



# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

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## UPSC - CSAT

MENTAL, ABILITY, ANALYTICAL - 2016  
& LOGICAL REASONING

28. A person climbs a hill in a straight path from point 'O' on the ground in the direction of north-east and reaches a point 'A' after travelling a distance of 5 km. Then, from the point 'A' he moves to point 'B' in the direction of north-west. Let the distance AB be 12

km. Now, how far is the person away from the starting point 'O'?

(a) 7 km                      (b) 13 km                      (c) 17 km                      (d) 11km

DIRECTIONS for the following 3 (three) items :

Consider the given information and answer the three items that follow.

When three friends A, B and C met, it was found that each of them wore an outer garment of a different colour. In random order, the garments are: jacket, sweater and tie; and the colours are: blue, white and black. Their surnames in random order are : Ribeiro, Kumar and Singh.

Further, we know that:



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1. neither B nor Ribeiro wore a white sweater
  2. C wore a tie
  3. Singh's garment was not white
  4. Kumar does not wear a jacket
  5. Ribeiro does not like to wear the black colour
  6. Each of the friends wore only one outer garment of only one colour
- 
29. What is C's surname ?  
(a)Riberio(b)Kumar (c)Singh (d)Cannot be determined
  30. What is the colour of the tie ?  
(a)Black(b)Blue (c)White (d)Cannot be determined
  31. Who wore the sweater ?  
(a)A (b)B (c)C (d) Cannot be determined
  - 32.A person walks 12 km due north, then 15 km due east, after that 19 km due west and then 15 km due south. How far is he from the starting point?  
(a) 5 km (b) 9 km (c) 37 km (d) 61km
  33. A cube has all its faces painted with different colours. It is cut into smaller cubes of equal sizes such that the side of the small cube is one-fourth the big cube. The number of small cubes with only one of the sides painted is:  
(a) 32 (b)24 (c) 16 (d) 8
  - 34.A military code writes SYSTEM as SYSMET and NEARER as AENRER.  
Using the same code, FRACTION can be written as:  
(a) CARFTION (b) FRACNOIT (c) NOITCARF (d) CARFNOIT
  - 35.Four-digit numbers are to be formed using the digits 1, 2, 3 and 4; and none of these four digits are repeated in any manner. Further,
    1. 2 and 3 are not to immediately follow each other



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2. 1 is not to be immediately followed by 3
  3. 4 is not to appear at the last place
  4. 1 is not to appear at the first place
- How many different numbers can be formed?
- (a) 6 (b) 8 (c) 9 (d) None of the above

36. In a class of 60 students, where the number of girls is twice that of boys, Kamal, a boy, ranked seventeenth from the top. If there are 9 girls ahead of Kamal, the number of boys in rank after him is:
- (a) 13 (b) 12 (c) 7 (d) 3

37. A person X was driving in a place where all roads ran either north-south or east-west, forming a grid. Roads are at a distance of 1 km from each other in a parallel. He started at the intersection of two roads, drove 3 km north, 3 km west and 4 km south. Which further route could bring him back to his starting point, if the same route is not repeated?
- (a) 3 km east, then 2 km south (b) 3 km east, then 1 km north  
(c) 1 km north, then 2 km west (d) 3 km south, then 1 km north

38. Consider the following statement:  
"We shall go either for a picnic or for trekking".  
Which of the following, if true, would falsify this claim?
- (a) We go for a picnic but not for trekking  
(b) Activities such as picnic and trekking are encouraged by the health authorities  
(c) We go for trekking and not for picnic  
(d) We do not go either for picnic or for trekking

39. There were 50 faculty members comprising 30 males and the rest females. No male faculty member knew music, but many of the female faculty members did. The Head of the institution invited six faculty members to a tea party by draw of lots. At the party it was discovered that no member knew music. The conclusion is that:



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- (a) the party comprised male faculty members only
- (b) the party comprised only those female faculty members who could not give renderings in music
- (c) the party comprised both male and female faculty members
- (d) nothing can be said about the gender composition of the party

40. Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.

- (i) C is seated next to A
  - (ii) A is seated two seats from D
  - (iii) B is not seated next to A
- On the basis of above information, which of the following must be true?
1. D is seated next to B
  2. E is seated next to A
  3. D and C are separated by two seats

Select the correct answer using the code given below:

- (a) 1 only
- (b) 1 and 2 only
- (c) 3 only
- (d) Neither 1 nor 2 nor 3

41. There are five hobby clubs in a college — photography, yachting, chess, electronics and gardening. The gardening group meets every second day, the electronics group meets every third day, the chess group meets every fourth day, the yachting group meets every fifth day and the photography group meets every sixth day. How many times do all the five groups meet on the same day within 180 days?

- (a) 5
- (b) 18
- (c) 10
- (d) 3

42. There are some nectar-filled flowers on a tree and some bees are hovering on it. If one bee lands on each flower, one bee will be left out. If two bees land on each flower, one flower will be left out. The number of flowers and bees respectively are:

- (a) 2 and 4
- (b) 3 and 2
- (c) 3 and 4
- (d) 4 and 3



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DIRECTIONS for the following 5 (five) items: Consider the following information and answer the five items that follow:

There are five persons in a group — P, Q, R, S and T. The group has one doctor, one lawyer and one artist. P and S are unmarried students. T is a man married to one of the group members. Q is the brother of P and is neither doctor nor artist. R is not doctor.

43. Who is the doctor?

- (a) T (b) P (c) Q (d) R

44. Who is the artist?

- (a)P (b)Q (C)R (D)T

45. Who is the spouse of R?

- (a) P (b)T (c)Q (d)S

46. Who is the lawyer?

- (a)P (b)Q (c)R (d)S

47. Who of the following is definitely a man?

- (a)P (b)S (c)Q (d) None of the above

48. There is an order of 19000 quantity of a particular product from a customer. The firm produces 1000 quantity of that product per day out of which 5% are unfit for sale. In how many days will the order be completed?

- (a)18 (b)19 (c)20 (d)22

49. Consider the following statements:

1. Either A and B are of the same age or A is older than B
2. Either C and D are of the same age or D is older than C



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3. B is older than C

Which of the following conclusions can be drawn from the above statements?

- (a) A is older than B (b) B and D are of the same age  
(c) D is older than C (d) A is older than C

DIRECTIONS for the following 3 (three) items: Consider the given-formation and answer the three items that follow.

Six boxes A, B, C, D, E and F have been painted with six different colours viz., violet, indigo, blue, green, yellow and orange and arranged from left to right (not necessarily either kept or painted with the colours in the same order). Each box contains a ball of any one of the following six games: cricket, hockey, tennis, golf, football and volleyball (not necessarily in the same order). The golf ball is in violet box and is not in the box D. The box A which contains tennis ball is orange in colour and is at the extreme right. The hockey ball is neither in box D nor in box E. The box C having cricket ball is painted green.

The hockey ball is neither in the box painted blue nor in the box painted yellow. The box C is fifth from right and next to box B. The box B contains volleyball. The box containing the hockey ball is between the boxes containing golf ball and volleyball.

50. Which one of the following boxes contains the ball?

- (a) F (b) E (c) D (d) None of the above

51. Which of the following statements is/are correct?

- (a) D is painted yellow (b) F is painted indigo  
(c) B is painted blue (d) All of the above

52. The football is in the box of which colour?

- (a) Yellow (b) Indigo  
(c) Cannot be determined as data are inadequate (d) Blue



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53. In a question paper there are five questions to be attempted and answer to each question has two choices - True (T) or False (F). It is given that no two candidates have given the answers to the five questions in an identical sequence. For this to happen the maximum number of candidates is:  
(a)10 (b)18 (c)26 (d)32

54. A ate grapes and pineapple; B ate grapes and oranges; C ate oranges, pineapple and apple; D ate grapes, apple and pineapple. After taking fruits, B and C fell sick. In the light of the above facts, it can be said that the cause of sickness was:  
(a)Apple (b)Pineapple (c)Grapes (d)Oranges

55. Consider the following statements.

1. The rate of population growth is increasing in the country
2. The death rate is declining faster in the country compared to birth rate
3. The birth rate is declining faster in the country compared to death rate
4. Rural-urban migration is taking place regularly in the country

Which one of the following conclusions may be true in the light of the above facts?

- (a) The rate of population growth is increasing due to rural-urban migration
- (b) The rate of population growth is increasing due to decline in death rate only
- (c) The rate of population growth is increasing due to increase in birth rate only
- (d) The rate of population growth is increasing due to faster decline in death rate than in birth rate

## ARITHMETIC

56. An agricultural field is in the form of a rectangle having length  $X_1$  meters and breadth  $X_2$  meters ( $X_1$  and  $X_2$  are variable). If  $X_1 + X_2 = 40$  meters, then the area of the agricultural field will not exceed which one of the following values?  
(a)400 sq m (b)300 sq m (c)200 sqm (d)80 sqm

57. The sum of the ages of 5 members comprising a family, 3 years ago, was 80 years. The average age of the family today is the same as it was 3 years ago,



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because of an addition of a baby during the intervening period. How" old is the baby ?

(a)6 months (b)1year (c)2 years (d)2 years and 6 months

58. The total emoluments of two persons are the same, but one gets allowances to the extent of 65% of his basic pay and the other gets allowances to die extent of 80% of his basic pay. The ratio of die basic pay of the former to the basic pay of the latter is:

(a)16:13 (b)5 : 4 (c)7:5 (d)12:11

59.A person is standing on the first step from the bottom of a ladder. If he has to climb 4 more steps to reach exactly the middle step, how many steps does the ladder have?

(a)8 (b)9 (c)10 (d)11

60. AB is a vertical trunk of a huge tree with A being the point where the base of the trunk touches the ground. Due to a cyclone, the trunk has been broken at C which is at a height of 12 meters, broken part is partially attached to the vertical portion of the trunk at C. If the end of the broken part Btouches the ground at D which is at a distance of 5 meters from A, then the original height of the trunk is:

(a)20 m (b)25 m (c)30 m (d)35 m

61.Ram and Shyam workon a job together for four days and complete 60% of it. Ram takes leavethen and Shyam works for eight more days to complete the job. How long would Ram take to complete the entire job alone?

(a)6 days (b)8 days (c)10 days (d)11 days

62.If R and S are different integers both divisible by 5, then which of the following is not necessarily true?

(a) R - S is divisible by 5  
(b) R + S is divisible by 10





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- (c)  $R \times S$  is divisible by 25  
(d)  $R^2 + S^2$  is divisible by 5

63. How many numbers are there between 100 and 300 which either begin with or end with 2?

- (a) 110                      (b) 111    (c) 112    (d) None of the above

64. W can do 25% of a work in 30 days, X can do  $\frac{1}{4}$  of the work in 10 days, Y can do 40% of the work in 40 days and Z can do  $\frac{1}{3}$  of the work in 13 days.

Who will complete the work first?

- (a) W                      (b) X    (c) Y    (d) Z

65. The average monthly income of a person in a certain family of 5 is \* 10,000. What will be the average monthly income of a person in the same family if the income of one person increased by Rs. 1,20,000 per year?

- (a) Rs. 12,000              (b) Rs. 16,000    (c) Rs. 20,000    (d) Rs. 34,000

66. In a race, a competitor has to collect 6 apples which are kept in a straight line on a track and a bucket is placed at the beginning of the track which is a starting point. The condition is that the competitor can pick only one apple at a time, run back with it and drop it in the bucket. If he has to drop all the apples in the bucket, how much total distance he has to run if the bucket is 5 meters from the first apple and all other apples are placed 3 meters apart?

- (a) 40m              (b) 50m    (c) 150m    (d) 75m

67. A round archery target of diameter 1 m is marked with four scoring regions from the centre outwards as red, blue, yellow and white. The radius of the red band is 0.20 m. The width of all the remaining bands is equal. If archers throw  $n$  arrows towards the target, what is the probability, that the arrow's fall in the red region of the archery target?

- (a) 0.40    (b) 0.20    (c) 0.16    (d) 0.04



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68. A person allows 10% discount for cash payment from the marked price of a toy and still he makes a 10% gain. What is the cost price of the toy which is marked Rs.770?

- (a)Rs.610 (b)Rs.620 (c)Rs.630 (d)Rs.640

69. A class starts at 11:00 am and lasts till 2:27 pm. Four periods of equal duration are held during this interval. After every  $\frac{7}{8}$  period, a rest of 5 minutes is given to the students. The exact duration of each period is:

- (a)48 minutes (b)50 minutes (c)51 minutes (d)53 minutes

70. 30g of sugar was mixed in 180 ml water in a vessel A, 40 g of sugar was mixed in 280 ml of water in vessel B and 20 g of sugar was mixed in 100 ml of water in vessel C. The solution in vessel B is :

- (a)sweeter than that in C (b)sweeter than that in A  
(c)as sweet as that in C (d)less sweet than that in C

71. In aid of charity, every student in a class contributes as many rupees as the number of students in that class. With the additional contribution of Rs.2 by one student only, the total collection is ₹ 443. Then how many students are there in the class?

- (a) 12 (b)21 (c)43 (d)45

72. Anita's mathematics test had 70 problems earning equal marks. 10 arithmetic, 30 algebra and 30 geometry. Although she answered 70% of the arithmetic, 40% of the algebra and 60% of the geometry problems correctly, she did not pass the test because she got less than 60% marks. The number of more questions she would have to answer correctly to earn a 60% passing marks is:

- (a)1 (b)5 (c)7 (d)9



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73. In a class, there are 18 very tall boys. If these constitute three-fourths of the boys and the total number of boys is two-thirds of the total number of students in the class, what is the number of girls in the class?

(a)6 (b)12 (c)18(d)21

74. The monthly average salary paid to all the employees of a company was Rs.5000. The monthly average salary paid to male and female employees was Rs.5200 and Rs.4200 respectively. Then the percentage of males employed in the company is :

(a)75% (b)80% (c)85% (d)90%

75. Two numbers X and Y are respectively 20% and 28% less than a third number Z. By what percentage is the number Y less than the number X ?

(a)12% (b)10% (c)9% (d)8%

76. A cylindrical overhead tank of radius 2 m and height 7 m is to be filled from an underground tank of size 5.5 m x 4 m x 6 m. How much portion of the underground tank is still filled with water after filling the overhead tank completely?

(a)1/3 (b)1/2 (c)1/4 (d)1/6

77. A piece of tin is in the form of a rectangle having length 12 cm and width 8 cm. This is used to construct a closed cube. The side of the cube is:

(a)2 cm (b)3cm (c)4 cm (d)7 cm

78. A and B walk around a circular park. They start at 8 a.m. from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other after 8 00 a.m. and before 9.30.a.m.?

(a)7 (b)6 (c)5 (d)8



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79. Four friends A, B, C and D need to cross a bridge. A maximum of two persons can cross it at a time. It is night and they just have one lamp. Persons that cross the bridge must carry the lamp to find the way. A pair must walk together at the speed of slower person. After crossing the bridge, the person having faster speed in the pair will return with the lamp each time to accompany another person in the group. Finally, the lamp has to be returned at the original place and the person who returns the lamp has to cross the bridge again without lamp. To cross the bridge, the time taken by them is as follows : A : 1 minute, B : 2 minutes, C : 7 minutes and D : 10 minutes. What is the total minimum time required by all the friends to cross the bridge?

(a) 23 minutes (b) 22 minutes (c) 21 minutes (d) 20 minutes

80. A daily train is to be introduced between station A and station B starting from each at 6 AM and the journey is to be completed in 42 hours. What is the number of trains needed in order to maintain the Shuttle Service?

(a) 2 (b) 4 (c) 3 (d) 7

## Mental Ability & Logical Reasoning (1995)

1. Consider the series given below:

4/12/95, 1/1/96, 29/1/96,

26/2/96, ... The next term of the series is

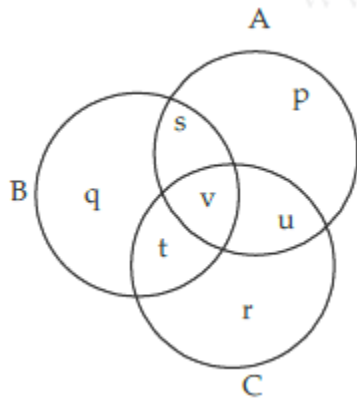
(a) 24/3/96 (b) 25/3/96 (c) 26/3/96 (d) 27/3/96

2. In the given diagram, circle A represents teachers who can teach Physics, circle B represents teachers who can teach Chemistry and circle C represents those who can teach Mathematics. Among these, which represents teachers who can teach Physics and Mathematics but not Chemistry, is



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- (a)v (b)u (c)s (d)t

3. Seven men A, B, C, D, E, F and G are standing in a queue in that order. Each one is wearing a cap of a different colour like violet, indigo, blue, green, yellow, orange and red. D is able to see in front of him green and blue, but not violet. E can see violet and yellow, but not red. G can see caps of all colours other than orange.

If E is wearing an indigo coloured cap, then the colour of the cap worn by F is:

- (a)blue (b)violet (c)red (d)orange

4. Examine the following statements:

- I. All children are inquisitive
- II. Some children are inquisitive
- III. No children are inquisitive
- IV. Some children are not inquisitive

Among these statements the two statements which cannot both be true simultaneously but can both be false, would be

- (a)I and III (b)I and IV (c)II and III (d)III and IV

5. Which of the following can be inferred from the statement that "Either John is stupid or John is lazy" ?

- 1. John is lazy/therefore, John is not stupid
- 2. John is not lazy/therefore, John is stupid
- 3. John is not stupid/therefore, John is lazy
- 4. John is stupid/therefore, John is not lazy



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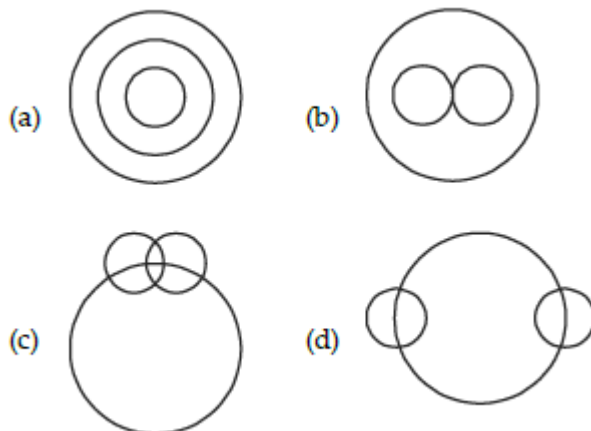
Codes:

- (a) 1 and 2   (b) 2 and 3   (c) 3 and 4   (d) 1 and 4

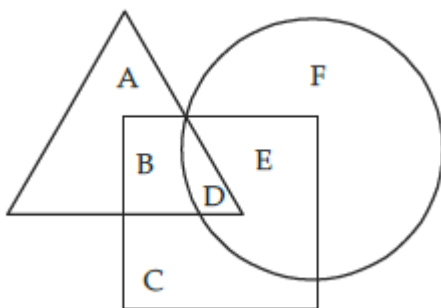
6. Six roads lead to a country. They may be indicated by letters X, Y, Z and digits 1, 2, 3. When there is storm, Y is blocked. When there are floods X, 1 and 2 will be affected. When road 1 is blocked, Z also is blocked. At a time when there are floods and a storm also blows, which road(s) can be used ?

- (a) Z and 2   (b) Only Z   (c) Only 3   (d) Only Y

7. Which one of the following Venn diagrams correctly illustrates the relationship among the classes: Carrot, Food, Vegetable?



8. In the given figure, the triangle represents girls, the square represents sports persons and the circle represents coaches. The portion in the figure which represents girls who are sports persons but not coaches is the one labelled, as





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(a)A (b)B (c)D (d)E

9.The next pair of letters in the series AZ, CX, FU.

(a) JQ (b) KP (c)IR (d)IV

10.Mouse is to cat as fly is to :

(a)rat (b)animal (c)spider (d)horse

11.Examine the following statements:

1 George attends Music classes on Monday

2. He attends Mathematics classes on Wednesday

3. His Literature classes are not on Friday

4. He attends History classes on the day following the day of his Mathematics classes

5. On Tuesday he attends his Sports classes. If he attends just one subject in a day and his Sunday is free, then he is also free on

(a)Monday (b)Thursday (c)Saturday (d)Friday

12.In an accurate clock, in a period of 2 hours 20 minutes (140 minutes), the minute hand will move over

(a)520° (b) 320° (c)840° (d)140°

13.Two important characteristics of a hypothesis are that it should be testable and that it should be stated in a manner that it can be refuted. Which one of the following hypothesis fulfills these characteristics?

(a)Intelligent persons have good memory (b)Some birds are animals (c)Some businessman are dishonest (d)All men are mortal

14.In the series POQ, SRT, VUW, \_\_\_\_\_ , the blank space refers to

(a)XYZ (b)XZY (c)YXZ (d)YZY



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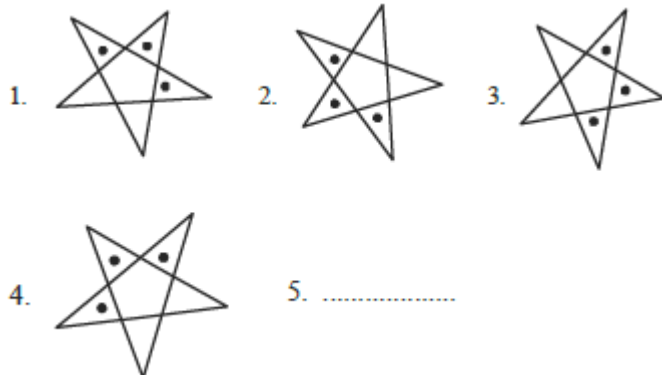
15. Examine the following statements regarding a set of balls

- 1. All balls are black
- 2. All balls are white
- 3. Only some balls are black
- 4. No balls are black

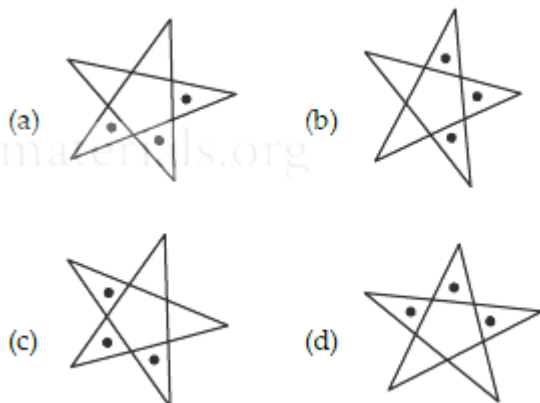
Assuming that the balls can only be black or white, which two of the statements given above can both be true, but cannot both be false? Choose the correct answer from the codes given below:

- (a) 1 and 4
- (b) 1 and 3
- (c) 2 and 3
- (d) 2 and 4

16. Consider the figures given below:



In the given sequence of figures, the figure that would logically appear at 5 is

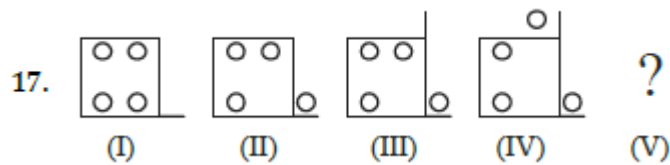




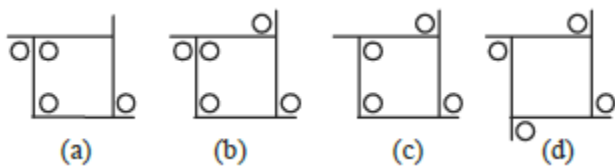


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In the above set of figures (I) to (IV), some parts are shown to change their position in a regular direction. Following the same sequence, which one of the following will appear at the fifth stage?



18. Examine the following statements:

1. All members of Mohan's family are honest
2. Some members of Mohan's family are not employed
3. Some employed persons are not honest
4. Some honest persons are not employed

Which one of the following inferences can be drawn from the above statements?

- (a) All members of Mohan's family are employed
- (b) The employed members of Mohan's family are honest
- (c) The honest members of Mohan's family are not employed
- (d) The employed member of Mohan's family are not honest

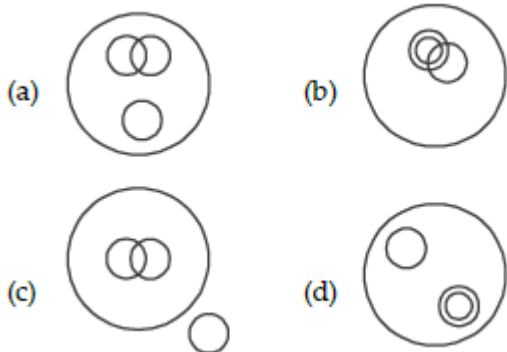
19. In a dinner party both fish and meat were served. Some took only fish and some only meat. There were some vegetarians who did not accept either. The rest accepted both fish and meat

Which one of the following logic diagrams correctly reflects the above situation?



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20. A, B, C, D, E, F and G are members of a family consisting of 4 adults and 3 children, two of whom, F and G are girls. A and D are brothers and A is a doctor. E is an engineer married to one of the brothers and has two children. B is married to D and G is their child. Who is C?

(a) G's brother (b) F's father (c) E's father (d) A's son

21. Which one of the following satisfies relationship Dda: aDD:: Rrb: ?

(a) DDA (b) RRR (c) bRR (d) BBr

22. A, B, C, D, E and F, not necessarily in that order, are sitting on six chairs regularly placed around a round table. It is observed that A is between D and F, C is opposite to D and D and E are not on neighbouring chairs.

Which one of the following pairs must be sitting on neighbouring chairs?

(a) A and B (b) C and E (c) B and F (d) A and C

23. If in a certain code SAND is VDQG and BIRD is ELUG, then what is the code for LOVE?

(a) PRYG (b) ORTG (c) NFLJH (d) ORYH

24. In a group of five people, K, L and M are ambitious, M, N, and R are honest, L, M and N are intelligent and K, N and R are industrious. Among these neither industrious nor ambitious person(s) would include

(a) K alone (b) L and R (c) M and N (d) none of the group



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25. On another planet, the local terminology for earth, water, light, air and sky are 'sky', 'light', 'air', 'water' and 'earth' respectively. If someone is thirsty there, what would he drink ?

- (a) Sky (b) Water (c) Air (d) Light

26. In a code language, 'SOLID' is written as 'WPSLPIMFHA', What does the code 'ATEXXQIBVO' refer to?

- (a) EAGER (b) WAFER (c) WAGER (d) WATER

27. Examine the following relationships among members of a family of six persons A, B, C, D, E and F.

1. The number of males equals that of females
2. A and B are sons of F.
3. D is the mother of two, one boy and one girl
4. C is the son of A
5. There is only one married couple in the family at present

Which one of the following inferences can be drawn from the above?

- A, B and C are all females B is the husband of D  
C and F are children of D D is the grand daughter of F

28. In a certain code, 'MARCH' is written as 'OCTEJ', how is 'RETURN' written in that code?

- (a) TFUVSM (b) QGSTQM (c) TGVWTP (d) TGRVSO

29. A, B, C, D, E and F not necessarily in that order are sitting in six chairs regularly placed around a round table. It is observed that.

A is between D and F

C is opposite D

D and E are not on neighbouring chairs

Which one of the following must be true

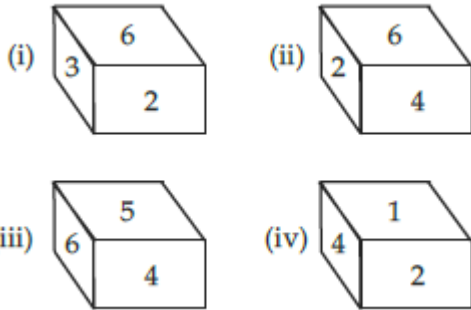
- (a) A is opposite B (b) D is opposite E (c) C and B are neighbours  
(d) B and E are neighbours



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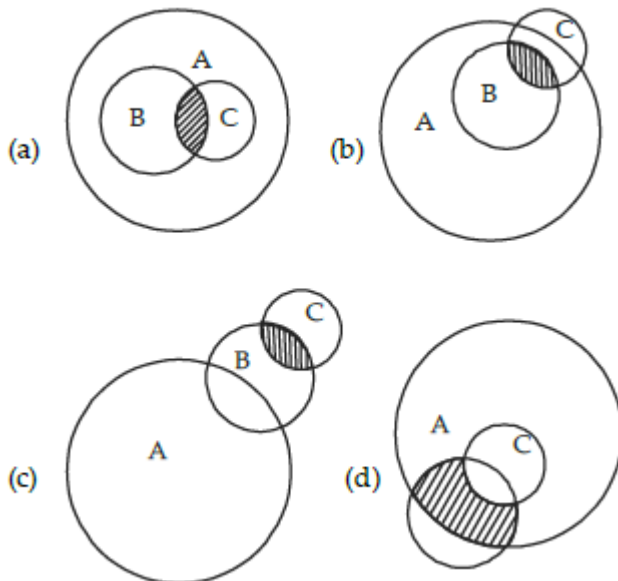
30. Consider the following pictures of dice:



What is the number opposite to 3 ?

- (a)1                    (b)4    (c)5                    (d)Data insufficient

31. Most guitarists are bearded males. If A represents all males, B represents bearded males and C represents all male guitarists, then the correct diagram for their relations (shaded portion) is:



DIRECTIONS (Qs. 32-35): The details given below relate to the FOUR items that follow:

Amit wishes to buy a magazine, four magazines one each on politics, sports, science and films are available to choose from. They are edited by Feroz, Gurbaksh, Swami and Ila not necessarily in that order) and published by Aryan,



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Bharat, Charan and Dev Publishers (not necessarily in that order) Further, it is given that :

- i) Dev publishers have published the magazine edited by Feroz.

- ii) The magazine on politics is published by Aryan Publishers

- iii) The magazine, on films is edited by Swann and is not published by Charan Publishers

- (iv) The magazine on science is edited by Ila. For the following four items, select the correct answer.

32. The magazine on science is published by

- (a) Aryan Publishers (b) Bharat Publishers
- (c) Charan Publishers (d) Dev Publishers

33. The magazine on sports is

- (a) edited by Feroz (b) edited by Gurbaksh
- (c) published by Bharat Publishers (d) published by Charan Publishers

34. The magazine on film is

- (a) published by Dev Publishers (b) published by Bharat Publishers
- (c) edited by Gurbaksh (d) published by Charan Publishers

35. The magazine on politics is

- (a) edited by Ha (b) edited by Gurbaksh
- (c) published by Dev Publishers (d) published by Charan Publishers

36. A person stands at the middle point of a wooden ladder, which starts slipping between a vertical wall and the floor of a room. The path traced by a person standing at the middle point of the slipping ladder, is

- (a) a straight line (b) an elliptical path
- (c) a circular path (d) a parabolic path

**DIRECTIONS (Qs. 37 to 40):** Based on the information given below, answer the four items which follow it:



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Gopal, Harsh, Inder, Jai and Krishnan have Ahmedabad, Bhopal, Cuttack, Delhi and Emakulam as their hometowns (not necessarily in that order). They are studying in Engineering, Medical, Commerce, Economics and History college, (not necessarily in that order). None of the five boys is studying in his hometown, but each of them studies in one of die cities given above.

- (i) Gopal's home town is Emakulam.
- (ii) Harsh is not studying in Ahmedabad or Bhopal
- (iii) Economics college is in die Bhopal
- (iv) Inder's hometown is in Cuttack
- (v) Krishnan is studying in Delhi
- (vi) Jai is studying in Emakulam and the History college is in his hometown Ahmedabad
- (vii) Engineering college is situated in Emakulam.

Based on the information given above answer the next FOUR items:

37. Which is Krishnan's hometown?

- (a) Ahmedabad (b) Cuttack (c) Bhopal (d) Cannot be determined.

38. Which college is situated in Inder's hometown?

- (a) Commerce (b) Medical (c) Economics (d) Commerce or Medical

39. Who studies in Bhopal ?

- (a) Gopal (b) Harsh (c) Gopal or Inder (d) Inder or Harsh

40. If Inder studies in Ahmedabad, then which one of the following is the correct combination of person Hometown- Place of study?

- (a) Gopal-Emakulam-Delhi (b) Jai-Ahmedabad-Emakulam  
(c) Krishnan - Delhi – Emakulam (d) Harsh- Bhopal –Delhi



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41. An equilateral triangular plate is to be cut into  $n$  number of identical small equilateral triangular plates. Which of the following can be possible value of  $n$ ?

- (a)196      (b)216    (c)256      (d)296

42.P, Q, R, Sand T reside in a five-storeyed (Ground + 4) building, and each of them resides on a separate floor.

Further:

1.T does not reside on the topmost floor.

2.Q does not reside on the ground floor.

3.S resides on one storey above that of P and one storey below that of R. To know as the which one of the five persons resides on the ground floor which of the above statements are sufficient/ insufficient?

- (a) 1 and 3 are sufficient    (b)2 and 3 are sufficient  
(c)1,2 and 3 are sufficient    (d)1,2 and 3 are insufficient

43.A box contains five sets of balls while there are 3 balls in each set. Each set of balls has one color which is different from every other set, what is the least number of balls that must be removed from the box in order to claim with certainty that a pair of balls of the same colour has been removed?

- (a)6    (b)7    (c)8    (d)9

44.In an office, the number of persons who take tea is twice the number of persons who take only coffee. The number of persons who take coffee is twice the number of persons who take only tea. Consider the following statement:

1.The sum of the number of persons who take either tea or coffee or both is four times the number of persons who take both coffee and tea.

2.The sum of the number of persons who take only coffee and those who take only tea is twice the number of persons who take both tea and coffee.



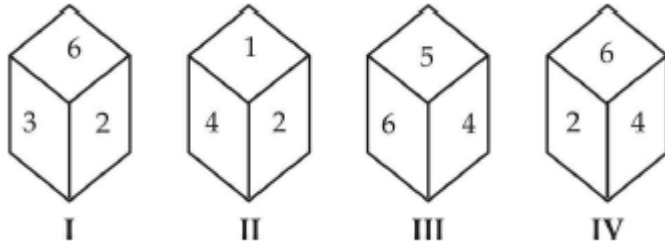
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Which of the statement(s) given above is/are correct?

(a)1 only (b)2 only (c)Both 1 and 2 (d)Neither 1 nor 2

15.Each of the six faces of a cube is numbered by one of the digits from 1 to 6. This cube is shown in its four different positions in the figure I, n, ID, and IV.



Consider the following statements.

1. Figures II and III are sufficient to know as to which face is opposite to die face numbered 6.
2. figures II and III are sufficient to know as to which face is opposite to die face numbered 4. .
3. Figures I and IV are sufficient to know as to which face is opposite to die face numbered 3.

Which of the statements given above are correct?

(a)1 and 3 only (b)1 and 2 only  
(c)2 and 3 only (d)1, 2 and 3

46.A watch showed a time of fourteen minutes past nine (9 hrs and 14 minutes). The positions of the hour-hand and the minute hand of the watch are exactly interchanged. The new time shown by the watch is closest to which one of the following?

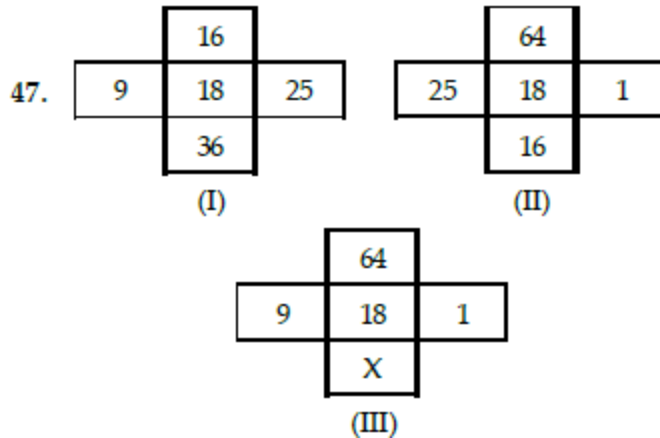
(a)Twelve minutes to three (b)Thirteen minutes to three  
(c)Fourteen minutes to three (d)Fifteen minutes to three





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What is the value of X in figure III ?

- (a) 4    (b) 16    (c) 25    (d) 36

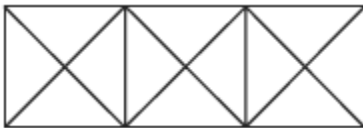
48. Six faces of a cube are numbered from 1 to 6, each face carrying one different number. Further,

1. The face 2 is opposite to the face 6.
2. The face 1 is opposite to the face 5.
3. The face 3 is between the face 1 and die face 5
4. The face 4 is adjacent to the face 2.

Which one of the following is correct? [2007]

- (a) The face 2 is adjacent to the face 3
- (b) The face 6 is between the face 2 and the face 4
- (c) The face 1 is between the face 5 and the face 6
- (d) None of the above

49. How many different triangles are there in the figure shown below?



- (a) 28    (b) 24    (c) 20    (d) 16

50. Six persons A, B, C, D, E and F are standing in a row'. C and D are standing close to each other alongside E. B is standing beside A only. A is fourth from F. Who are standing on the extremes?



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(a)A and F (b)B and D (c)B and F (d)None of the above

51.How many letters of the English alphabet (capitals) appear same when looked at in a mirror?

(a) 9 (b)10 (c)11 (d)12

52.There is a family of 6 persons A, B, C, D, E and F. There are two married couples in the family. The family members are lawyer, teacher, salesman, engineer, accountant and doctor. D, the salesman is married to the lady teacher. The doctor is married to the lawyer. F, the accountant is the son of B and brother of E. C, the lawyer is the daughter-in-law of A. E is the unmarried engineer. A is the grandmother of F. How is E related to F?

(a)Brother (b)Sister (c)Father  
(d)Cannot be established (cannot be determined)

53.There are three cans A, B and C. The capacities of A, B and C are 6 litres, 10 litres and 16 litres respectively. The can C contains 16 litres of milk. The milk has to be divided in them using these three cans only.

Consider the following statements:

1. It is possible to have 6 litres of milk each in can A and can B.
2. It is possible to have 8 litres of milk each in can B and can C.

Which of the statements given above is/are correct?

(a)1 only (b)2 only (c)Both 1 and 2 (d)Neither 1 nor 2

54.A person travels 12 km due North, then 15 km due East, after that 15 km due West and then 18 km due South. How far is he from the starting point?

(a)6 km (b)12 km (c)33 km (d)60 km

55.Six books A, B, C, D, E and F are placed side by side. B, C and E have blue cover and the other books have red cover. Only D and F are new



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books and the rest are old. A, C and D are law reports and others are Gazetteers. Which book is a new law report with a red colour?

(a)A (b)B (c)C (d)D

56.Six persons M, N, O, P, Q and R are sitting in two rows, three in each. Q is not at the end of any row. P is second to the left of R. O is die neighbour of Q and is sitting diagonally opposite to P. N is the neighbour of R. On die basis of above information, who is facing N?

(a)R (b)Q (c)P (d)M

57.P, Q, R and S are four men. P is the oldest but not the poorest. R is the richest but not the oldest. Q is older than S but not than P or R. P is richer than Q but not than S. The four men can be ordered (descending) in respect of age and richness, respectively as

(a)PQRS, RPSQ (b)PRQS,RSPQ (c)PRQS, RSQP (d)PRSQ, RSPQ

58.In a meeting, the map of a village was placed in such a manner that south-east becomes north, north-east becomes west and so on. What will south become?

(a)North (b)North-east (c)North-west (d)West

59.A cuboid has six sides of different colours. The red side is opposite to black. The blue side is adjacent to white. The brown side is adjacent to blue. The red side is face down. Which one of the following would be the opposite to brown?

(a)Red (b)Black (c)White (d) Blue

DIRECTIONS (Qs. 60-62) : Read the following-passage and answer the 3 (three) items that follow:

A, B, C, D and E are members of the same family. There are two fathers, two sons, two wives, three males and two females. The teacher was the wife of a lawyer who was the son of a doctor. E is not a male, neither also a wife of a



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professional. C is the youngest person in the family and D is the eldest. B is a male.

60. How is D related to E ?

(a)Husband (b)Son (c)Father (d)Wife

61. Who are the females in the group ?

(a)C and E (b)C and D (c)E and A (d)D and E

62. Whose wife is the teacher ?

(a)C (b)D (c)A (d)B

**DIRECTIONS (Qs. 63-65) :** Read the following passage and answer the 3 (three) items that follow:

In a survey regarding a proposed measure to be introduced, 2878 persons took part of which 1652 were males. 1226 persons voted against the proposal of which 796 were males. 1425 persons voted for the proposal. 196 females were undecided.

63. How many females voted for the proposal ?

(a) 430 (b)600 (c)624(d)640

64. How many males were undecided

(a) 31 (b)227 (c)426 (d)581

65. How many females were not in favour of the proposal?

(a)430 (b)496 (c)586 (d)1226

66. In a queue, Mr. X is fourteenth from the front and Mr.

Y is seventeenth from the end, while Mr. Z is exactly in between Mr. X and Mr. Y.



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If Mr. X is ahead of Mr. Y and there are 48 persons in the queue, how many persons are there between Mr. X and Mr. Z ?

(a)6 (b)7 (c)8 (d)9

**DIRECTIONS (Qs. 67-68):** Each of the following two items consists of four statements. Of these four statements, two cannot both be true, but both can be false. Study the statements carefully and identify the two that satisfy the above condition. Select the correct answer using the codes given below each set of statements:

67.Examine the following statements:

- 1.All animals are carnivorous.
- 2.Some animals are not carnivorous.
- 3.Animals are not carnivorous.
- 4.Some animals are carnivorous.

Codes:

(a) 1 and 3 (b)1 and 2 (c)2 and 3 (d)3 and 4

68.Examine the following statements :

1. All trains are run by diesel engine.
2. Some trains are run by diesel engine.
3. No train is run by diesel engine.
4. Some trains are not run by diesel engine.

Codes:

(a) 1 and 2 (b)2 and 3 (c)1 and 3 (d)1 and 4

69. There are four routes to travel from city A to city B and six routes from city B to city C. How many routes are possible to travel from the city A to city C ?

(a)24 (b)12 (c)10 (d)8

70.Consider die following figure and answer the item that follows:



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What is the minimum number of different colours required to paint the figure given above such that no two adjacent regions have die same colour?

- (a)3 (b)4 (c)5 (d)6

71.Consider the following argument:

"In order to be a teacher one must graduate from college. All poets are poor. Some Mathematicians are poets. No college graduate is poor."

Which one of the following is not a valid conclusion regarding the above argument?

- (a)Some Mathematicians are not teachers.  
(b)Some teachers are not Mathematicians.  
(c)Teachers are not poor, (d)Poets are not teachers.

72.The houses of A and B face each other on a road going north-south, A's being on the western side. A comes out of his house, turns left, travels 5 km, turns right, travels 5 km to the front of D's house. B does exactly the same and reaches the front of C's house. In this context, which one of the following statements is correct?

- (a)C and D live on the same street.  
(b)C's house faces south.  
(c)The houses of C and D are less than 20 km apart.  
(d)None of the above

73.Consider the following figures:



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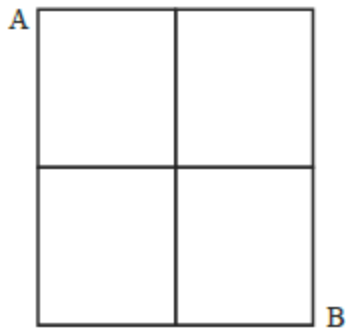
|    |    |
|----|----|
| 2  | 6  |
| 80 | 24 |

|     |    |
|-----|----|
| 3   | ?  |
| 120 | 36 |

What is the missing number?

- (a) 7            (b) 8    (c) 9    (d) 10

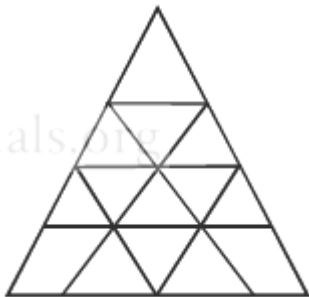
74. Study the following figure :



A person goes from A to B always moving to the right or downwards along the lines. How many different routes can he adopt? Select the correct answer from the codes given below:

- (a) 4    (b) 5    (c) 6    (d) 7

75. Consider the following figure and answer the item that follows:



What is the total number of triangles in the above grid?

- (a) 27            (b) 26    (c) 23    (d) 22

76. A person stood alone in a desert on a dark night and wanted to reach his village which was situated 5 km east of the point where he was



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standing. He had no instruments to find the direction but he located the polestar.

The most convenient way now to reach his village is to walk in the

- (a) direction facing the polestar
- (b) direction opposite to the polestar
- (c) direction keeping the polestar to his left
- (d) direction keeping the polestar to his right

77. Consider the following statements:

1. All artists are whimsical.
2. Some artists are drug addicts.
3. Frustrated people are prone to become drug addicts.

From the above three statements it may be concluded that

- (a) Artists are frustrated.
- (b) Some drug addicts are whimsical.
- (c) All frustrated people are drug addicts.
- (d) Whimsical people are generally frustrated.

78. Examine the following statements:

1. Either A and B are of the same age or A is older than B.
2. Either C and D are of the same age or D is older than C.
3. B is older than C.

Which one of the following conclusions can be drawn from the above statements?

- (a) A is older than B
- (b) B and D are of the same age
- (c) D is older than C
- (d) A is older than C

79. Examine the following statements:

1. Only those who have a pair of binoculars can become the members of the birdwatcher's club.
2. Some members of the birdwatcher's club have cameras.
3. Those members who have cameras can take part in photo-contests.

Which of the following conclusions can be drawn from the above statements?

- (a) All those who have a pair of binoculars are members of the birdwatcher's club.





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- (b) All members of the birdwatcher's club have a pair of binoculars.
- (c) All those who take part in photo-contests are members of the birdwatcher's club.
- (d) No conclusion can be drawn.

80. During the last summer vacation, Ankit went to a summer camp where he took part in hiking, swimming and boating. This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar.

Based on the above information, four conclusions, as given below, have been made. Which one of these logically follows from the information given above?

- (a) Ankit's parents want him to play the guitar.
- (b) Ankit prefers music to outdoor activities.
- (c) Ankit goes to some type of camp every summer.
- (d) Ankit likes to sing and dance.

81. Three persons A, B and C wore shirts of black, blue and orange colours (not necessarily in that order) and pants of green, yellow and orange colours (not necessarily in that order). No person wore shirt and pants of the same colour. Further, it is given that

1. A did not wear shirt of black colour.
2. B did not wear shirt of blue colour.
3. C did not wear shirt of orange colour.
4. A did not wear pants of green colour.
5. B wore pants of orange colour.

What were the colours of the pants and shirt by C, respectively?

- (a) Orange and black (b) Green and blue
- (c) Yellow and blue (d) Yellow and black

82. Ten new TV shows started in January — 5 sitcoms, 3 drama and 2 news magazines. By April, only seven of the new shows were still on, five of them being sitcoms. Based on the above information, four conclusions, as given below, have



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been made. Which one of these logically follows from the information given above?

- (a) Only one news magazine show is still on.
- (b) Only one of the drama shows is still on.
- (c) At least one discontinued show was a drama.
- (d) Viewers prefer sitcoms over drama.

83. Read the passage given below and the two statements that follow (given on the basis of the passage):

Four men are waiting at Delhi airport for a Mumbai flight. Two are doctors and the other two are businessmen. Two speak Gujarati and two speak Tamil. No two of the same profession speak the same language. Two are Muslims and two are Christians.

No two of the same religion are of the same profession, nor do they speak the same language. The Tamil-speaking doctor is a Christian.

1. The Christian-businessman speaks Gujarati.
2. The Gujarati-speaking doctor is a Muslim.

Which of the above statements is/are correct conclusion/ conclusions?

- (a) 1 only   (b) 2 only   (c) Both 1 and 2   (d) Neither 1 nor 2

84. Consider the following statement:

"Though quite expensive, television is not a luxury item, as one can learn many things through television."

Which one of the following is a valid inference from the above statement?

- (a) All expensive things are regarded as luxury.
- (b) All essential things for learning are not luxury.
- (c) Television is essential for learning.
- (d) Television is not a luxury item.

85. Gita is prettier than Sita but not as pretty as Rita. Then,



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- (a) Sita is not as pretty as Gita.
- (b) Sita is prettier than Rita.
- (c) Rita is not as pretty as Gita.
- (d) Gita is prettier than Rita.

86. Given that,

- 1. A is the brother of B.
- 2. C is the father of A.
- 3. D is the brother of E.
- 4. E is the daughter of B

Then, the uncle of D is

- (a) A (b) B (c) C (d) E

87. Examine the following statements:

- 1. Rama scored more than Rani.
  - 2. Rani scored less than Ratna.
  - 3. Ratna scored more than Rama.
  - 4. Padma scored more than Rama but less than Ratna. Who scored the highest?
- (a) Rama (b) Padma (c) Rani (d) Ratna

88. Examine the following statements: [2012 - II]

- 1. I watch TV only if I am bored.
- 2. I am never bored when I have my brother's company.
- 3. Whenever I go to the theatre I take my brother along.

Which one of the following conclusions is valid in the context of the above statements?

- (a) If I am bored, I watch TV.
- (b) If I am bored, I seek my brother's company.
- (c) If I am not with my brother, then I watch TV.
- (d) If I am not bored, I do not watch TV.



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89. Only six roads A, B, C, P, Q and R connect a military camp to the rest of the country. Only one out of A, P and R is open at any one time. If B is closed, so is Q. Only one of A and B is open during storms. P is closed during floods. In this context, which one of the following statements is correct?

- (a) Under normal conditions only three roads open.
- (b) During storms at least one road is open.
- (c) During floods only three roads are open.
- (d) During calamities all roads are closed.

90. Examine the following statements:

1. None but students are members of the club.
2. Some members of the club are married persons.
3. All married persons are invited for dance.

Which one of the following conclusions can be drawn from the above statements?

- (a) All students are invited for dance.
- (b) All married students of the club are invited for dance.
- (c) All members of the club are married persons.
- (d) None of the above conclusions can be drawn.

91. Four political parties W, X, Y and Z decided to set up a joint candidate for the coming parliamentary elections. The formula agreed by them was the acceptance of a candidate by most of the parties. Four aspiring candidates, A, B, C and D approached the parties for their tickets.

A was acceptable to W but not to Z.

B was acceptable to Y but not to X.

C was acceptable to W and Y.

D was acceptable to W and X.

When candidate B was preferred by W and Z, candidate C was preferred by X and Z, and candidate A was acceptable to X but not to Y; who got the ticket?

- (a) A
- (b) B
- (c) C
- (d) D



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92. Consider the following statements:

1. All X-brand cars parked here are white.
2. Some of them have radial tyres.
3. All X-brand cars manufactured after 1986 have radial tyres.
4. All cars are not X-brand.

Which one of the following conclusions can be drawn from the above statements?

- (a) Only white cars are parked here.
- (b) Some white X-brand cars with radial tyres are parked here.
- (c) Cars other than X-brand cannot have radial tyres.
- (d) Most of the X-brand cars are manufactured before 1986.

93. Consider the following statement:

The Third World War, if it ever starts, will end very quickly with the possible end of civilization. It is only the misuse of nuclear power which will trigger it. Based on the above statement, which one of the following inferences is correct?

- (a) Nuclear power will be used in the Third World War.
- (b) There will be no civilization left after the Third World War.
- (c) The growth of nuclear power will destroy civilization in the long run.
- (d) The Third World War will not take place.

94. The elements of the problem figures given below are changing with a certain rule as we observe them from left to right:

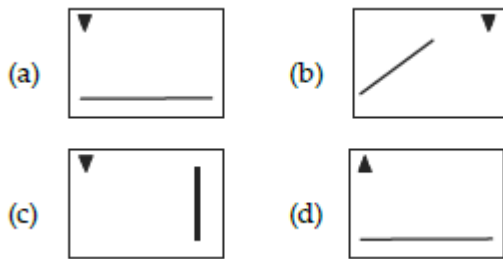


According to this rule, which of the following would be the next figure if the changes were continued with the same rule?

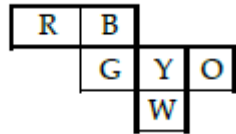


# SHAKTHII ACADEMY

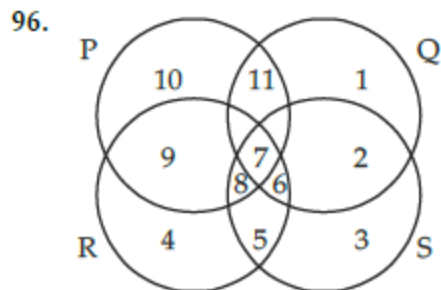
Increasing Confidence ; Reaching Goals



95. Six squares are coloured, front and back, red (R), blue (B), yellow (Y), green (G), white (W) and orange (O) and are hinged together as shown in the figure given below. If they are folded to form a cube, what would be the face opposite to the white face?



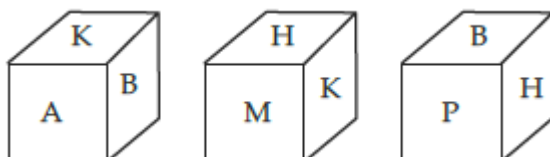
(a)R (b)G (c)B (d)O



In the above figure, circle P represents hardworking people, circle Q represents intelligent people, circle R represents truthful people, and circle S represents honest people. Which region represents the people who are intelligent, honest and truthful but not hardworking?

(a) 6 (b) 8 (c) 7 (d) 11

97. Three views of a cube following a particular motion are given below:





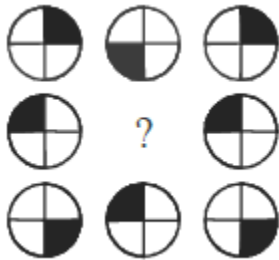
# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

What is the letter opposite to A?

- (a)H (b)P (c)B (d)M

98.



Which one of the figures shown below occupies the blank space (?) in the matrix given above?



**DIRECTIONS (Qs. 99-103):** Examine the information given in the following paragraph and answer the items there follow:

Guest lectures on five subjects viz., Economics, History, Statistics, English and Mathematics have to be arranged in a week from Monday to Friday. Only one lecture can be arranged on each day. Economics cannot be scheduled on Tuesday. Guest facility for History is available only on Tuesday. Mathematics lecture has to be scheduled immediately after the day of Economics lecture. English lecture has to be scheduled immediately before the day of Economics lecture.

99. Which lecture is scheduled on Monday?

- (a) History (b) Economics (c) Mathematics (d) Statistics



# SHAKTHI ACADEMY

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100. Which lecture is scheduled between Statistics and English?

- (a) Economics (b) History (c) Mathematics (d) No lecture

101. Which lecture is the last one in the week?

- (a) History (b) English (c) Mathematics (d) Economics

102. Which lecture is scheduled on Wednesday?

- (a) Statistics (b) Economics (c) English (d) History

103. Which lecture is scheduled before the Mathematics lecture?

- (a) Economics (b) History (c) Statistics (d) English

104. Consider the following statements:

1. All machines consume energy.
2. Electricity provides energy.
3. Electrically operated machines are cheap to maintain.
4. Electrically operated machines do not cause pollution.

Which one of the following inferences can be drawn from the above statements?

- (a) All machines are run by electric energy.  
(b) There is no form of energy other than electricity.  
(c) Most machines are operated on electric energy.  
(d) Electrically operated machines are preferable to use.

105. Examine the following statements: [2012-11]

1. None but the rich can afford air-travel.
2. Some of those who travel by air become sick.
3. Some of those who become sick require treatment.

Which one of the following conclusions can be drawn from the above statements?

- (a) All the rich persons travel by air.  
(b) Those who travel by air become sick.  
(c) All the rich persons become sick.  
(d) All those who travel by air are rich.





# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

106. In five flats, one above the other, live five professionals.

The professor has to go up to meet his IAS officer friend.

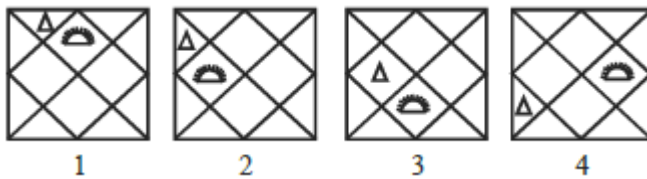
The doctor is equally friendly to all, and has to go up as frequently as go down.

The engineer has to go up to meet his MLA friend above whose flat lives the professor's friend.

From the ground floor to the top floor, in what order do the five professionals live?

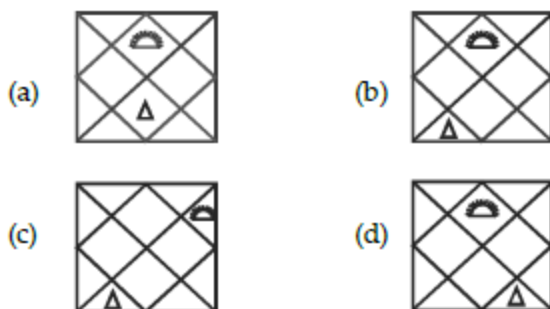
- (a) Engineer, Professor, Doctor, IAS officer, MLA
- (b) Professor, Engineer, Doctor, IAS officer, MLA
- (c) IAS officer, Engineer, Doctor, Professor, MLA
- (d) Professor, Engineer, Doctor, MLA, IAS officer

107. Consider the following figures 1, 2, 3 and 4:



In the figures from 1 to 4 above, two symbols are shown to change their position in a regular direction.

Following the same sequence, which one of the following will appear at the fifth stage?



**DIRECTIONS (Qs. 108-109):** In each item, there are two sets of figures, first four figures named Problem figure and next four figures named Answer figures indicated as (a), (b), (c) and (d). The problem figures follow a particular sequence.

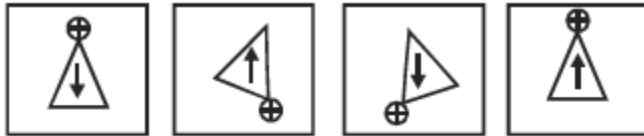


# SHAKTHI ACADEMY

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In accordance with the same, which one of the four answer figures should appear as the fifth figure?

108.



Answer figures:



(a)

(b)

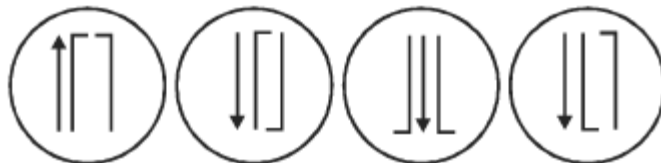
(c)

(d)

109. Problem figures :



Answer figures:



(a)

(b)

(c)

(d)

110. Consider the following matrix:

|   |     |   |
|---|-----|---|
| 3 | 370 | 7 |
| 2 | 224 | 6 |
| 1 | 730 | X |

What is the number at 'X' in the above matrix?

(a) 5                      (b) 8      (c) 9      (d) 11

111. Examine the following three figures in which the numbers follow a specific pattern:



# SHAKTHI ACADEMY

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|    |    |
|----|----|
| 84 |    |
| 14 | 12 |

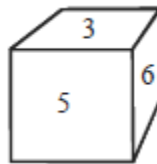
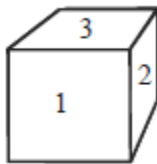
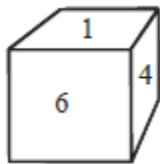
|    |   |
|----|---|
| 81 |   |
| 18 | 9 |

|    |    |
|----|----|
| 88 |    |
| ?  | 11 |

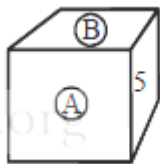
The missing number (?) in the third figure above is

- (a)7 (b)16 (c)21 (d) 28

112. A cube has six numbers marked 1,2,3,4,5 and 6 on its faces. Three views of the cube are shown below:



What possible numbers can exist on the two faces marked (A) and (B), respectively on the cube?



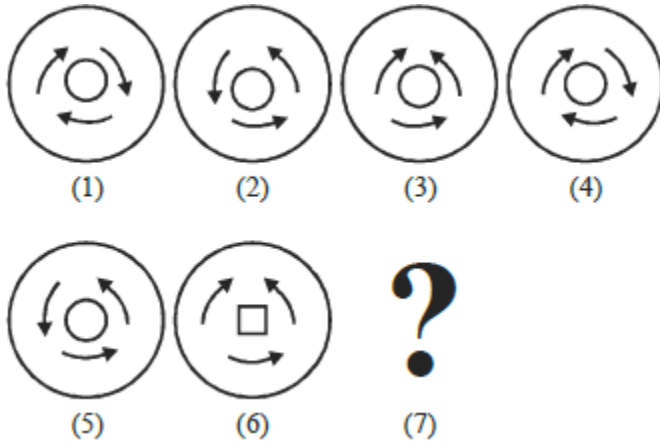
- (a)2 and 3 (b) 6 and 1 (c)1 and 4 (d)3 and 1

113. Consider the following figures:

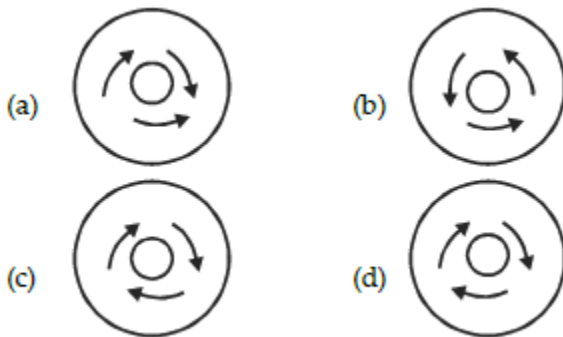


# SHAKTHII ACADEMY

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Which one of the following figures would logically come in the 7<sup>th</sup> position indicated above by a question mark?



114. Consider the following statements: [2013-11]

- (i) A primary group is relatively smaller in size.
- (ii) Intimacy is an essential characteristic of a primary group.
- (iii) A family may be an example of a primary group.

In the light of the above statements, which one of the following is true?

- (a) All families are primary groups.
- (b) All primary groups are families.
- (c) A group of smaller size is always a primary group.
- (d) Members of a primary group know each other intimately.

**DIRECTIONS (Qs. 115-118):** Read the following statements and answer the four items that follow:

Five cities P, Q, R, S and T are connected by different modes of transport as follows:



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P and Q are connected by boat as well as rail.

S and R are connected by bus and boat.

Q and T are connected by air only.

P and R are connected by boat only,

T and R are connected by rail and bus.

115. Which mode of transport would help one to reach R starting from Q, but without changing the mode of transport?

(a) Boat (b) Rail (c) Bus (d) Air

116. If a person visits each of the places starting from P and gets back to P, which of the following places must he visit twice?

(a) Q (b) R (c) S (d) T

117. Which one of the following pairs of cities is connected by any of the routes directly without going to any other city?

(a) P and T (b) T and S (c) Q and R (d) None of these

118. Between which two cities among the pairs of cities given below are there maximum travel options available?

(a) Q and S (b) P and R (c) P and T (d) Q and R

**DIRECTIONS (QS. 119-121):** Read the following passage and answer the three items that follow:

A tennis coach is trying to put together a team of four players for the forthcoming tournament. For this 7 players are available : males A, B and C: and females W, X, Y and Z. All players have equal capability and at least 2 males will be there in the team. For a team of four, all players must be able to play with each other. But, B cannot play with W, C cannot play with Z and W cannot play with Y.



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119. If Y is selected and B is rejected, the team will consist of which one of the following groups?

- (a) A, C, W and Y
- (b) A, C, X and Y
- (c) A, C, Y and Z
- (d) A, W, Y and Z

120. If B is selected and Y is rejected, team will consist of which one of the following groups?

- (a) A, B, C and W
- (b) A, B, C and Z
- (c) A, B, C and X
- (d) A, W, Y and Z

121. If all the three males are selected, then how many combination of four member teams are possible?

- (a) 1
- (b) 2
- (c) 3
- (d) 4

122. The music director of film wants to select four persons to work on different aspects of the composition of a piece of music. Seven persons are available for this work: they are Rohit, Tanya, Shobha, Kaushal, Kunal, Mukesh and Jaswant. Rohit and Tanya will not work together. Kunal and Shobha will not work together. Mukesh and Kunal want to work together.

Which of the following is the most acceptable group of people that can be selected by the music director?

- (a) Rohit, Shobha, Kunal and Kaushal
- (b) Tanya, Kaushal, Shobha and Rohit
- (c) Tanya, Mukesh, Kunal and Jaswant
- (d) Shobha, Tanya, Rohit and Mukesh

123. Five people A, B, C, D and E are seated about a round table. Every chair is spaced equidistant from adjacent chairs.



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- (i) C is seated next to A.
  - (ii) A is seated two seats from D.
  - (iii) B is not seated next to A.
- Which of the following must be true?

- (I) D is seated next to B.
- (II) E is seated next to A.

Select the correct answer from the codes given below:

- (a) I only
- (b) II only
- (c) Both I and II
- (d) Neither I nor II

**DIRECTIONS (Qs. 124-126):** Examine carefully the following statements and answer the three items that follow:

Out of four friends A, B, C and D. A and B play football and cricket. B and C play cricket and hockey. A and D play basketball and football. C and D play hockey and basketball.

124. Who does not play hockey?

- (a) D
- (b) C
- (c) B
- (d) A

125. Who plays football, basketball and hockey?

- (a) D
- (b) C
- (c) B
- (d) A

126. Which game do B, C and D play?

- (a) Basketball
- (b) Hockey
- (c) Cricket
- (d) Football

127. Geeta is older than her cousin Meena. Meena's brother Bipin is older than

Geeta. When Meena and Bipin visit Geeta, they like to play chess. Meena wins the game more often than Geeta.

Based on the above information, four conclusions, as given below, have been made. Which one of these logically follows from the information given above?

- (a) While playing chess with Geeta and Meena, Bipin often loses.
- (b) Geeta is the oldest among the three.
- (c) Geeta hates to lose the game.



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(d) Meena is the youngest of the three.

128. There are five hobby clubs in a college viz, photography yachting, chess, electronics and gardening. The gardening group meets every second day, the electronics group meets every third day, the chess group meets every fourth day, the yachting group meets every fifth day and the photography group meets every sixth day. How many times do all the five groups meet on the same day within 180 days?

(a)3 (b)10 (c)5 (d)18

129. A, B, C, D and E belong to five different cities P, Q, R, S and T (not necessarily in that order). Each one of them comes from a different city. Further it is given that :

1. B and C do not belong to Q.
2. B and E do not belong to P and R.
3. A and C do not belong to R, S and T.
4. D and E do not belong to Q and T.

Which one of the following statements is not correct?

- (a) C belongs to P (b) D belongs to R (c) A belongs to Q  
(d) B belongs to S

130. Seven men, A, B, C, D, E, F and G are standing in a queue in that order. Each one is wearing a cap of different colour like violet, indigo, blue green, yellow, orange and red. D is able to see in front of him green and blue, but not violet. E can see violet and yellow, but not red. G can see caps of all colours other than orange. If E is wearing an indigo coloured cap, then the colour of the cap worn by F is:

- a) Blue (b) Violet (c) Red (d) Orange

131. In a class of 45 students, a boy is ranked 20<sup>th</sup>. When two boys joined, his rank was dropped by one. What is his new rank from the end?

- (a) 25<sup>th</sup> (b) 26<sup>th</sup> (c) 27<sup>th</sup> (d) 28<sup>th</sup>





# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

132. A question paper must have a question on one of the eight poets: A, B, C, D, E, F, G or H. The first four belong to the medieval period while the rest are considered modern poets.

Generally, modern poets figure in the question paper in alternate years. Generally those who like H like G also; and those who like F like E also. The paper-setter does not like to ask about F as he has written a book on F, but he likes F. Last year, the paper contained a question on A. On the basis of the information given, this year's paper is most likely to contain a question on

(a)C (b)E (c)F (d)H

133. In a group of six women there are four dancers, four vocal musicians, one actress and three violinists. Girija and Vanaja are among the violinists while Jalaja and Shailaja do not know how to play on the violin.

Shailaja and Tanuja are among the dancers. Jalaja, Vanaja, Shailaja and Tanuja are all vocal musicians and two of them are also violinists. If Pooja is an actress, who among the following is certainly a dancer and a violinist ?

(a)Jalaja (b)Pooja (c)Shailaja (d) Tanuja

134. The letters L, M, N, O, P, Q, R, S and T in their order are substituted by nine integers 1 to 9 but not in that order. 4 is assigned to P. The difference between P and T is 5. The difference between N and T is 3. What is the integer assigned to N?

(a)7 (b)5 (c)4 (d)6

135. The number of deaths among the army personnel is 8 in 1000, but among the civilian population it is 20 per 1000. Which one of the following inferences can be drawn from this statement ?

- (a)It is better to join the army.
- (b)The relationship is fortuitous.
- (c)Quality of Life Index is very high within the armed forces.
- (d)The groups cannot be compared due to their heterogeneity.



# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

136. Given the statement: "Buses are the cause of more accidents than cars, and trucks cause fewer accidents than buses", which of the following conclusions can we draw ?

- (a) There are more buses on the road than trucks.
- (b) Car drivers are more careful than bus drivers.
- (c) Truck drivers are more skilled than either car or bus drivers.
- (d) None of the above

137. If political leadership fails to emerge, there is a likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society's level of political development." In the context of political development, the assumption in the above passage is that

- (a) political leadership is not an effective instrument.
- (b) military fills in political vacuum.
- (c) military intervention is inevitable for development.
- (d) None of the above

138. Four persons, Alok, Bhupesh, Chander and Dinesh have a total of ₹ 100 among themselves. Alok and Bhupesh together have as much money as Chander and Dinesh together, but Alok has more money than Bhupesh; and Chander has only half the money that Dinesh has. Alok has in fact ₹ 5 more than Dinesh has. Who has the maximum amount of money?

- (a) Alok (b) Bhupesh (c) Chander (d) Dinesh

139. In a row 'A' is in the 11<sup>th</sup> position from the left and 'B' is in the 10<sup>th</sup> position from the right. If 'A' and 'B' interchange, then 'A' becomes 18<sup>th</sup> from the left. How many persons are there in the row other than 'A' and 'B'?



# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

(a) 27 (b) 26 (c) 25 (d) 24

140. If the 3<sup>rd</sup> day of a month is Monday, which one of the following will be the fifth day from 21<sup>st</sup> of this month?

(a) Monday (b) Tuesday (c) Wednesday (d) Friday

**DIRECTIONS (Qs. 141-143):** Read the passage given below and answer the items follow.

A, B, C, D, E, F are members of a family. They are engineer, stenographer, doctor, draughtsman, lawyer and judge (not in order). A, the engineer is married to the lady stenographer.

The judge is married to the lawyer. F, the draughtsman is the son of B and brother of E. C, the lawyer is the daughter-in-law of D. E is the unmarried doctor. D is the grandmother of F. There are two married couples in the family.

141. What is the profession of B ?

(a) Judge (b) Lawyer (c) Draughtsman (d) Cannot be determined

142. Which of the following is/are a couple/couples ?

(a) AD only (b) BC only (c) Both AD and BC (d) Both AC and BD

143. What is the profession of D?

(a) Judge (b) Stenographer (c) Doctor (d) Cannot be determined

144. There are 50 students admitted to a nursery class. Some students can speak

only English and some can speak only Hindi. 10 students can speak both English and Hindi. If the number of students who can speak English is 21, then how many students can speak Hindi, how many can speak only Hindi and how many can speak only English?

(a) 21, 29 and 10 respectively (b) 28, 18 and 22 respectively

(c) 37, 27 and 13 respectively (d) 39, 29 and 11 respectively



# SHAKTHI ACADEMY

Increasing Confidence ; Reaching Goals

145. Out of a total of 120 musicians in a club, 5% can play all the three instruments, guitar, violin and flute. It so happens that the number of musicians who can play any two and only two of the above instruments is 30. The number of musicians who can play the guitar alone is 40. What is the total number of those who can play violin alone or flute alone ?

(a) 45 (b) 44 (c) 38 (d) 30

146. Six identical cards are placed on a table. Each card has number '1' marked on one side and number '2' marked on its other side. All the six cards are placed in such a manner that the number '1' is on the upper side. In one try, exactly four (neither more nor less) cards are turned upside down. In how many least number of tries can the cards be turned upside down such that all the six cards show number '2' on the upper side ?

(a) 3 (b) 5 (c) 7 (d) This cannot be achieved

147. There are seven persons up on a ladder, A, B, C, D, E, F and G (not in that order). A is further up than E but is lower than C. B is in the middle. G is between A and B. E is between B and F. If F is between E and D, the person on the bottom step of the ladder will be

(a) B (b) F (c) D (d) E

148. Consider that:

1. A is taller than B.
2. C is taller than A.
3. D is taller than C.
4. E is the tallest of all.

If they are made to sit in the above order of their height, who will occupy the middle position ?

(a) A (b) B (c) C (d) D

149. Consider the following statements:

There are six villages A, B, C, D, E and F.



# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals

F is 1 km to the west of D.

B is 1 km to the east of E.

A is 2 km to the north of E.

C is 1 km to the east of A.

D is 1 km to the south of A.

Which three villages are in a line ?

- (a)A,C,B (b)A,D,E (c)C,B,F (d) E,B,D

150. Four children are sitting in a row. A is occupying the seat next to B but not next to C. If C is not sitting next to D, who is/are occupying seat/seats adjacent to D ?

- (a)B (b)A (c)B and A (d)Impossible to tell

151. Assume that

1. the hour and minute hands of a clock move without jerking.
2. the clock shows a time between 8 o'clock and 9 o'clock.
3. the two hands of the clock are one above the other.

After how many minutes (nearest integer) will the two hands be again lying one above the other ?

- (a)60 (b)62 (c)65 (d)67

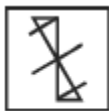
152.Examine the following figure:



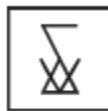
Which one of the following figures has the above figure embedded in it?



(a)



(b)



(c)



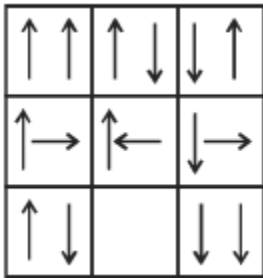
(d)

153. Consider the following matrix:







# SHAKTHII ACADEMY

Increasing Confidence ; Reaching Goals



Which one of the following figures fits into the blank part of the above matrix ?

- (a)  (b) 
- (c)  (d) 

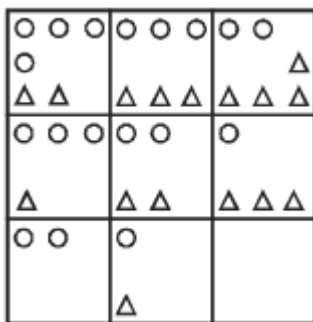
154. Consider the table given below in which the numbers bear certain relationship among themselves along the rows:

|    |    |    |
|----|----|----|
| 29 | 13 | 18 |
| 33 | X  | 19 |
| 30 | 27 | 3  |

Which one of the following numbers is the missing number indicated above by X ?

- (a)19 (b)15 (c)14 (d)8

155. Consider the following matrix with one empty block in the lower extreme corner:

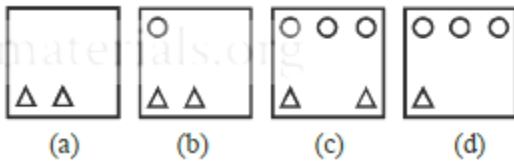


Which of the following figures could fit in the empty block and thus complete the matrix ?

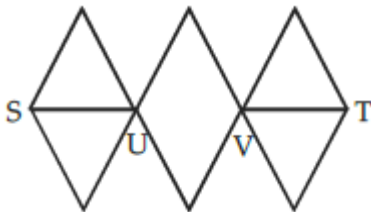


# SHAKTHI ACADEMY

Increasing Confidence ; Reaching Goals



156. With reference to the figure given below, the number of different routes from S to T without retracing from U and/or V, is

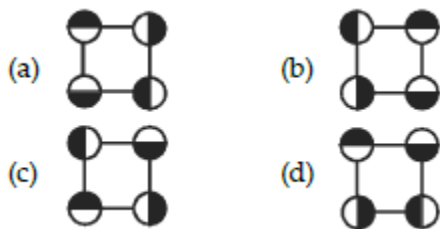


- (a)3 (b)6 (c)9 (d)18

157. Consider the following figures:



Change in positions of beads in the four figures above follows a sequence. Following the same sequence, which of the figures below<sup>7</sup> should appear as the fifth figure above ?



158. Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, a day's labour, the rent of houses, etc. were to double. Prices then would certainly rise, but values of all things except one would not."

The writer wants to say that if prices of all things were doubled

- (a)the values of all things would remain constant,  
 (b)the values of the things sold would be doubled,



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- (c) the values of the things bought would be halved,
- (d) the value of money only would be halved.

159. "Liberty, therefore, is never real unless the Government can be called to account when it invades rights."

Which one of the following is the best justification of the above statement?

- (a) In the realisation that the government can be brought to book in a court of law
- (b) In identifying a man as a political unit in a way which distinguishes him from other citizens
- (c) In a decentralized society wherein the basic needs of men can find satisfaction
- (d) In the understanding that liberty and restraints are complementary

160. Six books are labelled A, B, C, D, E and F and are placed side by side. Books B, C, E and F have green covers while others have yellow covers. Books A, B and D are new while the rest are old volumes. Books A, B and C are law reports while the rest are medical extracts. Which two books are old medical extracts and have green covers?

- (a) B and C
- (b) E and F
- (c) C and E
- (d) C and F

161. If A runs less fast than B, and B runs as fast but not faster than C; then, as compared to A, C runs .

- (a) slower than A
- (b) faster than A
- (c) with same speed as A
- (d) Given data is not sufficient to determine

162. Examine the following statements:

1. Lady's finger is tastier than cabbage.
2. Cauliflower is tastier than lady's finger.
3. Cabbage is not tastier than peas.

The conclusion that can be drawn from these statements is that





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- (a) peas are as tasty as lady's finger.
- (b) peas are as tasty as cauliflower and lady's finger.
- (c) cabbage is the least tasty of the four vegetables.
- (d) cauliflower is tastier than cabbage.

163. Shahid and Rohit start from the same point in opposite directions. After each 1 km, Shahid always turns left and Rohit always turns right. Which of the following statements is correct ?

- (a) After both have travelled 2 km, the distance between them is 4 km.
- (b) They meet after each has travelled 3 km.
- (c) They meet for the first time after each has travelled 4 km.
- (d) They go on without ever meeting again.

164. Out of 130 students appearing in an examination, 62 failed in English, 52 failed in Mathematics, whereas 24 failed in both English and Mathematics. The number of students who passed finally is:

- (a) 40 (b) 50 (c) 55 (d) 60

165. In a group of persons travelling in a bus, 6 persons can speak Tamil, 15 can speak Hindi and 6 can speak Gujarati. In that group none can speak any other language. If 2 persons in the group can speak two languages only and one person can speak all the three languages, then how many persons are there in the group?

- (a) 21 (b) 22 (c) 23 (d) 24

166. In a parking area, the total number of wheels of all the cars (four-wheelers) and scooters/motorbikes (two-wheelers) is 100 more than twice the number of parked vehicles. The number of cars parked is:

- (a) 35 (b) 45 (c) 50 (d) 55

167. The mangroves can shed tons of leaves per acre every year; fungi and bacteria break down this leaf litter and consume it, they then are consumed by tiny



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worms and crustaceans, which in turn feed small fish, which feed larger fish and birds and crocodiles.

Which among the following is the most logical inference of the above statement?

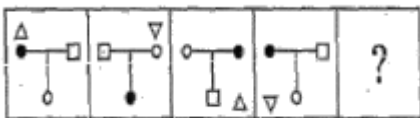
- (a) Coastal areas cannot have food chains without mangroves.
- (b) Mangroves are an essential component of all marine ecosystems.
- (c) Mangroves have a crucial role in some of the coastal food chains.
- (d) The composition of marine flora and fauna is largely determined by mangroves.

168. "By liberty I mean the eager maintenance of that atmosphere in which men have the opportunity to be their best selves."

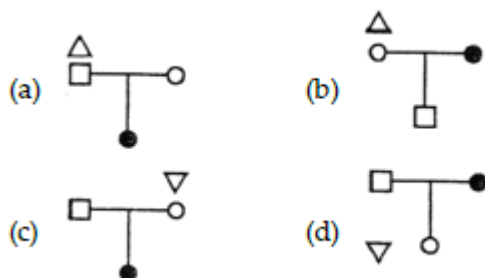
Which one of the following expresses the view implied in the above statement?

- (a) Liberty is the absence of restraint on human action.
- (b) Liberty is what law permits people to perform.
- (c) Liberty is the ability to do what one desires.
- (d) Liberty is the maintenance of conditions for the growth of human personality.

169. Consider the figures given below:



To fit the question mark, the correct answer is



170. Consider the following matrix:

|   |    |    |   |    |   |
|---|----|----|---|----|---|
| 3 | 8  | 10 | 2 | ?  | 1 |
| 6 | 56 | 90 | 2 | 20 | 0 |



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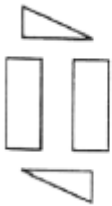
What is the missing number at '?' in the matrix?

- (a) 5                      (b) 0      (c) 7                      (d) 3

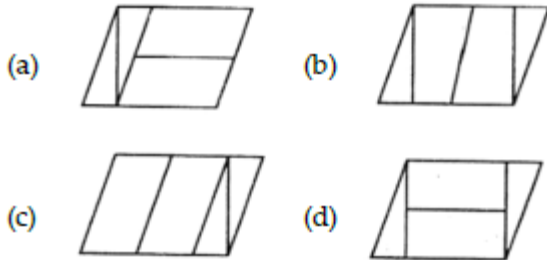
171. What is the missing number 'X' of the series 7, X, 21, 31, 43?

- (a) 11      (b) 12      (c) 13      (d) 14

172. Four cardboard pieces of specific shapes are shown in the following figure:



Which one of the following figures given can be formed by joining these pieces together?



173. Four persons A, B, C and D consisting of two married couples are in a group.

Both the women are shorter than their respective husbands. A is the tallest among the four. C is taller than B. D is B's brother. In this context, which one of the following statements is not correct?

- (a) All four have family ties.  
(b) B is the shortest among the four. (c) C is taller than D.  
(d) A is B's husband.

174. Consider the following statements :

1. A man had a wife, two sons and daughters in his family



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2. The daughters were invited to a feast and the male members of the family went out to take part in a picnic

3. The man's father did not return from his work.

Which of the following statements is true?

- (a) Only die man's wife was left at home.
- (b) It is likely that die man's wife was left at home.
- (c) None was left at home
- (d) More than one person was left at home.

175. Geeta: Naresh has become a better boxer since he started meditation.

Radha: Impossible, A boxer's most important asset is his aggressiveness.

Radha's statement reflects her belief that

- (a) meditation tends to make a person less aggressive.
- (b) meditation has little or no effect on the person who practises it.
- (c) Naresh was a poor boxer earlier because he was not aggressive enough.
- (d) Naresh would not have taken to meditation as he was a boxer.

176. All good athletes want to win and all athletes who want to win eat a well-balanced diet; therefore all athletes who do not eat a well-balanced diet are bad athletes.

The best conclusion from this statement is that

- (a)no bad athlete wants to win.
- (b)no athlete who does not eat a well-balanced diet is a good athlete.
- (c)every athlete who eats a well-balanced diet is a good athlete.
- (d)all athletes who want to win are good athletes.

177. Between 6 PM and 7 PM the minute hand of a clock will be ahead of the hour hand by 3 minutes at

- (a)6:15 PM
- (b)6:18PM
- (c)6:36 PM
- (d)6:48PM



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178. Two men, Anil and David, and two women, Shabnam and Rekha are in a sales group. Only two speak Tamil. The other two speak Marathi. Only one man and one woman can drive a car. Shabnam speaks Marathi. Anil speaks Tamil. Both Rekha and David can drive. Which of the following statements is true?

- (a) Both the Tamil speakers can drive a car.
- (b) Both the Marathi speakers can drive a car.
- (c) Both of those who can drive a car speak Marathi.
- (d) One of those who can drive a car speaks Tamil.

179. A society consists of only two types of people fighters and cowards. Two cowards are always friends. A fighter and a coward are always enemies. Fighters are indifferent to one another. If A and B are enemies, C and D are friends, E and F are indifferent to each other, A and E are not enemies, while B and F are enemies.

Which of the following statements is correct?

- (a) B, C and F are cowards.
- (b) A, E and F are fighters.
- (c) B and E are in the same category.
- (d) A and F are in different categories.

180. Each of the six different faces of a cube has been coated with a different colour i.e., V, I, B, G, Y and O. Following information is given:

1. Colours Y, O and B are on adjacent faces.
2. Colours I, G and Y are on adjacent faces.
3. Colours B, G and Y are on adjacent faces.
4. Colours O, V and B are on adjacent faces.

Which is the colour of the face opposite to the face coloured with O?

- (a) B            (b) V    (c) G            (d) I

181. Consider the following statements followed by two conclusions.



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Statements: Some men are great. Some men are wise.

Conclusion I : Men are either great or wise.

Conclusion II: Some men are neither great nor

Which one of the following is correct?

- (a) Only conclusion I is valid
- (b) Only conclusion II is valid
- (c) Both the conclusions are valid
- (d) Neither of the conclusions is valid

182. Consider the following statements:

1. Some claim to have seen UFOs (Unidentified Flying Objects).
2. Life on other heavenly bodies is considered to be a possibility.
3. Voyage to space is now an established fact.

From the above statements, it may be concluded that

- (a) UFOs are heavenly bodies
- (b) UFOs are sent from other heavenly bodies
- (c) Some living species in other heavenly bodies are more intelligent than man
- (d) Nothing definite can be said about the UFOs

183. If  $ABC \times DEED = ABCABC$ ; where A, B, C, D and E are different digits, what are the values of D and E?

- (a)  $D = 2, E = 0$
- (b)  $D = 0, E = 1$
- (c)  $D = 1, E = 0$
- (d)  $D = 1, E = 2$

184. Usha runs faster than Kamala, Priti runs slower than Swati, Swati runs slower than Kamala. Who is the slowest runner?

- (a) Kamala
- (b) Priti
- (c) Swati
- (d) Usha

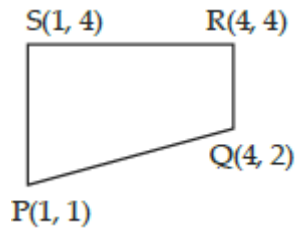
## Geometry & Mensuration (page:406)

1. In the Cartesian plane four points P, Q, R, S have co-ordinates (1,1), (4,2), (4,4) and (1,4) respectively, The area of the quadrilateral PQRS is



# SHAKTHII ACADEMY

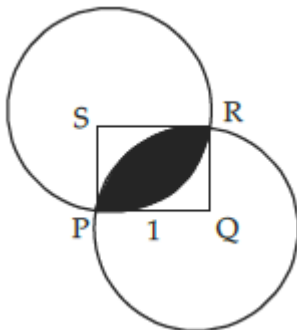
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- (a)9 (b)7.5 (c)4.5  
(d)impossible to find unless diagonals are known the lengths of the

2.A rectangular sump of dimension 6m x 5m x 4m is to be built by using bricks to make the outer dimension 6.2 m x 5.2 m x 4.2 m. Approximately how many bricks of size 20 cm x 10 cm x 5 cm are required to build the sump for storing water?  
(a)15408 (b)3000 (c)15000 (d) 30000

3.Consider the figure given below:



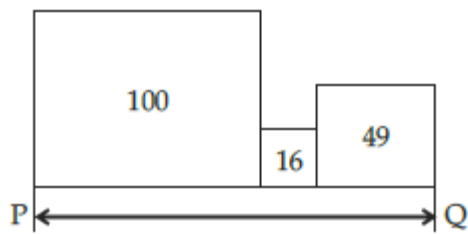
PQRS is a square of side 1 unit and Q, S are the centres of the two circles. The area of the shaded portion is  
(a) $(\frac{22}{7})/2$  (b) $1/2$  (c) $(\frac{22}{7})/4 - \frac{1}{2}$  (d) $(\frac{22}{7})/2 - 1$

4.The following figure contains three squares with areas of 100,16 and 49 sq. units respectively laying side by side as shown. By how much should the area of the middle square be reduced in order that the total length PQ of the resulting three squares is 19?



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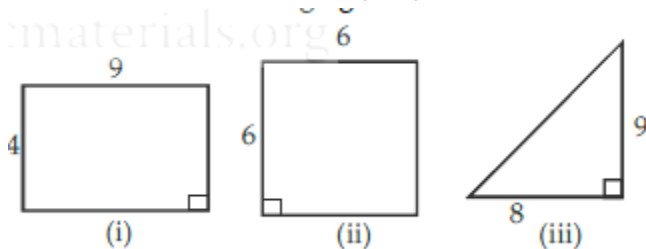


- (a) 12 (b) 4 (c) 2 (d) 2

5. A rectangle has perimeter of 50 metres. If its length is 13 metres more than its breadth, then its area is:

- (a)  $124 \text{ m}^2$  (b)  $144 \text{ m}^2$  (c)  $114 \text{ m}^2$  (d)  $104 \text{ m}^2$

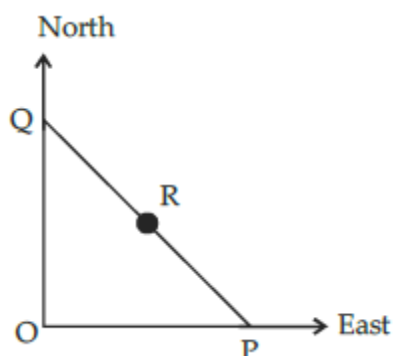
6. Consider the following figures:



Which one of the following conclusions can be drawn from these figures?

- (a) The areas of the three figures are all different  
(b) The areas of all the three figures are equal  
(c) The perimeters of the three figures are equal  
(d) The perimeters of figures I and II are equal

7. In the following figure







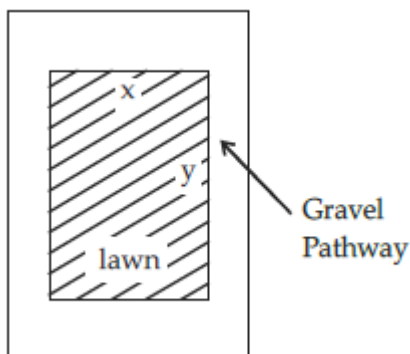
# SHAKTHI ACADEMY

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P is 300 km eastward of O and Q is 400 km north of O. R is exactly in the middle of Q and P. The distance between Q and R is:

- (a) 250 km (b) 300 km (c) 350 km (d)  $250^2$  km

8. A rectangular plot of lawn shown in the figure has dimensions 'x' and 'y' and is surrounded by a gravel pathway of width 2 m. What is the total area of the Gravel Pathway?



- (a)  $2x + 2y + 4$  (b)  $2x + 2y + 8$  (c)  $4x + 4y + 8$  (d)  $4x + 4y + 16$

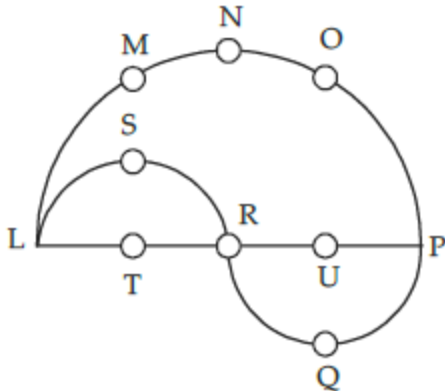
9. If the numbers representing volume and surface area of a cube are equal, then the length of the edge of the cube in terms of the unit of measurement will be

- (a) 3 (b) 4 (c) 5 (d) 6

10. The length, breadth and height of a room are l, b and h respectively. The perimeter of the ceiling expressed as a percentage of the total area of the four walls, is

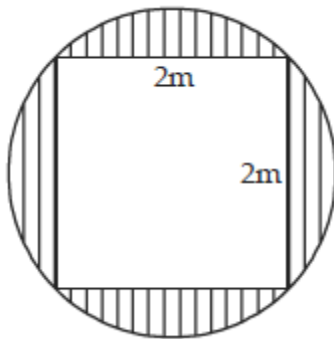
- (a)  $100h\%$  (b)  $100/h\%$  (c)  $h\%$  (d)  $h/100\%$

11. LMNOP is a semicircle with centre at R and diameter LP. LSR and RQP are also semi circles with centres at T and U respectively and diameters  $LR = RP = \frac{1}{2} LP$ . The ratio of perimeter of LMNOP and LSRQP is



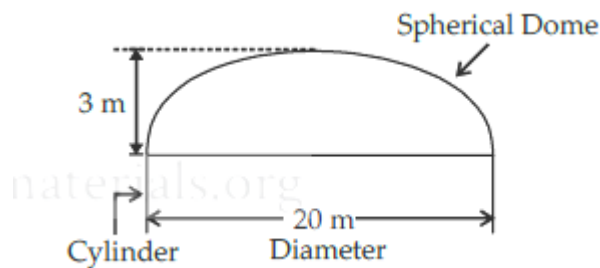
- (a) 0.75:1 (b) 1:1 (c) 1:0.75 (d) 1.25:1

12. A square pond has 2 m sides and is 1 m deep. If it is to be enlarged, the depth remaining the same, into a circular pond with the diagonal of the square as diameter as shown in the figure, then what would be the volume of earth to be removed?



- (a)  $(2\pi - 4) m^3$  (b)  $(4\pi - 4) m^3$  (c)  $(4\pi - 2) m^3$  (d)  $(2\pi - 2) m^3$

13. The surface area of spherical dome-shaped roof of a cylindrical water tank shown in the figure is



- (a)  $60\pi m^2$  (b)  $109\pi m^2$  (c)  $120\pi m^2$  (d)  $300\pi m^2$



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14. A hemispherical bowl is filled to the brim with a beverage. The contents of the bowl are transferred into a cylindrical vessel whose radius is 50% more than its height. If the diameter is same for both bowl and cylinder, then the volume of the beverage in the cylindrical vessel will be

- (a)  $66\frac{2}{3}\%$
- (b) 78.5%
- (c) 100%
- (d) More than 100% (that is, some liquid will still be left in the bowl)

15. A man is standing on the 6m long pole whose length of shadow is 8m. If the length of his shadow is 2.4m, what is the height of the man ?

- (a) 1.4m
- (b) 1.6m
- (c) 1.8m
- (d) 2.0m

16. If the angle of triangle are in the ratio of 4 : 3 : 2, then the triangle

- (a) is obtuse angled triangle
- (b) has one angle greater than  $80^\circ$
- (c) is a right triangle
- (d) is acute angled triangle

17. At a given time, two players are standing on a play-field. The cartesian coordinates of their locations are

(20, 60) and (-40, -20) units. What is the distance between the players?

- (a) 60 units
- (b) 80 units
- (c) 100 units
- (d) 140 units

18. The area of an ellipse is twice that of a circle. The major

diameter of the ellipse is twice that of the minor diameter. The radius of the circle is

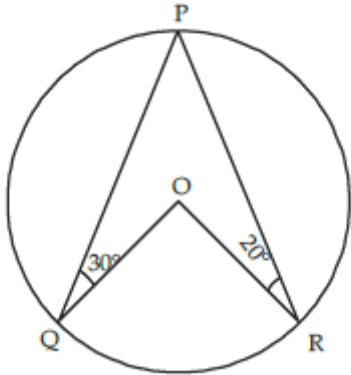
- (a) 50% of minor diameter of the ellipse
- (b) 50% of major diameter of the ellipse
- (c) minor diameter of the ellipse
- (d) major diameter of die ellipse



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19.

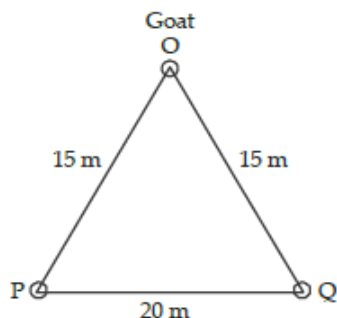


In the given figure  $\angle OQP = 30^\circ$  and  $\angle ORP = 20^\circ$ , then  $\angle QOR$  is equal to  
(a)  $100^\circ$  (b)  $120^\circ$  (c)  $130^\circ$  (d)  $140^\circ$

20. Which one of the following has a greater perimeter than the rest?

- (a) A square with an area of 36 sq.cm
- (b) An equilateral triangle with a side of 9 cm
- (c) A rectangle with 10 cm as length and 40 sq cm as area
- (d) A circle with a radius of 4 cm

21. A goat is tied to two poles P and Q with ropes that are 15 meters long. P and Q are 20 metres apart as shown in the given diagram:

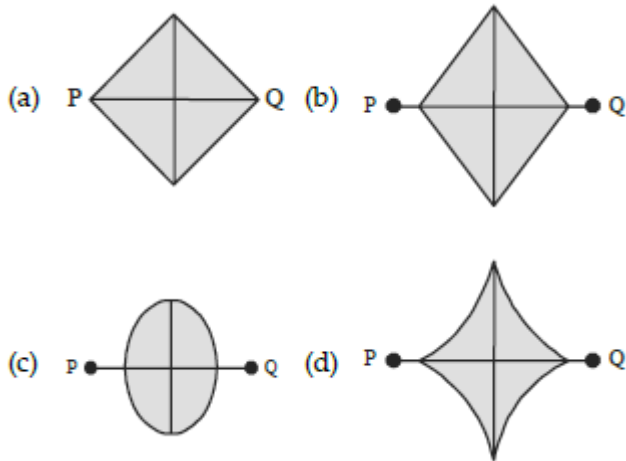


Which one of the following shaded portions indicates the total area over which the goat can graze?



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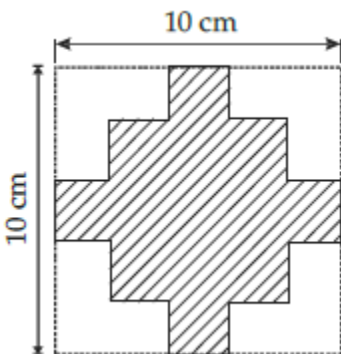
22. What is the maximum number of pieces of 5 cm x 5 cm x 10 cm of cake that can be cut from a big cake of 5 cm x 30 cm x 30 cm size?

- (a) 10 (b) 15 (c) 18 (d) 30

23. A rectangular water tank measures 15 m x 6 m at top and is 10 m deep. It is full of water. If water is drawn out lowering the level by 1 meter, how much of water has been drawn out?

- (a) 90000 litres (b) 45000 litres (c) 4500 litres (d) 900 litres

24. In the given figure, all line segments of the shaded portion are of same length and at right angles to each other. The same can be cut out of a board of side 10 cm. What is the area of the shaded portion?



- (a)  $36 \text{ cm}^2$  (b)  $48 \text{ cm}^2$  (c)  $52 \text{ cm}^2$  (d)  $64 \text{ cm}^2$



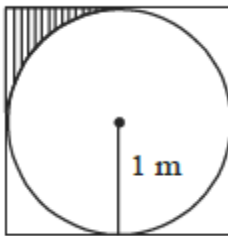
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25. A rectangular piece of iron sheet measuring 50 cm by 100 cm is rolled into cylinder of height 50 cm. If the cost of painting the cylinder is 50 per square metre, then what will be the cost of painting die outer surface of the cylinder?

- (a)Rs.25.00 (b)Rs.37.50 (c)Rs.75.00 (d)Rs.87.50

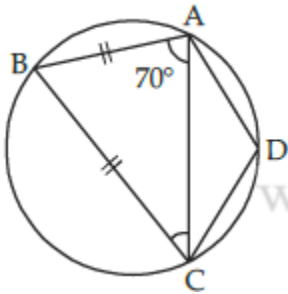
26.



A circle of 1 m radius is drawn inside a square as shown in figure given above. What is the area of the shaded portion (in  $m^2$ ) ?

- (a)  $(4 - \pi)$  (b)  $(1 - \pi/2)$  (c)  $(\frac{1}{4} - \pi/4)$  (d)  $(1 - \pi/4)$

37. In the above figure, ABCD is a cyclic quadrilateral,  $AB = BC$  and  $\angle BAC = 70^\circ$ , then  $\angle ADC$  is



- (a)  $40^\circ$  (b)  $80^\circ$  (c)  $110^\circ$  (d)  $140^\circ$

28. The length of the longest pole that can be placed in a room 12 m long, 9 m wide and 8 m high, is

- (a) 12m (b) 14 m (c) 17m (d) 21m

29. Consider the volumes of the following:

1. A parallelepiped of length 5 cm, breadth 3 cm and height 4 cm



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2. A cube of each side 4 cm
3. A cylinder of radius 3 cm and length 3 cm.
4. A sphere of radius 3 cm.

The volumes of these in the decreasing order is

- (a) 1,3,2,4      (b) 4,2,3,1  
(c) 1,2,3,4      (d) 4,3, 2,1

30. A big rectangular plot of area 4320 m<sup>2</sup> is divided into 3 square shaped smaller plots by fencing parallel to the smaller side of the plot. However some area of land was still left as a square could not be formed. So, 3 more square shaped plots were formed by fencing parallel to the longer side of the original plot such that no area of the plot was left surplus. What are the dimensions of the original plot?

- (a) 160 m x 27 m    (b) 240 m x 15 m  
(c) 120 m x 36 m    (d) 35 m x 32 m

31. The diameters of two circular coins are in the ratio of 1:3. The smaller coin is, made to roll around the bigger coin till it returns to the position from where the, process of rolling started. How many times the smaller coin rolled around the bigger coin?

- (a) 9    (b) 6    (c) 3    (d) 1.5

32. A village having a population of 4000 requires 150 litres of water per head per day. It has a tank measuring 20 m x 15 m x 6 m. The water of this tank will last for

- (a) 2 days    (b) 3 days    (c) 4 days    (d) 5 days

33. Two glasses of equal volume are respectively half and three-fourths filled with milk. They are then filled to the brim by adding water. Their contents are then poured into another vessel. What will be the ratio of milk to water in this vessel?

- (a) 1:3    (b) 2:3    (c) 3:2    (d) 5:3



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34. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden

- (a) has increased by 20%. (b) has increased by 12%.  
(c) has increased by 8%. (d) is exactly the same as the old area.

35. In a plane, line X is perpendicular to line Y and parallel to line Z; line U is perpendicular to both lines V and W; line X is perpendicular to line V.

Which one of the following statements is correct?

- (a) Z, U and W are parallel. (b) X, V and Y are parallel.  
(c) Z, V and U are all perpendicular to W.  
(d) Y, V and W are parallel.

## PCP

1. A student has 60% chance of passing in English and 54% chance of passing in both English and Mathematics. What is the percentage probability that he will fail in Mathematics?

- (a) 12 (b) 36 (c) 4 (d) 10

2. A table has three drawers. It is known that one of the drawers contains two silver coins, another contains two gold coins and the third one contains a silver coin and gold coin. One of the drawers is opened at random and a coin is drawn. It is found to be a silver coin. What is the probability that the other coin in the drawer is a gold coin?

- (a) 0.25 (b) 1.00 (c) 0.50 (d) 0.60

3. X and Y are two variables whose values at Y time are related to each other as shown in Fig. (i). X is known to vary periodically with reference to time as shown in Fig. (ii)





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Figure (i)

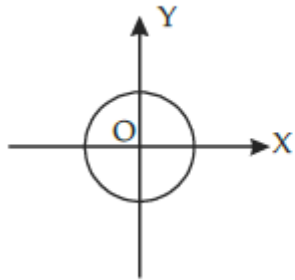
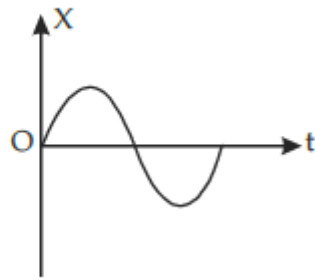
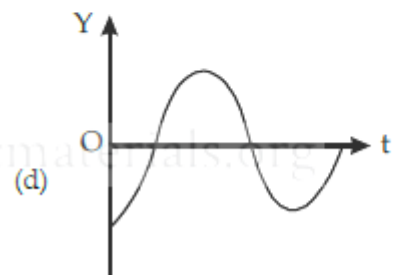
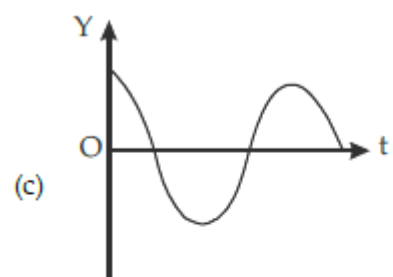
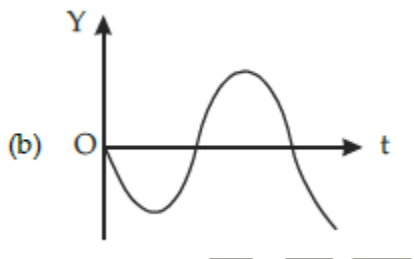
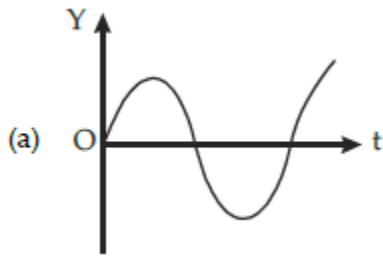


Figure (ii)



Which of the following curves depicts correctly the dependence of Y on time?

[1995]



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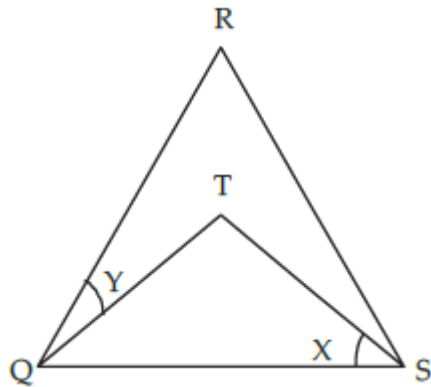
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4. Two packs of cards are thoroughly mixed and shuffled and two cards are drawn at random, one after the other. What is the probability that both of them are jacks?

- (a)  $1/13$  (b)  $2/13$  (c)  $7/1339$  (d)  $1/169$

5. In the given figure, if QRS is an equilateral triangle and TQS is an isosceles triangle and  $x = 47^\circ$ , then the value of  $y$  (in degrees) will be



- (a)  $13^\circ$  (b)  $23^\circ$  (c)  $33^\circ$  (d)  $33^\circ$

6. When three coins are tossed together, the probability that all coins have the same face up, is

- (a)  $1/3$  (b)  $1/6$  (c)  $1/8$  (d)  $1/12$

7. In a factory quality assurance test is conducted on various samples for a specific characteristic value of the product. The values and the number of samples are as given in the following table:

| Characteristic value, X | No. of Samples |
|-------------------------|----------------|
| 10                      | 3              |
| 11                      | 7              |
| 12                      | 10             |
| 13                      | 15             |
| 14                      | 28             |
| 15                      | 33             |
| 16                      | 24             |
| 17                      | 11             |
| 18                      | 10             |
| 19                      | 6              |
| 20                      | 3              |



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Consider the following statements based on the table:

1. The probability that  $X \leq 15$  is 0.64
2. The probability that  $13 < X \leq 17$  is greater than 0.64
3. The probability that  $X = 15$  is less than 0.22

Which of the above statements is/are not true?

- (a) 1 alone (b) 1 and 2 (c) 2 and 3 (d) 1, 2 and 3

8. A bag contains 20 balls, 8 balls are green, 7 are white and 5 are red. What is minimum number of balls that must be picked up from the bag blind-folded (without replacing any of it) to be assured of picking at least one ball of each colour?

- (a) 4 (b) 7 (c) 11 (d) 16

9. A complete cycle of a traffic light takes 60 seconds. During each cycle the light is green for 25 seconds, yellow for 5 seconds and red for 30 seconds. At a randomly chosen time, the probability that the light will not be green, is

- (a)  $\frac{1}{3}$  (b)  $\frac{1}{4}$  (c)  $\frac{5}{12}$  (d)  $\frac{7}{12}$

10. Three flags, each of different colour, are available for a military exercise. Using these flags, different codes can be generated by waving

- (i) single flag of different colours or  
(ii) any two flags in a different sequence of colour

Or

- (iii) three flags in a different sequence of colours.

The maximum number of codes that can be generated, is

- (a) 6 (b) 9 (c) 15 (d) 18

11. A two member committee comprising of one male and one female member is to be constituted out of five males and three females. Amongst the females,



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Mrs. A refused to be a member of the committee in which Mr. B is taken as the member. In how many different ways can the committee be constituted?

- (a) 11 (b) 12 (c) 13 (d) 14

12. In a question of a test paper, there are five items each under List-A and List-B. The examinees are required to match each item under List-A with its corresponding correct item under List-B. Further, it is given that

- (i) no examinee has given the correct answer,  
(ii) answers of no two examinees are identical

Which is the maximum number of examinees who took this test?

- (a) 24 (b) 26 (c) 119 (d) 129

13. Nine different letters are to be dropped in three different letter boxes. In how many different ways can this be done?

- (a) 27 (b)  $3^9$  (c)  $9^2$  (d)  $3^9 - 3$

14. In how many different ways can six players be arranged in a line such that two of them, Ajit and Mukherjee, are never together?

- (a) 120 (b) 240 (c) 360 (d) 480

15. Three students are picked at random from a school having a total of 1000 students. The probability that these three students will have identical date and month of their birth, is

- (a)  $3/1000$  (b)  $3/365$  (c)  $1/(365)^2$  (d) None of these

16. On a railway route between two places A and B, there are 20 stations on the way. If 4 new stations are to be added, how many types of new tickets will be required if each ticket is issued for a one way journey? [2005]

17. 2 men and 1 woman board a bus in which 5 seats are vacant. One of these five seats is reserved for ladies. A woman may or may not sit on the seat reserved for



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ladies but a man can not sit on the seat reserved for ladies. In how many different ways can the five seats occupied by these passengers?

(a)15 (b)36 (c) 48 (d) 60

18.A square is divided into 9 identical smaller squares. Six identical balls are to be placed in these smaller square such that each of the three rows gets at least one ball (one ball in one square only). In how many different ways can this be done?

(a) 27 (b) 36 (c) 54 (d) 81

19.There are 10 identical coins and each one of them has 'H' engraved on its one face and 'T' engraved on its other face. These 10 coins are lying on a table and each one of them has 'H' face as the upper face.

In one attempt, exactly four (neither more nor less) coins can be turned upside down. What is the minimum total number of attempts in which the 'T' faces of all the 10 coins can be brought to be the upper faces?

[2005]

(a)4 (b)7 (c)8 (d) Not possible

20.Ten identical particles are moving randomly inside a closed box. What is the probability that at any given point of time all the ten particles will be lying in the same half of the box?

(a)1/2 (b)1/5 (c)1/2<sup>9</sup> (d)2/11

21.Each of two women and three men is to occupy one chair out of eight chairs, each of which numbered from 1 to 8. First, women are to occupy any two chairs from those numbered 1 to 4; and then the three men would occupy any, three chairs out of the remaining six chairs. What is the maximum number of different ways in which this can be done?[2006]

(a)40 (b)132 (c)1440 (d)3660

22.In a tournament, each of the participants was to play one match against each of the other participants. Three players fell ill after each of them had played three



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matches and had to leave the tournament. What was the total number of participants at the beginning, if the total number of matches played was 75? [2006]

(a) 08 (b) 10 (c) 12 (d) 15

23. There are three parallel straight lines. Two points, 'A' and 'B', are marked on the first line, points, C and 'D' are marked on the second line; and points, 'E' and 'F', are marked on the third line. Each of these 6 points can move to any position on its respective straight line. [2006]

Consider the following statements:

1. The maximum number of triangles that can be drawn by joining these points is 18.
2. The minimum number of triangles that can be drawn by joining these points is zero.

Which of the statement(s) given above is/are correct?

(a) 1 only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2

24. A mixed doubles tennis game is to be played between two teams (each team consists of one male and one female.) There are four married couples. No team is to consist of a husband and his wife. What is the maximum number of games that can be played?

(a) 12 (b) 21 (c) 36 (d) 42

25. 3 digits are chosen at random from 1, 2, 3, 4, 5, 6, 7, 8 and 9 without repeating any digit. What is the probability that their product is odd? [2006]

(a)  $\frac{2}{3}$  (b)  $\frac{5}{108}$  (c)  $\frac{5}{42}$  (d)  $\frac{8}{42}$

26. In a question paper, there are four multiple choice type questions. Each question has five choices with only one choice for its correct answer. What is the total number of ways in which a candidate will not get all the four answers correct?

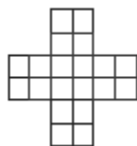
(a) 19 (b) 120 (c) 624 (d) 1024



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27. Each of eight identical balls is to be placed in the squares shown in the figures given below in a horizontal direction such that one horizontal row contains six balls and the other horizontal row contains two balls. In how many maximum different ways can this be done? [2006]

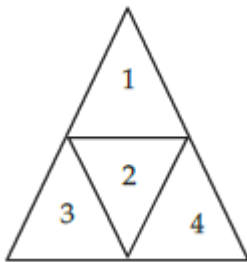


(a) 38 (b) 28 (c) 16 (d) 14

28. Each of the 3 persons is to be given some identical items such that product of the numbers of items received by each of the three persons is equal to 30. In how many maximum different ways can this distribution be done? [2007]

(a) 21 (b) 24 (c) 27 (d) 33

29. In the figure shown below, what is the maximum number of different ways in which 8 identical balls can be placed in the small triangles 1, 2, 3 and 4 such that each triangle contains at least one ball? [2007]



(a) 32 (b) 35 (c) 44 (d) 56

30. Amit has five friends: 3 girls and 2 boys. Amit's wife also has 5 friends: 3 boys and 2 girls. In how many maximum number of different ways can they invite 2 boys and 2 girls such that two of them are Amit's friends and two are his wife's? [2007]

(a) 24 (b) 38 (c) 46 (d) 58



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31. Five balls of different colours are to be placed in three different boxes such that any box contains at least one ball. What is the maximum number of different ways in which this can be done? [2007]

(a)90 (b)120 (c)150 (d)180

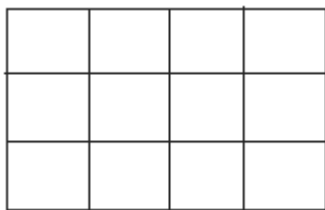
32. All the six letters of the name SACHIN are arranged to form different words without repeating any letter in any one word. The words so formed are then arranged as in a dictionary. What will be the position of the word SACHIN in that sequence? [2007]

(a)436 (b)590 (c)601 (d)751

33. Three dice (each having six faces with each face having one number from 1 to 6) are rolled. What is the number of possible outcomes such that at least one dice shows the number 2? [2007]

(a) 36 (b) 81 (c) 91 (d) 116

34. In how many maximum different ways can 3 identical balls be placed in the 12 squares (each ball to be placed in the exact centre of the squares and only one ball is to be placed in one square) shown in the figure given below such that they do not lie along the same straight line? [2007]



(a)144 (b)200 (c)204 (d)216

35. Groups each containing 3 boys are to be formed out of 5 boys - A, B, C, D and E such that no one group contains both C and D together. What is the maximum number of such different groups? [2007]

(a)5 (b) 6 (c)7 (d) 8





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36. In how many different ways can four books A, B, C and D be arranged one above another in a vertical order such that the books A and B are never in continuous position? [2008]

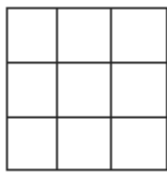
- (a) 9 (b) 12 (c) 14 (d) 18

37. A schoolteacher has to select the maximum possible number of different groups of 3 students out of a total of 6 students. In how many groups any particular student will be included? [2008]

- (a) 6 (b) 8 (c) 10 (d) 12

38. In how many different ways can all of 5 identical balls be placed in the cells shown below such that each row contains at least 1 ball?

[2008]

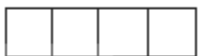


- (a) 64 (b) 81 (c) 84 (d) 108

39. There are 6 different letters and 6 correspondingly addressed envelopes. If the letters are randomly put in the envelopes, what is the probability that exactly 5 letters go into the correctly addressed envelopes?

- (a) Zero (b)  $1/6$  (c)  $1/2$  (d)  $5/6$

40. There are two identical red, two identical black and two identical white balls. In how many different ways can the balls be placed in the cells (each cell to contain one ball) shown below such that balls of the same colour do not occupy any two consecutive cells?



- (a) 15 (b) 18 (c) 24 (d) 30



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41. A person has 4 coins each of different denomination. What is the number of different sums of money the person can form (using one or more coins at a time)?

- (a) 16 (b) 15 (c) 12 (d) 11

42. How many numbers lie between 300 and 500 in which 4 comes only one time?

[2009]

- (a) 99 (b) 100 (c) 110 (d) 120

43. How many three-digit numbers can be generated from 1, 2, 3, 4, 5, 6, 7, 8, 9 such that the digits are in ascending order?

- (a) 80 (b) 81 (c) 83 (d) 84

44. In a carrom board game competition,  $m$  boys and  $n$  girls ( $m > n > 1$ ) of a school participate in which every student has to play exactly one game with every other student. Out of the total games played, it was found that in 221 games one player was a boy and the other player was a girl. [2009]

Consider the following statements:

1. The total number of students that participated in the competition is 30.
2. The number of games in which both players were girls is 78.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only  
(c) Both 1 and 2 (d) Neither 1 nor 2

45. A question paper had ten questions. Each question could only be answered as True (T) or False (F). Each candidate answered all the questions. Yet, no two candidates wrote the answers in an identical sequence. How many different sequences of answers are possible? [2010]

- (a) 20 (b) 40 (c) 512 (d) 1024

46. When ten persons shake hands with one another, in how many ways is it possible? [2010]

- (a) 20 (b) 25 (c) 40 (d) 45



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47. In how many ways can four children be made to stand in a line such that two of them, A and B are always together? [2010]  
(a) 6 (b) 12 (c) 18 (d) 24

48. A group of 630 children is seated in rows for a group photo session. Each row contains three less children than the row in front of it. Which one of the following number of rows is not possible? [2014- II]

49. Twelve people form a club. By picking lots, one of them will host a dinner for all once in a month. The number of dinners a particular member has to host in one year is [2015-11]

(a) One (b) Zero (c) Three (d) Cannot be predicted

50. There are 5 tasks and 5 persons. Task-1 cannot be assigned to either person-1 or person-2. Task-2 must be assigned to either person-3 or person-4. Every person is to be assigned one task. In how many ways can the assignment be done?

[2015-II]

(a) 6 (b) 12 (c) 24 (d) 144

51. In a society it is customary for friends of the same sex to hug and for friends of opposite sex to shake hands when they meet. A group of friends met in a party and there were 24 handshakes.

Which one among the following numbers indicates the possible number of hugs?

[2015-II]

(a) 39 (b) 30 (c) 21 (d) 20

52. In a box of marbles, there are three less white marbles than the red ones and five more white marbles than the green ones. If there are a total of 10 white marbles, how many marbles are there in the box? [2015-11]

(a) 26 (b) 28 (c) 32 (d) 36



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53. A selection is to be made for one post of Principal and two posts of Vice-Principal. Amongst the six candidates called for the interview, only two are eligible for the post of Principal while they all are eligible for the post of Vice-Principal. The number of possible combinations of selectees is [2015-11]

(a) 4 (b) 12 (c) 18 (d) None of the above

54. A student has to opt for 2 subjects out of 5 subjects for a course, namely, Commerce, Economics, Statistics, Mathematics I and Mathematics II. Mathematics II can be offered only if Mathematics I is also opted. The number of different combinations of two subjects which can be opted is

[2015-11]

(a) 5 (b) 6 (c) 7 (d) 8

55. A person ordered 5 pairs of black socks and some pairs of brown socks. The price of a black pair was thrice that of a brown pair. While preparing the bill, the bill clerk interchanged the number of black and brown pairs by mistake which increased the bill by 100%. What was the number of pairs of brown socks in the original order? [2015-11]

(a) 10 (b) 15 (c) 20 (d) 25

56. The number of persons who read magazine X only is thrice the number of persons who read magazine Y. The number of persons who read magazine Y only is thrice the number of persons who read magazine X. Then, which of the following conclusions can be drawn? [2015- II]

1. The number of persons who read both the magazines is twice the number of persons who read only magazine X.

2. The total number of persons who read either one magazine or both the magazines is twice the number of persons who read both the magazines.

Select the correct answer using the code given below:

(a) 1 only (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2

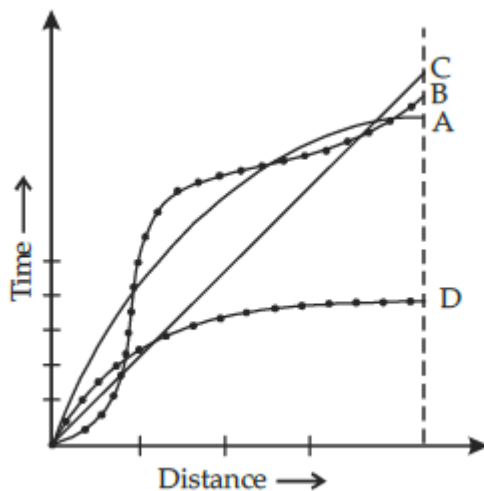


## Time & Distance

1. A person travelled from one place to another at an average speed of 40 kilometres/hour and back to the original place at an average speed of 50 kilometres/ hour. What is his average speed (in kilometres/hour) during the entire round-trip? [1995]

- (a) 45
- (b)  $20\sqrt{5}$
- (c)  $400/9$
- (d) impossible to find out unless the distance between the two places is known

2. Distance time graph in respect of a race among four persons is shown in the given figure. Consider the following statements in this regard: [1996]



- 1. 'A' stood first in the race
- 2. 'C' led all the way
- 3. 'D' ran faster than others in the later part of the race

Of these statements

- (a) 1 and 3 are false and 2 is true
- (b) 1 and 2 are false and 3 is true
- (c) 1 and 3 are true and 2 is false



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(d) 1 is true and 2 and 3 are false

3. A boat which has a speed of 5 km/hr in still water crosses a river of width 1 km along the shortest possible path in 15 minutes. The velocity of the river water (in km/hr) is [1997]

(a) 1 (b) 3 (c) 4 (d)  $\sqrt{41}$

4. One local and another express train were proceeding in the same direction on parallel tracks at 29 km/hour and 65 km/hour respectively. The driver of the former noticed that it took exactly 16 seconds for the faster train to pass by him. What is the length of the faster train? [1998]

(a) 60 m (b) 120 m (c) 160 m (d) 240 m

5. The average speed of a train in the onward journey is 25% more than that of the return journey. The train halts for one hour on reaching the destination. The total time taken for the complete to and fro journey is 17 hours covering a distance of 800 km. The speed of the train in the onward journey is [1999]

(a) 45 km per hour (b) 47.06 per hour  
(c) 50.00 km per hour (d) 56.25 km per hour

6. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and destination is [2000]

(a) 18 km (b) 16 km (c) 15 km (d) 12 km

7. A person travels from X to Y at a speed of 40 kmph and returns by increasing his speed 50%. What is his average speed for both the trips? [2001]

(a) 36 kmph (b) 45 kmph (c) 48 kmph (d) 50 kmph

8. A worker reaches his factory 3 minutes late if his speed from his house to the factory is 5 km/hr. If he walks at a speed of 6 km/hr, then he



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reaches the factory 7 minutes early. The distance of the factory from his house is  
[2001]

(a)4 km (b)5 km (c)6 km (d)7 km

9.A conveyer belt delivers baggage at the rate of 3 tonns in 5 minutes and a second conveyer belt delivers baggage at the rate of 1 tonns in 2 minutes. How much time will it take to get 33 tonns of baggage delivered using both the conveyer belts?  
[2001]

(a)25 minutes and 30 seconds (b)30 minutes  
(c)35 minutes (d)40 minutes and 45 seconds

10.Two ladies simultaneously leave cities A and B connected by a straight road and travel towards each other. The first lady travels 2 km/hr faster than the second lady and reaches B one hour before the second lady reaches A. The two cities A and B are 24 km. apart. How many kilometers does each lady travel in one hour?  
[2002]

(a)5 km, 3 km (b)7km, 5 km (c)8 km, 6 km (d)16km,14 km

11.A bus is moving at a speed of 30 km/hr ahead of a car with speed of 50 km/hr. How many kilometres apart are they if it takes 15 minutes for die car to catch up the bus?  
[2002]

(a) 5 km (b) 7.5km (c) 12.5 km (d)15 km

12.A train of length 150 metres, moving at a speed of 90 km/hr can cross a 200 metres bridge in [2002]

(a)8 seconds (b)14 seconds (c)6 seconds (d)15 seconds

13.A car travels the first one-third of a certain distance with a speed of 10 km/hrs. The next one-third of distance with a speed of 20 km/hrs. and the last one- third distance with a speed of 60 km/hrs. The average speed of the car for the whole journey is :  
[2003]

(a)18 km/hrs (b)24km/hrs (c)30 km/hrs (d)36km/hrs



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14. Total time taken by a person in going to a place by walking and returning on cycle is 5 hours 45 minutes. He would have gained 2 hours by cycling both ways. The time taken by him to walk both ways, is [2003]

- (a) 6 hours 45 minutes
- (b) 7 hours 45 minutes
- (c) 8 hours 15 minutes
- (d) 8 hours 30 minutes,

15. Two cars X and Y starts from two places A and B respectively which are 700 km apart at 9 a.m. Both the cars run at an average speed of 60 km/hr. Car X stops at 10 a.m. and again starts at 11 a.m., while the other car Y continues to run without stopping. When do the two cars cross each other? [2004]

- (a) 2:40 p.m.
- (b) 3:20 p.m.
- (c) 4:10 p.m.
- (d) 4:20 p.m.

16. A and B start from the same point and in the same direction at 7 a.m. to walk around a rectangular field 400 m x 300 m. A and B walk at the rate of 3 km/hr and 2.5 km/hr respectively. How many times shall they cross each other, if they continue to walk till 12:30 p.m.? [2004]

- (a) Not even once
- (b) Once
- (c) Twice
- (d) Thrice

17. 50 men or 80 women can finish a job in 50 days. A contractor deploys 40 men and 48 women for this work, but after every duration of 10 days, 5 completed. The work is completed in [2004]

- (a) 45 days
- (b) 50 days
- (c) 54 days
- (d) 62 days

18. Aryan runs at a speed of 40 metres/minute. Rahul follows him after an interval of 5 minutes and runs at a speed of 50 metres/minute. Rahul's dog runs at a speed of 60 metres/minute and starts along with Rahul. The dog reaches Aryan and then comes back to Rahul, and continues to do so till Rahul reaches Aryan. What is the total distance covered by the dog? [2005]





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(a)600 metres (b)750 metres (c)980 metres (d)1200 metres

19. There are eight equidistant points 'A', 'B', 'C', 'D', 'E', 'F', 'G', and 'H' in the clockwise direction on the periphery of a circle. In a time interval  $t$ , a person reads from 'A' to 'C' with uniform motion while another person reads the point 'E' from the point 'B' during the same time interval with uniform motion. Both the persons move in the same direction along the circumference of the circle and start at the same instant. How much time after the start, will the two persons meet each other? [2006]

(a)  $4t$  (b)  $7t$  (c)  $9t$  (d) Never

20. Amit starts from a point A and walks to another point B, and then returns from B to A by his car and thus takes a total time of 6 hours and 45 minutes. If he had driven both ways in his car, he would have taken 2 hours less. How long would it take for him to walk both ways? [2007]

(a) 7 hours 45 minutes (b) 8 hours 15 minutes  
(c) 8 hours 30 minutes (d) 8 hours 45 minutes

21. A and B can complete work together in 5 days. If A works at twice his speed and B at half of his speed, this work can be finished in 4 days. How many days would it take for A alone to complete the job? [2007]

(a) 10 (b) 12 (c) 15 (d) 18

22. A train completes a journey with a few stoppages in between at an average speed of 40 km per hour. If the train had not stopped anywhere, it would have completed the journey at an average speed of 60 km per hour. On an average, how many minutes per hour does the train stop during the journey? [2007]

(a) 20 minutes per hour (b) 18 minutes per hour  
(c) 15 minutes per hour (d) 10 minutes per hour



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Increasing Confidence ; Reaching Goals

23. Carpenter A can make a chair in 6 hours, carpenter B in 7 hours and carpenter C in 8 hours. If each carpenter works for 8 hours per day, how many chairs will be made in 21 days? [2008]

(a) 61 (b) 67 (c) 73 (d) 79

24. Two trains leave New Delhi at the same time. One travels north at 60 kmph and the other travels south at 40 kmph. After how many hours will the trains, be 150 km apart? [2010]

(a)  $3/2$  (b)  $4/3$  (c)  $3/4$  (d)  $15/2$

25. Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes. What is the length of the train? [2010]

(a) 250 m (b) 500 m (c) 1000 m (d) 1500 m

26. A person travelled a distance of 50 km in 8 hours. He covered a part of the distance, on foot at the rate of 4 km per hour and a part on a bicycle at the rate of 10 km per hour. How much distance did he travel on foot? [2010]

(a) 10 km (b) 20 km (c) 30 km (d) 40 km

27. Three men start together to travel the same way around a circular track of 11 km. Their speeds are 4, 5.5 and 8 kmph respectively. When will they meet at the starting point for the first time? [2010]

(a) After 11 hours (b) After 21 hours  
(c) After 22 hours (d) After 33 hours

28. If a bus travels 160 km in 4 hours and a train travels 320 km in 5 hours at uniform speeds, then what is the ratio of the distances travelled by them in one hour? [2011-11]

(a) 8:5 (b) 5:8 (c) 4:5 (d) 1:2



# SHAKTHI ACADEMY

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29. Mr. Kumar drives to work at an average speed of 48 km per hour. The time taken to cover the first 60% of the distance is 10 minutes more than the time taken to cover the remaining distance. How far is his office? [2012-11]

- (a) 30 km (b) 40 km (c) 45 km (d) 48 km

30. A person can walk a certain distance and drive back in six hours. He can also walk both ways in 10 hours. How much time will he take to drive both ways? [2013-11]

- (a) Two hours (b) Two and a half hours  
(c) Five and a half hours (d) Four hours

31. Four cars are hired at the rate of Rs.6 per km plus the cost of diesel at Rs.40 a litre. In this context, consider the details given in the following table: [2013 - II]

| Car | Mileage (km/l) | Hours | Total Payment(₹) |
|-----|----------------|-------|------------------|
| A   | 8              | 20    | 2120             |
| B   | 10             | 25    | 1950             |
| C   | 9              | 24    | 2064             |
| D   | 11             | 22    | 1812             |

Which car maintained the maximum average speed?

- (a) Car A (b) Car B (c) Car C (d) Car D

32. A thief running at 8 km/hr is chased by a policeman whose speed is 10 km/hr. If the thief is 100 m ahead of the policeman, then the time required for the policeman to catch the thief will be [2013-II]

- (a) 2 min (b) 3 min (c) 4 min (d) 6 min

33. A train travels at a certain average speed for a distance of 63 km and then travels a distance of 72 km at an average speed of 6 km/hr more than its original speed. If it takes 3 hours to complete the total journey, what is the original speed of the train in km/hr? [2013 - II]



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(a) 24 (b) 33 (c) 42 (d) 66

34. Location of B is north of A and location of C is east of A.

The distances AB and AC are 5 km and 12 km respectively. The shortest distance (in km) between the locations B and C is [2014 - II]

(a) 60 (b) 13 (c) 17 (d) 7

35. Two cars start towards each other, from two places A and B which are at a distance of 160 km. They start at the same time 08 :10 AM. If the speeds of the cars are 50 km and 30 km per hour respectively, they will meet each other at

[2014-II]

(a) 10:10 AM (b) 10:30 AM (c) 11:10 AM (d) 11:20 AM

36. A straight line segment is 36 cm long. Points are to be marked on the line from both the end points. From each end, the first point is at a distance of 1 cm from the end, the second point is at a distance of 2 cm from the first point and the third point is at a distance of 3 cm from the second point and so on. If the points on the ends are not counted and the common points are counted as one, what is the number of points ?

[2014-11]

(a) 10 (b) 12 (c) 14 (d) 16

37. A and B decide to travel from place X to place Y by bus. A has Rs.10 with him and he finds that it is 80% of the bus fare for two persons. B finds that he has Rs.3 with him and hands it over to A. In this context, which one of the following statements is correct ? [2014 - II]

(a) Now the money A has is just enough to buy two tickets.

(b) A still needs Rs.2 for buying the tickets.

(c) After buying the two tickets A will be left with 50 paise.

(d) The money A now has is still not sufficient to buy two tickets.



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38. In a 500 metres race, B starts 45 metres ahead of A, but A wins the race while B is still 35 metres behind. What is the ratio of the speeds of A to B assuming that both start at the same time?[2015-11]

- (a)25:21 (b) 25:20 (c)5:3 (d)5:7

39. Two cities A and B are 360 km apart. A car goes from A to B with a speed of 40 km/hr and returns to A with a speed of 60 km/hr. What is the average speed of the car?[2015-11]

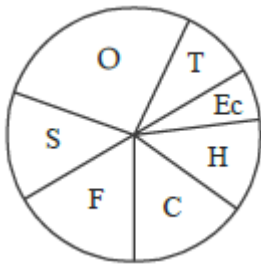
- (a)45 km/hr (b)48km/hr (c)50 km/hr (d)55 km/hr

40. Two pipes A and B can independently fill a tank completely in 20 and 30 minutes respectively. If both the pipes are opened simultaneously how much time will they take to fill the tank completely? [2015-11]

- (a)10 minutes (b)12minutes (c)15 minutes  
(d)25 minutes

## Data Interpretation

1. Consider the diagram given below:



T:Transport

Ec:Education and children

H:Housing

C:Clothing

F:Food

S:Savings

O:Others



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From the diagram shown it would be right to conclude that

- (a) the family spent more than half of income on food and clothing
- (b) the amount saved by the family was too little
- (c) the family had no health problems
- (d) the family managed to meet all the essential expenses out of the income earned

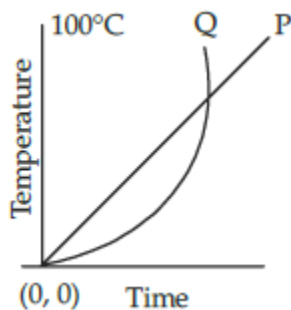
Consider the table given below providing details of traffic volume per hour for four locations: [1995]

| Location | Total Traffic | % of Heavy Vehicles | Average Noise Level | Noise Pollution Level |
|----------|---------------|---------------------|---------------------|-----------------------|
| I        | 377           | 24.40               | 73.50               | 84.00                 |
| II       | 380           | 12.50               | 72.60               | 83.00                 |
| III      | 377           | 30.00               | 73.50               | 86.50                 |
| IV       | 225           | 12.50               | 72.98               | 80.90                 |

When the total traffic volume is the same, respectively the factor(s) which affect(s) the noise pollution level is/are

- (a) percentage of heavy vehicles
- (b) noise pollution level and average noise level
- (c) average noise level and % of heavy vehicles
- (d) indeterminable on the basis of details given

3. The variations in temperatures from  $0^{\circ}\text{C}$  to  $100^{\circ}\text{C}$  with respect to time of two liquids P, Q are shown in the graph given below: [1995]



Which one of the following statements is correct?

- (a) During heating, liquid P remained hotter than liquid Q throughout



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- (b) At no point of time during heating did the two liquids have the same temperature
- (c) P attained the temperature of  $100^{\circ}\text{C}$ -faster than Q
- (d) Q attained the temperature of  $100^{\circ}\text{C}$  faster than P

4.The price fluctuations of 4 scrips in a stock market in the four quarters of a year are shown in the table below". Four different investors had the following portfolios of investment in the four companies throughout the year.

### Portfolios

Investor 1:10 of A, 20 of B, 30 of C, and 40 of D

Investor 2:40 of A, 10 of B, 20 of C, and 30 of D

Investor 3:30 of A, 40 of B, 10 of C, and 20 of D

Investor 4:20 of A, 30 of B, 40 of C, and 10 of D

### Stock Market Performance

| Quarter | I<br>Quarter | II<br>Quarter | III<br>Quarter | IV<br>Quarter |
|---------|--------------|---------------|----------------|---------------|
| Scrip A | Up10%        | Down 15%      | UP 10%         | Down 10%      |
| Scrip B | UP2%         | UP 1%         | UP 2%          | UP 2%         |
| Scrip C | UP1%         | UP 1%         | Down 5%        | Down 1%       |
| Scrip D | UP20%        | Down 15%      | UP 30%         | Down 10%      |

In the light of the above which one of the following statement is correct? [1995]

- (a)Investor 2 has made the best investment
- (b)Investor 1 has made the best investment
- (c)Investor 2 suffered a net loss during the year
- (d)Investor 3 suffered a net loss during the year

5.The following table shows the percentage distribution of revenue expenditure of Government of India in 1989-90 and 1994-95 :



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Expenditure Head (percent to total)

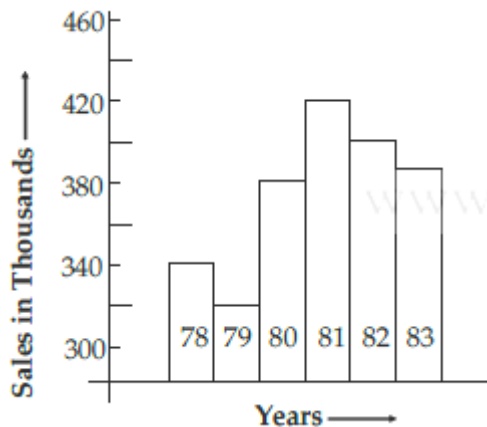
| Years   | Defence | Interest Payments | Subsidies | Grants to  |       |
|---------|---------|-------------------|-----------|------------|-------|
|         |         |                   |           | States/Uts | Other |
| 1989-90 | 15.1    | 27.7              | 16.3      | 13.6       | 27.4  |
| 1994-95 | 13.6    | 38.7              | 8.0       | 16.7       | 23.0  |

Based on this table, it can be said that the Indian economy is in poor shape because the Central government continues to be under pressure to: [1996]

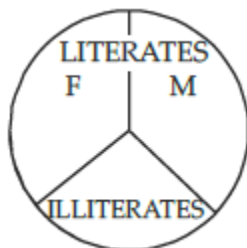
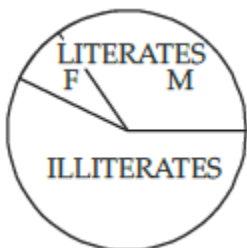
- (a) reduce expenditure on defence
- (b) spend more and more on interest payments
- (c) reduce expenditure on subsidies
- (d) spend more and more as grants-in-aid to State government/Union Territories

6. The following figure represents sales (in thousands), over the period 1978 to 1983. [1996]

The sales in 1981 exceeded that in 1979 by



- (a) Rs. One hundred
- (b) Rs. Ten thousand
- (c) Rs. One lakh
- (d) Rs. Ten lakh







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and also the proportion of males (M) and females (F) among the literates. Which one of the following statements can be said to be true beyond any doubt? [1996]

- (a) In 1970 half of the illiterates were women (females)
- (b) The proportion of literate males to the total population of males remained the same over the years
- (c) Male literacy did not improve over this period
- (d) The ratio of female literates to male literates improved significantly over this period

8. The number of students in two sections, A and B having different heights is shown in the following Table. [1997]

| Height<br>(in metres) | Number of students |              |
|-----------------------|--------------------|--------------|
|                       | in section A       | in section B |
| 1.55                  | 3                  | 2            |
| 1.60                  | 7                  | 6            |
| 1.62                  | 12                 | 14           |
| 1.65                  | 15                 | 14           |
| 1.68                  | 8                  | 9            |
| 1.71                  | 6                  | 5            |
| 1.75                  | 3                  | 4            |

The ratio of the number of students of a particular height in section A to that in section B is the maximum for the height of

- (a) 1.55 m (b) 1.60 m (c) 1.65 m (d) 1.71 m

9. The following table shows the percent change in the amount of sales (in rupees) at different retail stores in a given neighborhood market in the period 1993 to 1995 [1997]



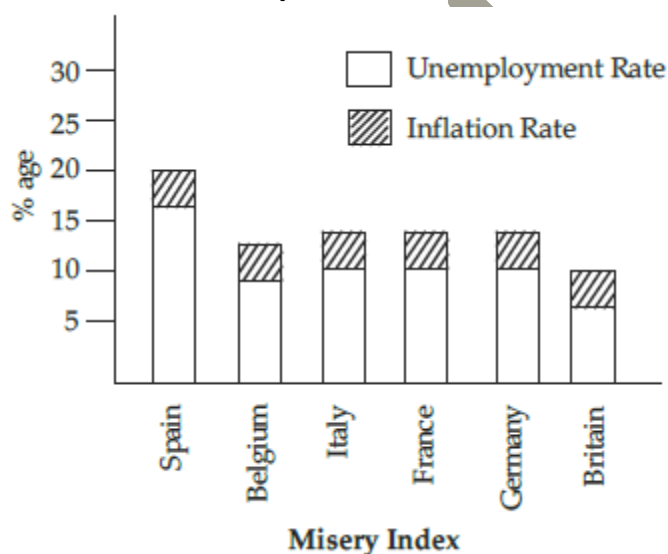
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| Retail store | Percent change |              |
|--------------|----------------|--------------|
|              | 1993 to 1994   | 1994 to 1995 |
| Anshu        | + 10           | - 10         |
| Borna        | - 20           | + 9          |
| Calpo        | + 5            | + 12         |
| Dilip        | - 7            | - 15         |
| Elegant      | + 17           | - 8          |

If the sales at Anshu store amounted to Rs.8 lakh in 1993, then the amount of sales (in lakh rupees) at that store in 1995 was  
(a)7.92 (b)8.00 (c)8.80 (d)9.68

10.The misery index is the sum of a country's unemployment and inflation rate. The higher the index, the more miserable is the country to live in. The figure given below is die misery index for various countries in Europe. [1998]



Which of the following conclusions can be drawn from the misery index given above?

1. Britain is the most miserable country to live In
2. The inflation rate in Spain is less than that in Belgium and Britain
3. Italy and France seem to have almost identical unemployment
- 4.The higher the misery index, the higher the inflation rate



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Select the correct answer using die codes given below:

Codes:

- (a)1 alone      (b)2 and 3 (c)1,2, 3 and 4      (d)None of these

11. Production of Rice and Wheat (In 'million of Tonnes')[1998]

| Year     | Rice  | Wheat | Percentage of Wheat to Rice |
|----------|-------|-------|-----------------------------|
| 1950 -51 | 20.58 | 6.46  | 31.4                        |
| 1960 -61 | 34.58 | 11.00 | 31.8                        |
| 1970-71  | 42.22 | 23.83 | 56.4                        |
| 1980-81  | 58.63 | 36.31 | 67.7                        |
| 1990-91  | 74.29 | 55.14 | 74.2                        |
| 1994-95  | 81.81 | 65.77 | 80.4                        |
| 1995-96  | 79.62 | 62.62 | 78.6                        |

The above table indicates die performance of India in rice and wheat production from 1950-51 to 1995-96. Which of the following conclusions arrived at from the above table would be valid?

1. Record production of rice as well as wheat has been in 1994-95
2. The ratio of wheat to rice production seems to have steadily increased over 16 years
3. Wheat has not been popular among the Indian population before 1980
4. India became self-sufficient in rice and wheat only after 1990

Select the correct answer using the codes given below: Codes:

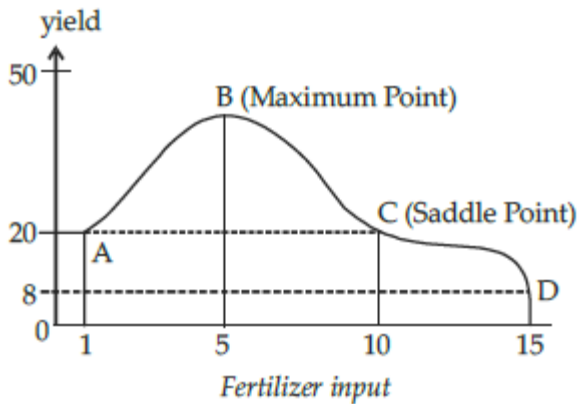
- (a) 1 and 2      (b) 1,2, 3 and 4 (c) 3 and 4 (d) None of these

12. The yield versus fertilizer input is shown in the graph. [1999]



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Increasing Confidence ; Reaching Goals



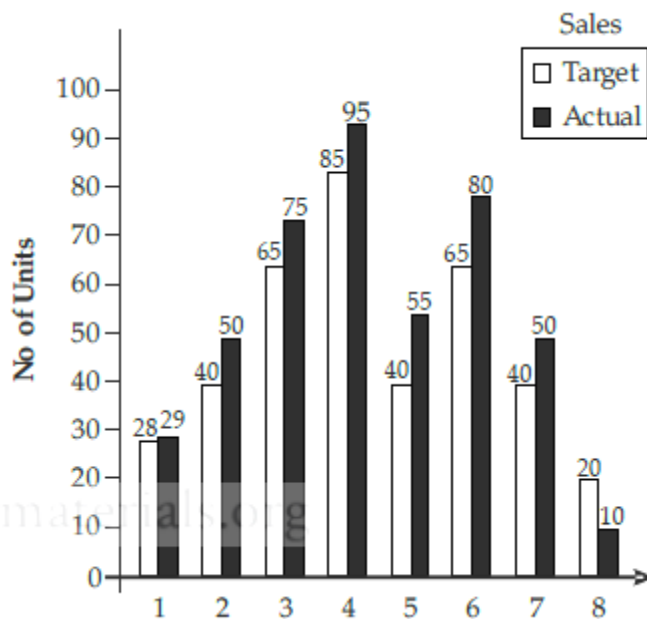
Consider the following statements based on this graph:

1. Yield rate is zero at B and C
2. There is no yield with no fertilizer input
3. The yield is minimum at D
4. The yield is neither minimum nor maximum at C

Which of the above statements are correct?

- (a) 1, 2 and 4      (b) 3 and 4      (c) 2 and 3      (d) 1, 3 and 4

13. A company manufacturing air-conditioners set a monthly target. The target and realised values are shown in the bar chart. [1999]





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Consider the following statements based on the chart

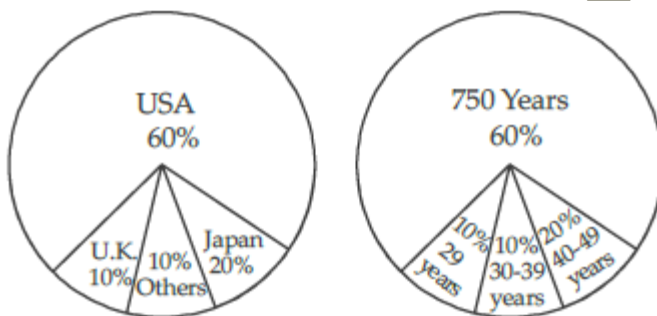
1. The targeted sales on a monthly basis have been achieved
2. The overall target value has been exceeded by 7.5%
3. The Sales Department deserves a pat on the back

Which of the above statements is/are correct?

- (a) 1 alone      (b) 2 alone    (c) 1 and 2    (d) 2 and 3

14. The distribution of 1,00,000 tourists who visited India during a particular year is shown in the given charts. Based on this, the number of Japanese tourists below the age of 39 who visited India in the year concerned is

[2000]



- (a) 10,000    (b) 8,000    (c) 6,000    (d) 4,000

15. The following table shows the percentage change in the consumption of electricity by five towns P, Q, R, S, T from 1986 to 1988: [2001]

Percent change

| Town | From         | From         |
|------|--------------|--------------|
|      | 1986 to 1987 | 1987 to 1988 |
| P    | + 8          | - 18         |
| Q    | - 15         | + 11         |
| R    | + 6          | + 9          |
| S    | - 7          | - 5          |
| T    | + 13         | - 6          |

If town T consumed 500,000 units in 1986, how much did it consume in 1988?

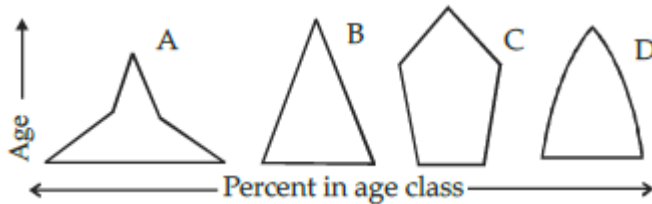
- (a) 371,000 units    (b) 531,100 units    (c) 551,100 units  
(d) 571, 100 units



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16. Consider the four age pyramids given below namely A, B, C and D representing four different countries.

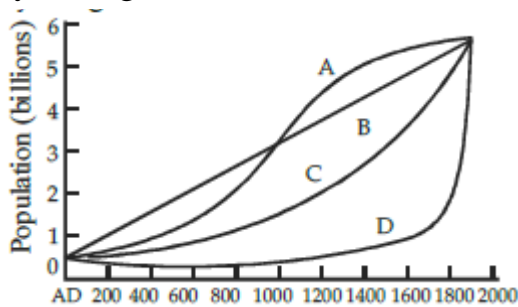


Which one of them indicates the declining population ?

- (a) A (b) B (c) C (d) D

17. The following figure has four curves namely A, B, C and D.

Study the figure and answer the item that follows. [2011 - II]



Which curve indicates the exponential growth?

- (a) A (b) B (c) C (d) D

DIRECTIONS for the following 2 (two) items:

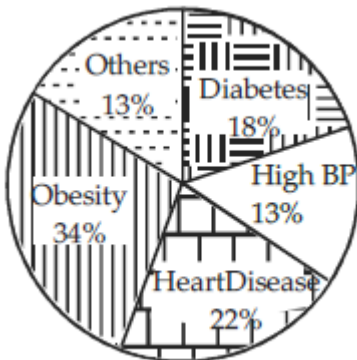
The following pie charts show the break up of disease categories recorded in the patients from two towns, Town A and Town B. Pie charts plot the disease categories as percentage of the total number of patients. Based on these answer the two items that follow' the charts. [2011 - II]

Distribution of diseases in Town – A

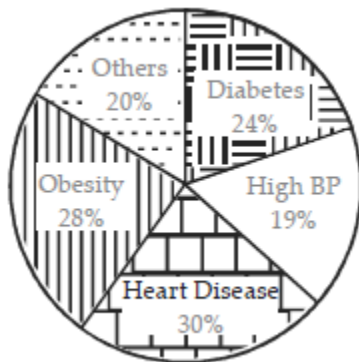


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Increasing Confidence ; Reaching Goals



Distribution of diseases in Town - B



18. Which of the two towns has a higher number of persons with Diabetes ?

- (a) Town A
- (b) Town B
- (c) Same in Town A and Town B
- (d) No inference can be drawn

19. What can we say about persons with more than one disease from these graphs ?

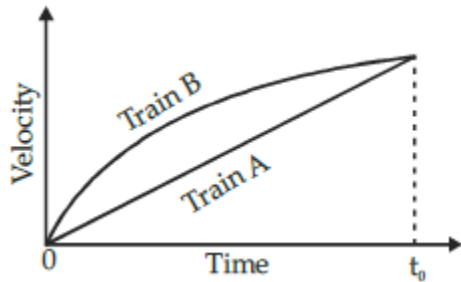
- (a) There are likely to be persons with more than one disease in Town A.
- (b) There are likely to be persons with more than one disease in Town B.
- (c) There are likely to be persons with more than one disease in both Towns A and B.
- (d) No inference can be drawn.

20. Consider the following Velocity - Time graph. It shows two trains starting simultaneously on parallel tracks.



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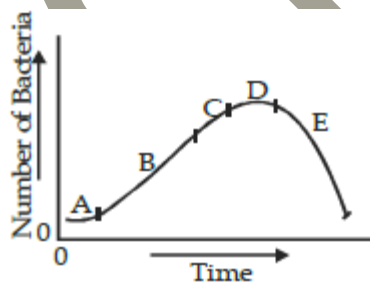


With reference to the above graph, which one of the following statements is not of correct? [2011-11]

- (a) Train B has an initial acceleration greater than that of Train A.
- (b) Train B is faster than Train A at all times.
- (c) Both trains have the same velocity at time  $t_0$ .
- (d) Both trains travel the same distance in time  $t_0$  units.

DIRECTIONS for the following 3 (three) items : Read the passage given below, study the graph that follows and answer the three items given below the figure.

During a party, a person was exposed to contaminated water. A few days later, he developed fever and loose motions. He suffered for some days before going to a doctor for treatment. On starting the treatment, he soon became better and recovered completely a few' days later. The following graph show's different phases of the person's disease condition as regions A, B, C, D and E of the curve. [2011 - II]



21. Which region/regions of the curve correspond/ corresponds to incubation phase of the infection?

- (a) A only
- (b) B only
- (c) B and C





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(d) No part of the curve indicates the incubation phase

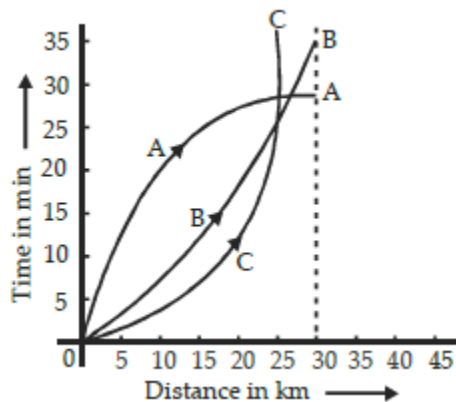
22. Which region of the curve indicates that the person began showing the symptoms of infection ?

(a) A (b) B (c) C (d) D

23. Which region of the curve indicates that the treatment yielded effective relief?

(a) C (b) D (c) E (d) the curve does not indicate the treatment

24. Consider the following distance - time graph. The graph shows three athletes A, B and C running side by side for a 30 km race.



With reference to the above graph, consider the following statements : [2011 - II]

1. The race was won by A.
2. B was ahead mark of A up to 25 km mark
3. C ran very slowly from the beginning.

Which of the statements given above is/are correct ?

(a) 1 only (b) 1 and 2 only (c) 2 and 3 only (d) 1, 2 and 3

25. Consider the following information regarding the performance of a class of 1000 students in four different tests:



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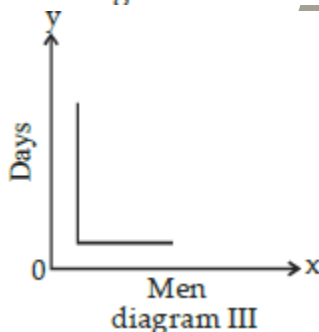
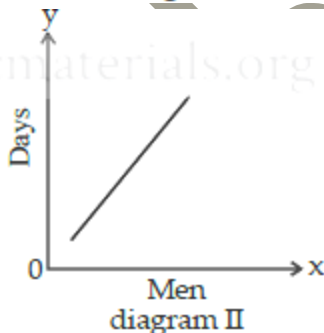
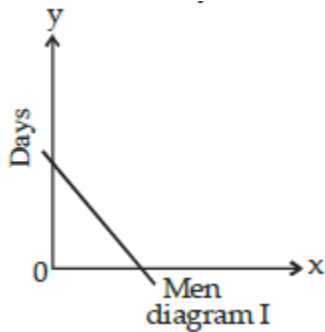
| Tests          | I  | II | III | IV  |
|----------------|----|----|-----|-----|
| Average marks  | 60 | 60 | 70  | 80  |
| Range of marks | 30 | 45 | 20  | 0   |
|                | to | to | to  | to  |
|                | 90 | 75 | 100 | 100 |

If a student scores 74 marks in each of the four tests, in which one of the following tests is her performance the best comparatively? [2012- II]

- (a) Test I      (b) Test II      (c) Test III      (d) Test IV

26. Consider the following diagrams: [2013- II]

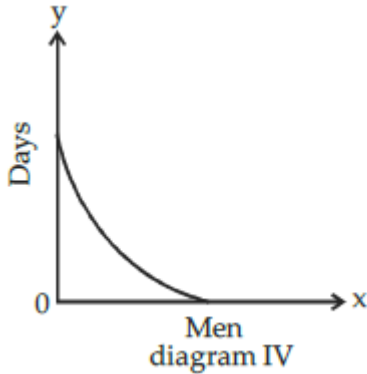
$x$  men, working at constant speed, do a certain job in  $y$  days. Which one of these diagrams shows the relation between  $x$  and  $y$ ?





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(a)Diagram I    (b)Diagram II    (c)Diagram El    (d)Diagram IV

DIRECTIONS for the following 5 (five) items : Study the two figures given below and answer the questions that follow:

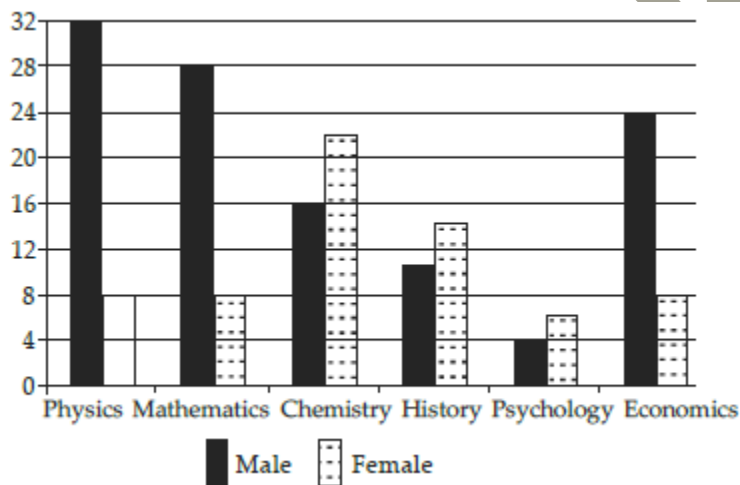


Fig 1 : Number of Professors in selected disciplines in a University by sex

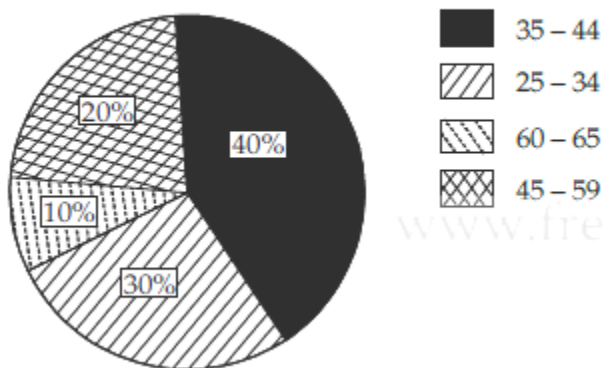


Fig. 2 : Age of Physics Professors



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27. How many Physics professors belong to the age group 35 - 44? [2 013-11]

- (a) 18 (b) 16 (c) 14 (d) 12

28. Which one of the following disciplines has the highest ratio of males to females? [2013 - II]

- (a) Physics (b) Mathematics (c) Chemistry (d) Economics

29. What percentage of all Psychology professors are females? [2013-11]

- (a) 40% (b) 50% (c) 60% (d) 70%

30. If the number of female Physics professors in the age group 25 - 34 equals 25% of all the Physics professors in that age group, then what is the number of male Physics professors in the age group 25 - 34? [2013 - II]

- (a) 9 (b) 6 (c) 3 (d) 2

31. If the Psychology professors in the University constitute 2% of all the professors in the University, then what is the number of professors in the University? [2013-11]

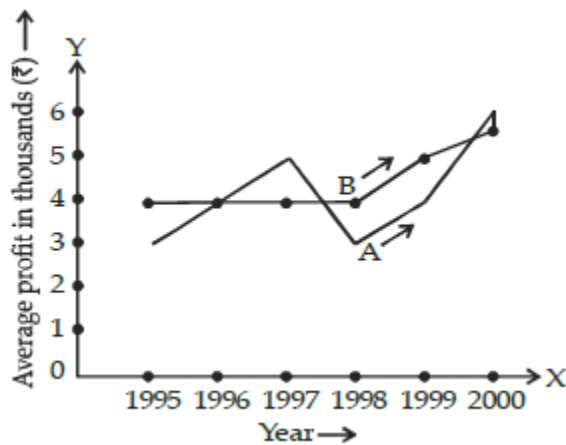
- (a) 400 (b) 600 (c) 500 (d) 700

**DIRECTIONS** for the following 4 (four) items: The following graph shows the average profit of two fruit-sellers A and B in thousands (f) per year from the year 1995 to 2000. Consider the graph and answer the 4 (four) items that follow:



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32. In which year is the average profit of A and B same ?

[2014-11]

(a)1995 (b)1996 (c)1997 (d)1998

33. What is the difference between the average profit of B and A in the year 1998 ? [2014 - II]

(a)-Rs.100 (b)- Rs.1000 (c)+ Rs.600 (d)-Rs.300

34. How much more average profit did A make in the year 2000 than in the year 1999 ? [2014 - II]

(a)Rs.200 (b)Rs.1,000 (c)Rs. 1,500 (d)Rs.2,000

35. What is the trend of the average profit of B from the year 1997 to the year 2000 ? [2014 - II]

(a)Non-increasing (b)Non-decreasing  
(c)Steady (d)Fluctuating

36. The following table shows the marks obtained by two students in different subjects : [2014 - II]



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|            | Student<br>A | Maximum<br>Marks | Student<br>B | Maximum<br>Marks |
|------------|--------------|------------------|--------------|------------------|
| English    | 60           | 100              | 80           | 150              |
| Psychology | 70           | 100              | 70           | 100              |
| History    | 50           | 100              | 60           | 100              |
| Sanskrit   | 30           | 50               | 15           | 25               |

The difference in the mean aggregate percentage marks of the students is

- (a)2.5% (b)13.75% (c)1.25% (d)Zero

37.The following table gives population and total income of a city for four years :[2014- II]

| Year                 | 1992 | 1993 | 1994 | 1995 |
|----------------------|------|------|------|------|
| Population in lakhs  | 20   | 21   | 22   | 23   |
| Income in crores (₹) | 1010 | 1111 | 1225 | 1345 |

Which one of the following statements is correct in respect of the above data ?

- (a)Population increased by 5% or more every year.  
(b)Income increased by 10% or more every year.  
(c)Per capita income was always above Rs. 5,000.  
(d)Per capita income was highest in 1994.

38. An automobiles owner reduced his monthly petrol consumption when the prices went up. The price- consumption relationship is as follows: [2015 - II]

|                                 |    |    |    |    |    |
|---------------------------------|----|----|----|----|----|
| Price (in Rs.Per litre)         | 40 | 50 | 60 | 75 |    |
| Monthly consumption (in litres) |    | 60 | 48 | 40 | 30 |

If the price goes up to ? 80 per litre, his expected consumption (in litres) will be

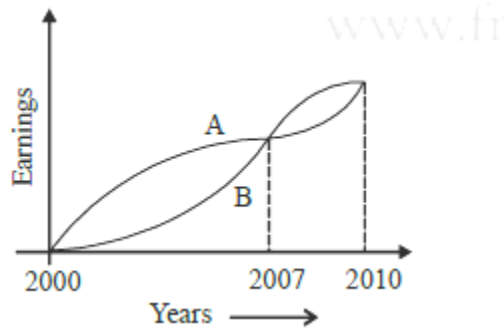
- (a) 30 (b) 28 (c) 26 (d) 24

39.The graph below depicts the earnings of A and B over the period 2000 to 2010: [2015 - II]



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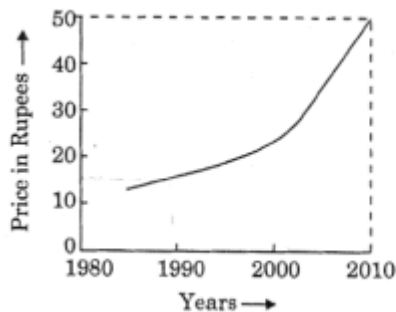
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From the graph, which one of the following can be concluded?

- (a) On the average A earned more than B during this period.
- (b) On the average B earned more than A during this period.
- (c) The earnings of A and B were equal during this period.
- (d) The earnings of A were less as compared to B during this period.

40. Year-wise variation of the price of a certain commodity is shown in the following graph: [2015-11]



The price of the commodity in the year 1990

- (a) must have been Rs. 10/-
- (b) must have been Rs. 12/-
- (c) must have been anywhere between Rs. 10/- and Rs. 20/-
- (d) is higher than that in the year 1991

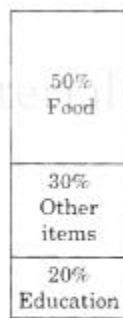
41. The proportion of expenditure on various items by two families A and B are represented in the following Bar Charts:

[2015-11]

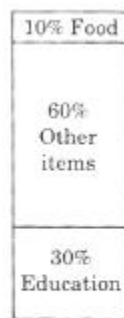


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Family A  
Total expenditure :  
₹ 20,000 per month



Family B  
Total expenditure :  
₹ 1,00,000 per month

From these charts, we can conclude that

- (a) Family A spent more money on food than Family B.
- (b) Family B spent more money on food than Family A.
- (c) Family A and Family B spent the same amount on food.
- (d) The expenditure on food by Family A and Family B cannot be compared.

---

## Arithmetic

1. In track meets both 100 yards and 100 metres are used as distances; By how many metres is 100 metres longer than 100 yards?

[1995]

- (a) 0.856 m (b) 8.56 m (c) 0.0856 m (d) 1.0 m

2. The value of  $(a-m)$   $(b-m)$   $(y - m)$   $(z - m)$  is [1995]

- (a)  $m^{26} + am^{25} + abm^{24} + \dots + a.b.c \dots z$
- (b)  $m^{26} - am^{23} + abm^{24} + \dots + a.b.c \dots z$
- (c) 0
- (d) indeterminate

3. Out of a total of 120 musicians in a club, 5% can play all the three instruments, guitar, violin and flute. If so happens that the number of musicians who can play any two and only two of the





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above instruments is 30. The number of musicians who can play the guitar alone is 40. What is the total number of those who can play violin alone or flute alone?

[1995]

(a) 45 (b) 44 (c) 38 (d) 30

4.Zero was invented by [1995]

(a) Aryabhata (b)Varahamihira  
(c) Bhaskaral (d)An unknown Indian

5.A person earns ? 2000 per month over and above his salary as additional charge allowance. However, 30% of this additional income will be deducted as additional income tax at source. If the person would deposit Rs. 1000 per month on a long term saving fetching 12% interest his tax liability on the additional allowance would reduce to 10%. What is the effective interest for this person for money invested in the long term savings scheme? [1995]

(a)12% (b)18% (c)19% (d)20%

6.The average of  $x_1$ ,  $x_2$  and  $x_3$  is 14. Twice the sum of  $x_2$  and  $x_3$  is 30. What is the value of  $x_1$ ?[1996]

(a)20 (b) 27 (c) 16 (d) 2

7.If the price of a television set is increased by 25%, then by what percentage should the new price be reduced to bring the price back to the original level? [1996]

(a) 15% (b)25% (c)20% (d)30%

8.If  $A = x^2 - y^2$ ,  $B = 20$  and  $x + y = 10$ , then [1996]

(a)A is greater than B  
(b)B is greater than A  
(c)A is equal to B  
(d) It is not possible to compare A and B as the data provided is inadequate



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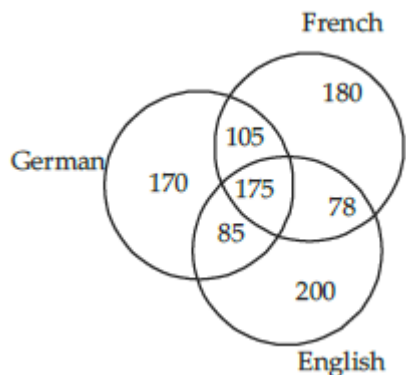
9. The average monthly income of person in a certain family of 5 is Rs.1000. What will be monthly average income of person in the same family if the income of one person increased by Rs.12000 per year? [1997]

(a)Rs.1200 (b)Rs.1600 (c)Rs.2000 (d)Rs.3400

10. In a group of persons travelling in a bus, 6 persons can speak Tamil, 15 can speak Hindi and 6 can speak Gujarati. In that group none can speak any other language. If 2 persons in the group can speak two languages and one person can speak all the three languages, then how many persons are there in the group? [1997]

(a) 21 (b) 22 (c) 23 (d) 24

11. A survey was conducted on a [samples of 1000 persons with reference to their knowledge of English, French and German. The results of the survey are presented in the given Venn diagram. The ratio of the number of the persons who do not know' any of the three languages to those who know' all the three language, is [1997]



(a)1/27 (b)1/25 (c)1/550 (d)175/1000

12. The number of times in a day the Hour-hand and the Minute-hand of a clock are at right angles, is [1997]

(a) 44 (b) 48 (c) 24 (d) 12



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13. There are 50 students admitted to a nursery class. Some students can speak only English and some can speak only Hindi. 10 students can speak both English and Hindi. If the number of students who can speak English is 21, then how many can speak Hindi, how many can speak only Hindi and how many can speak only English? [1998]

- (a) 21, 11 and 29 respectively
- (b) 28, 18 and 22 respectively
- (c) 37, 27 and 13 respectively
- (d) 39, 29 and 11 respectively

14. An accurate clock shows the time as 3.00. After hour hand has moved  $135^\circ$ , the time would be [1998]

- (a) 7.30 (b) 6.30 (c) 8.00 (d) 9.30

15. A man purchases two clocks A and B at a total cost of Rs. 650. He sells A with 20% profit and B at a loss of 25% and gets the same selling price for both the clocks. What are the purchasing prices of A and B respectively? [1998]

- (a) Rs.225; Rs.425 (b) Rs.250; Rs.400
- (c) Rs.275; Rs.375 (d) Rs.300; Rs.350

16. If 15 pumps of equal capacity can fill a tank in 7 days, then how many extra pumps will be required to fill the tank in 5 days? [1998]

- (a) 6 (b) 7 (c) 14 (d) 21

17. Out of the three annual examinations, each with a total of 500 marks, a student secured average marks of 45% and 55% in the first and second annual examinations. To have an overall average of 60%, how many marks does the student need to secure in the third annual examination? [1998]

- (a) 450 (b) 400 (c) 350 (d) 300



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18. In a family, a couple has a son and daughter. The age of the father is three times that of his daughter and the age of the son is half of his mother. The wife is nine years younger to her husband and the brother is seven years older than his sister. What is the age of the mother? [1995]

(a) 40 years (b) 45 years (c) 50 years (d) 60 years

19. The missing fraction in the series given below is:

$4/9, 9/20, \dots, 39/86$

(a)  $17/40$  (b)  $19/42$  (c)  $20/45$  (d)  $29/53$

20. If  $x + 2y = 2x + y$ , then  $x^2/y^2$  is equal to

(a) 0 (b) 1 (c) 2 (d) 4

21. In an office, the distribution of work hours is as shown in the following table [1999]

| Members | Work hours |
|---------|------------|
| 5       | 0-19       |
| 1       | 20-24      |
| 25      | 25-29      |
| 40      | 30-34      |
| 15      | 35-39      |
| 8       | 40-45      |

Consider the following inferences drawn from the table:

1. The average number of hours worked by a staff member is about 30
2. The percentage of those who worked 3.5 or more hours is less than 25
3. At least 5 staff members worked more than 44 hours

Which of these inferences is/are valid?

(a) 1 alone (b) 2 alone (c) 1 and 2 (d) 1, 2 and 3

22. Amar, Akbar and Anthony are friends, being looked after by a matron Farah, Amar weighs 50% more than Akbar and Anthony weighs 25% less than Amar.



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Farah weighs a third of the combined weight of the three boys. All four together weigh 232kg. The correct

arrangement of the persons in the ascending order of their weights, is : [1999]

- (a) Anthony, Akbar, Farah, Amar
- (b) Anthony, Akbar, Amar, Farah
- (c) Akbar, Anthony, Amar, Farah
- (d) Akbar, Anthony, Farah, Amar

23. In the sequence of numbers 5, 8, 13, X, 34, 55, 89, ..., the value of X is [1999]

- (a) 20
- (b) 21
- (c) 23
- (d) 29

24. In a town 25% families own a phone and 15% own a car. 65% families own neither a phone nor a car. 2000 families own both a phone and a car. Consider the following statements in this regard: [1999]

- 1. 10% families own both a car and a phone
- 2. 35% families own either a car or a phone
- 3. 40,000 families live in the town

Which of the above statements are correct?

- (a) 1 and 2
- (b) 1 and 3
- (c) 2 and 3
- (d) 1, 2 and 3

25. In an examination, every candidate took Physics or Mathematics or both. 65.8% took Physics and 59.2% took Mathematics. The total number of candidates was 2000. How many candidates took both Physics and Mathematics? [2000]

- (a) 750
- (b) 500
- (c) 250
- (d) 125

26. A club has 108 members. Two-thirds of them are men and the rest are women. All members are married except for 9 women members. How many married women are there in the club? [2000]

- (a) 20
- (b) 24
- (c) 27
- (d) 30



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27. An accurate clock shows 8 O' clock in the morning. Throughout how many degrees will the hour hand rotate, when the clock shows 20' clock in the afternoon?

[2000]

(a)  $150^\circ$  (b)  $144^\circ$  (c)  $168^\circ$  (d)  $180^\circ$

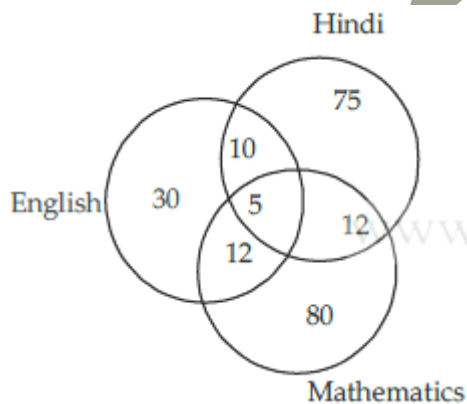
28. The monthly income of Komal and Asha are in the ratio of 4:3. Their monthly expenses are in the ratio of 3 : 2. However, both save Rs.600 per month. What is their total monthly income?[2000]

(a) Rs.8,400 (b) Rs.5,600 (c) Rs.4,200 (d) Rs.2,800

29. If  $x = -2$ , then  $x^3 - x^2 - x - 1$  is equal to

(a) 1 (b) -3 (c) -11 (d) -15

30. The given diagram shows the number of students who failed in an examination comprising papers in English, Hindi and Mathematics. The total number of students who took the test is 500. What is the percentage of students who failed in atleast two subject? [2000]



(a) 6.8 (b) 7.8 (c) 34 (d) 39

31. In a class there are 18 boys who are over 160 cm tall. If these boys constitute three fourths of the boys and the total number of boys is two-third of the number of students in the class, then what is the number of girls in the class? [2000]



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(a) 6 (b) 12 (c) 18 (d) 24

32. For the system of equations  $x^2 + y^2 = 34$ ,  $x^4 - y^4 = 544$ , the values of  $x$  and  $y$  are [2001]

(a) +4, +3 (b) +5, +3 (c) +3, +5 (d) +3, +4

33. Water is filled in a container in such a manner that its volume doubles after every five minutes. If it takes 30 minutes for the container to be full, in how much time will it be one-fourth full? [2001]

(a) 7 minutes and 30 seconds (b) 10 minutes  
(c) 20 minutes (d) 25 minutes

34. A city has a population of 3,00,000 out of which 1,80,000 are males. 50% of the population is literate. If 70% of the males are literate, the number of literate females is [2001]

(a) 24,000 (b) 30,000 (c) 54,000 (d) 60,000

35. In a survey, it was found that 80% of those surveyed owned a car while 60% of those surveyed owned a mobile phone. If 55% owned both a car and a mobile phone, what percent of those surveyed owned a car or a mobile phone or both? [2001]

(a) 65% (b) 80% (c) 85% (d) 97.5%

36. In 1930, a person's age was 8 times that of his son. In 1938, the father's age became ten times that of his son's age in 1930. The ages of the son and father in 1940 were respectively [2001]

\* \_

(a) 16 years, 58 years (b) 15 years, 50 years  
(c) 14 years, 42 years (d) 13 years, 34 years



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37. Amit started a business by investing Rs.30,000. Rahul joined the business after some time and invested Rs.20,000. At the end of the year, profit was divided in the ratio of 2 :1. After how many months did Rahul join the business? [2002]

(a) 2 (b)3 (c) 4 (d)5

38. When the time in the wall-clock is 3.25 p.m., the acute angle between the hours-hand and the minutes-hand is [2002]

(a)  $60^\circ$  (b) $52.5^\circ$  (c) $47.5^\circ$  (d) $42^\circ$

39. The age of a man is three times the sum of the ages of his two sons. Five years hence, his age will be double of the sum of the ages of his sons. The father's present age is [2002]

(a)40 years (b)45years (c)50 years (d)55years

40. In a company 60% of the employees are men. Of these 40% are drawing more than Rs. 50,000 per year. If 36% of the total employees of the company draw more than Rs. 50,000 per year, what is the percentage of women who are drawing less than Rs.50,000 per year? [2002]

(a) 70 (b) 60 (c) 40 (d) 30

41. A trader fixed the price of an article in such a way that by giving a rebate of 10% on the price fixed, he made a profit of 15%. If the cost of the article is Rs.72, the price fixed on it, is [2002]

(a)Rs.82.80 (b)Rs.90.00 (c)Rs.92.00 (d)Rs.97.80

42. Three bells toll at intervals of 9, 12 and 15 minutes respectively. All the three begin to toll at 8 a.m. At what time will they toll together again? [2003]

(a)8.45 a.m. (b)10.30 a.m. (c)11.00 a.m. (d)1.30 p.m.

43. Left pan of a faulty weight weighs 100 gram more than its right pan. A shopkeeper keeps the weight measure in the left pan while buying goods but keeps





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it in the right pan while selling his goods. He uses only 1 kg weight measure. If he sells his goods at the listed cost price, what is his gain? [2005]

- (a)200/11% (b)100/11% (c)100/9% (d)200/9%

44. There are 6 persons; A, B, C, D, E and F. A has 3 items more than C

D has 4 items less than B

E has 6 items less than F

C has 2 items more than F

F has 3 items more than D

Which one of the following figures can not be equal to the total number of items possessed by all the 6 persons? [2005]

- (a) 41 (b) 4 (c) 53 (d) 58

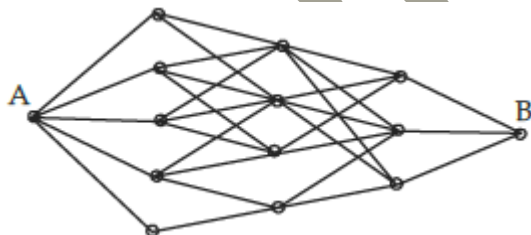
45. How many numbers are there in all from 6000 to 6999 (Both 6000 and 6999 included) having all digits same? [2006]

- (a)216 (b)356 (c)496 (d)504

46. Each of the five persons A, B, C, D and E possesses unequal number of similar items. A, B and C possess twenty-one items in all, while C, D and E possess seven items in all. How many items do A and B possess in all? [2006]

- (a) 15 (b)17 (c)18 (d)Data is insufficient

47. (Each small circle represents a different station) What is the maximum number of different paths that exist between the station A and the station B? [2007]



- (a) 28 (b) 31 (c) 33 (d) 35



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48.6 equidistant vertical lines are drawn on a board 6 equidistant horizontal lines are also drawn on the board cutting the 6 vertical lines, and the distance between any two consecutive horizontal lines is equal to that between any two consecutive vertical lines. What is the maximum number of squares thus formed? [2007]

(a) 37 (b) 55 (c) 126 (d) 225

49. A person has to completely put each of three liquids: 403 litres of petrol, 465 litres of diesel and 496 litres of Mobile Oil in bottles of equal size without mixing any of the above three types of liquids such that each bottle is completely filled. What is the least possible number of bottles required?

[2007]

(a) 34 (b) 44 (c) 46 (d) None of the above

50. If all the numbers from 501 to 700 are written, what is the total number of times does the digit 6 appear? [2007]

(a) 138 (b) 139 (c) 140 (d) 141

51. The average salary of 100 employees in an office is Rs.16,000 per month. The management decided to raise salary of every employee by 5% but stopped a transport allowance of Rs.800 per month which was paid earlier to every employee. What will be the new average monthly salary? [2007]

(a) Rs.16,000 (b) Rs.16,500  
(c) Rs.16,800 (d) Cannot be known since data are insufficient

52. In the series

AABABCABCDABCDE...

Which letter occupies the 100th position?

(a) H (b) I (c) J (d) K [2008]

53. What is the number of terms in the series 117, 120, 123, 126, ..., 333? [2008]



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(a) 72 (b) 73 (c) 76 (d) 79

54. A person purchases 100 pens at a discount of 10%. The net amount of money spent by the person to purchase the pens is ? 600. The selling expenses incurred by the person are 15% on the net cost price. What should be the selling price for 100 pens in order to earn a profit of 25%? [2008]

(a) Rs. 802.50 (b) Rs. 811.25 (c) Rs. 862.50 (d) Rs. 875

55. In an examination, 70% of the students passed in the Paper I, and 60% of the students passed in the Paper II. 15% of the students failed in both the papers while 270 students passed in both the papers. What is the total number of students?

[2008]

(a) 600 (b) 580 (c) 560 (d) 540

56. March 1, 2008 was Saturday. Which day was it on March 1, 2002? [2008]

(a) Thursday (b) Friday (c) Saturday (d) Sunday

57. There are four persons A, B, C, D; and A has some coins.

A gave half of the coins to B and 4 more besides. B gave half of the coins to C and 4 more besides. C gave half of the coins to D and 4 more besides. Both B and D end up with same number of coins. How many coins did A have originally?

[2009]

(a) 96 (b) 84 (c) 72 (d) 64

58. While adding the first few 'continuous natural numbers, a candidate missed one of the numbers and wrote the answer as 177. What was the number missed?

[2009]

(a) 11 (b) 12 (c) 13 (d) 14

59. Four metal rods of lengths 78 cm, 104 cm, 117 cm and 169 cm are to be cut into parts of equal length. Each part must be as long as possible. What is the maximum number of pieces that can be cut? [2009]



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a) 27 (b) 36 (c) 43 (d) 400

60. In an examination, there are three subjects A, B and C.

A student has to pass in each subject. 20% students failed in A, 22% students failed in B and 16% failed in C. The total number of students passing the whole examination lies between [2009]

(a) 42% and 84% (b) 42% and 78% (c) 58% and 78% (d) 58% and 84%

61. How many times are an hour hand and a minute hand of a clock at right angles during their motion from 1.00 p.m. to 10.00 p.m.? [2009]

(a) 9 (b) 10 (c) 18 (d) 20

62. There are 240 balls and  $n$  number of boxes  $B_1, B_2, B_3, \dots, B_n$ . The balls are to be placed in the boxes such that  $B_1$  should contain 4 balls more than  $B_2$ ,  $B_2$  should contain 4 balls more than  $B_3$ , and so on. Which one of the following cannot be the possible value of  $n$ ? [2009]

(a) 4 (b) 5 (c) 6 (d) 7

63. In a tournament 14 teams play league/matches. If each team plays against every other team only once then how many matches are played? [2010]

(a) 105 (b) 91 (c) 85 (d) 78

64. Two numbers  $X$  and  $Y$  are respectively 20% and 28% less than a third number  $Z$ . By what percentage is the number  $Y$  less than the number  $X$ ? [2010]

(a) 8% (b) 9% (c) 10% (d) 12%

65. How many numbers from 0 to 999 are not divisible by either 5 or 7? [2010]

(a) 313 (b) 341 (c) 686 (d) 786

66. In a group of five persons A, B, C, D and E, there is a professor, a doctor and Lawyer. A and D are unmarried ladies, and do not work. Of the married couple in



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the Group, E is the husband. B is the brother of A and is neither a doctor nor a lawyer. Who is the professor? [2010]

- (a) B (b)C (c) A (d) None of these

67. Half of the villagers of a certain village have their own houses. One-fifth of the villagers cultivate paddy. One-third of the villagers are literate. Four-fifth of the villagers are below twenty five. Then, which one of the following is certainly true? [2010]

- (a) All the villagers who have their own houses are literate  
(b) Some villagers under twenty five are literate  
(c) A quarter of the villagers who have their own houses cultivate paddy  
(d) Half of the villagers who cultivate paddy are literate

68. Each person's performance compared with all other persons is to be done to rank them subjectively. How many comparisons are needed in total, if there are 11 persons? [2010]

- (a) 66 (b) 55 (c) 54 (d) 45

69. A man fills a basket with eggs in such a way that the number of eggs added on each successive day is the same as the number already present in the basket. This way the basket gets completely filled in 24 day. After how many days the basket was  $\frac{1}{4}$ <sup>th</sup> full? [2010]

- (a) 6 (b) 12 (c) 17 (d) 22

70. The difference between the simple interest received from two banks on Rs.500 for two years is rs.2.50. What is the difference between their rates? [2010]

- (a) 0.25% (b) 0.5% (c) 1% (d) 2.5%

71. A candidate attempted 12 questions and secured full marks in all of them. If he obtained 60% in the test and all questions carried equal marks, then what is the number of questions in the test? [2010]

- (a) 36 (b) 30 (c) 25 (d) 20



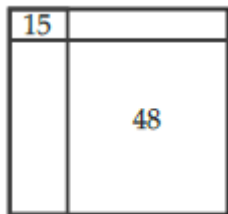
# SHAKTHI ACADEMY

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72. A contract on construction job specifies a penalty for delay in completion of the work beyond a certain date is as follows: Rs. 200 for the first day, Rs. 250 for the second day, Rs. 300 for the third day etc., the penalty for each succeeding day being Rs. 50 more than that of the preceding day. How much penalty should the contractor pay if he delays the work by 10 days? [2011-II]

(a) Rs. 4950 (b) Rs. 4250 (c) Rs. 3600 (d) Rs. 650

73. Consider the following figure and answer the item that follows:



A square is divided into four rectangles as shown above. The lengths of the sides of rectangles are natural numbers. The areas of two rectangles are indicated in the figure. What is the length of each side of the square? [2011-II]

(a) 10 (b) 11 (c) 15

(d) Cannot be determined as the given data are insufficient

74. A person has only Rs. 1 and Rs. 2 coins with her. If the total number of coins that she has is 50 and the amount of money with her is Rs. 75, then the number of Rs. 1 and Rs. 2 coins are, respectively [2011 -

II]

(a) 15 and 35 (b) 35 and 15 (c) 30 and 20 (d) 25 and 25

75. Three persons start walking together and their steps measure 40 cm, 42 cm and 45 cm respectively. What is the minimum distance each should walk so that each can cover the same distance in complete steps? [2011-II]

(a) 25 m 20 cm (b) 50 m 40 cm (c) 75 m 60 cm (d) 100 m 80 cm



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76. A student on her first 3 tests received an average score of  $N$  points. If she exceeds her previous average score by 20 points on her fourth test, then what is the average score for the first 4 tests ? [2011 - II]

(a)  $N + 20$  (b)  $N + 10$  (c)  $N + 4$  (d)  $N + 5$

77. In a group of persons, 70% of the persons are male and 30% of the persons are married. If two-sevenths of the males are married, what fraction of the females is single? [2011-II]

(a)  $2/7$  (b)  $1/3$  (c)  $3/7$  (d)  $2/3$

78. In a rare coin collection, there is one gold coin for every three non-gold coins. 10 more gold coins are added to the collection and the ratio of gold coins to non-gold coins would be 1 : 2. Based on the information, the total number of coins in the collection now becomes [2013-11]

(a) 90 (b) 80 (c) 60 (d) 50

79. A gardener has 1000 plants. He wants to plant them in such a way that the number of rows and the number of columns remains the same. What is the minimum number of plants that he needs more for this purpose? [2013-II]

(a) 14 (b) 24 (c) 32 (d) 34

80. A sum of Rs. 700 has to be used to give seven cash prizes to the students of a school for their overall academic performance. If each prize is Rs. 20 less than its preceding prize, what is the least value of the prize? [2013 - II]

(a) Rs. 30 (b) Rs. 40 (c) Rs. 60 (d) Rs. 80

81. Out of 120 applications for a post, 70 are male and 80 have a driver's license. What is the ratio between the minimum to maximum number of males having driver's license? [2013-II]

(a) 1 to 2 (b) 2 to 3 (c) 3 to 7 (d) 5 to 7



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82. In a garrison, there was food for 1000 soldiers for one month. After 10 days, 1000 more soldiers joined the garrison. How long would the soldiers be able to carry on with the remaining food? [2013 - II]

- (a) 25 days (b) 20 days (c) 15 days (d) 10 days

83. The tank-full petrol in Arun's motor-cycle lasts for 10 days. If he starts using 25% more everyday, how many days will the tank-full petrol last? [2013 - II]

- (a) 5 (b) 6 (c) 7 (d) 8

84. There are some balls of red, green and yellow colour lying on a table. There are as many red balls as there are yellow balls. There are twice as many yellow balls as there are green ones. The number of red balls. [2013-11]

- (a) is equal to the sum of yellow and green balls  
(b) is double the number of green balls.  
(c) is equal to yellow balls minus green balls.  
(d) cannot be ascertained.

85. For a charity show, the total tickets sold were 420. Half of these tickets were sold at the rate of Rs.5 each, one-third at the rate of Rs.3 each and the rest for Rs.2 each. What was the total amount received? [2014 - II]

- (a) Rs.900 (b) Rs.1,540 (c) Rs.1,610 (d) Rs.2,000

86. If Sohan, while selling two goats at the same price, makes a profit of 10% on one goat and suffers a loss of 10% on the other [2014 - II]

- (a) he makes no profit and no loss.  
(b) he makes a profit of 1%.  
(c) he suffers a loss of 1%.  
(d) he suffers a loss of 2%.





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87. Five persons fire bullets at a target at an interval of 6, 7, 8, 9 and 12 seconds respectively. The number of times they would fire the bullets together at the target in an hour is [2014-11]

(a) 6 (b) 7 (c) 8 (d) 9

88. A bell rings every 18 minutes. A second bell rings every 24 minutes. A third bell rings every 32 minutes. If all the three bells ring at the same time at 8 o'clock in the morning, at what other time will they all ring together? [2014-11]

(a) 12:40 hrs (b) 12:48 hrs (c) 12:56 hrs (d) 13:04 hrs

89. As per agreement with a bank, a businessman had to refund a loan in some equal instalments without interest. After paying 18 instalments he found that 60 percent of his loan was refunded. How many instalments were there in the agreement? [2014-II]

(a) 22 (b) 24 (c) 30 (d) 33

90. A person X has four notes of Rupee 1, 2, 5 and 10 denomination. The number of different sums of money she can form from them is [2010]

(a) 16 (b) 15 (c) 12 (d) 8

91. There are 100 students in a particular class. 60% students play cricket, 30% student play football and 10% students play both the games. What is the number of students who play neither cricket nor football? [2011-11]

(a) 25 (b) 20 (c) 18 (d) 15

92. Each of A, B, C and D has Rs. 100. A pays Rs. 20 to B, who pays Rs. 10 to C, who gets Rs. 30 from D. In this context, which one of the following statements is not correct? [2015-II]

(a) C is the richest (b) D is the poorest.



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- (c) C has more than what A and D have together.  
(d) B is richer than D

93. In a town, 45% population read magazine A, 55% read magazine B, 40% read magazine C, 30% read magazines A and B, 15% read magazines B and C, 25% read magazines A and C; and 10% read all the three magazines. What percentage do not read any magazine? [2015-11]

- (a) 10% (b) 15% (c) 20% (d) 25%

94. Two equal glasses of same type are respectively  $\frac{1}{3}$  and  $\frac{1}{4}$  full of milk. They are then filled up with water and the contents are mixed in a pot. What is the ratio of milk and water in the pot? [2015-11]

- (a) 7:17 (b) 1:3 (c) 9:21 (d) 11:23

95. In a test, a candidate attempted only 8 questions and secured 50% marks in each of the questions. If he obtained a total of 40% in the test and all questions in the test carried equal marks, how many questions were there in the test?

[2015-11]

- (a) 8 (b) 10 (c) 15 (d) 16

96. A father is nine times as old as his son and the mother eight times as old as the son. The sum of the father's and the mother's age is 51 years. What is the age of the son? [2015-11]

- (a) 7 years (b) 5 years (c) 4 years (d) 3 years

97. The monthly incomes of Peter and Paul are in the ratio of 4:3. Their expenses are in the ratio of 3:2. If each saves Rs.6,000 at the end of the month, their monthly incomes respectively are (in Rs.) [2015-II]

- (a) 24,000 and 18,000 (b) 28,000 and 21,000  
(c) 32,000 and 24,000 (d) 34,000 and 26,000



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**DIRECTIONS (Qs. 98-99) :** Read the following passage and answer the 2 (two) items that follow:

A, B, C, D, E and F are cousins. No two cousins are of the same age, but all have birthdays on the same day of the same month. The youngest is 17 years old and the oldest E is 22 years old. F is somewhere between B and D in age. A is older than B. C is older than D. A is one year older than C.

[2015-II]

98. Which one of the following is possible?

- (a) D is 20 years old    (b) F is 18 years old  
(c) F is 19 years old    (d) F is 20 years old

99. What is the number of logically possible orders of all six cousins in terms of increasing age?

- (a) 1                    (b) 2    (c) 3    (d) 4

100. A cow costs more than 4 goats but less than 5 goats. If a goat costs between Rs.600 and Rs.800, which of the following is a most valid conclusion? [2015-11]

- (a) A cow costs more than Rs. 2,500.  
(b) A cow costs less than RS. 3,600.  
(c) A cow costs between Rs. 2,600 and Rs.3,800.  
(d) A cow costs between Rs.2,400 and Rs.4,000.

101. Candidates in a competitive examination consisted

of 60% men and 40% women. 70% men and 75% women cleared the qualifying test and entered the final test where 80% men and 70% women were successful.

Which of the following statements is correct? [2015-11]

- (a) Success rate is higher for women.  
(b) Overall success rate is below 50%.  
(c) More men cleared the examination than women.  
(d) Both (a) and (b) above are correct.



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## Prelims 2018 CSAT

1. A number consists of three digits of which the middle one is zero and their sum is 4. If the number formed by interchanging the first and last digits is greater than the number itself by 198, then the difference between the first and last digits is  
(a) 1                      (b) **2**                      (c) 3                      (d) 4
2. A solid cube of 3 cm side, painted on all its faces, is cut up into small cubes of 1 cm side. How many of the small cubes will have exactly two painted faces?  
(a) 12                      (b) 8                      (c) 6                      (d) **4**
3. While writing all the numbers from 700 to 1000, how many numbers occur in which the digit at hundred's place is greater than the digit at ten's place, and the digit at ten's place is greater than the digit at unit's place?  
(a) **61**                      (b) 64                      (c) 85                      (d) 91
4. If  $\text{Pen} < \text{Pencil}$ ,  $\text{Pencil} < \text{Book}$  and  $\text{Book} > \text{Cap}$ , then which one of the following is always true?  
(a)  $\text{Pen} > \text{Cap}$                       (b)  **$\text{Pen} < \text{Book}$**                       (c)  $\text{Pencil} = \text{Cap}$                       (d)  $\text{Pencil} > \text{Cap}$
5. A bookseller sold 'a' number of Geography textbooks at the rate of Rs. x per book, 'a + 2' number of History textbooks at the rate of Rs. (x + 2) per book and 'a - 2' number



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of Mathematics

textbooks at the rate of Rs.  $(x - 2)$  per book. What is his total sale in Rs. ?

- (a)  $3x + 3a$             (b)  **$3ax + 8$**             (c)  $9ax$             (d)  $x^3 a^3$

6. A bag contains 15 red balls and 20 black balls. Each ball is numbered either 1 or 2 or 3. 20% of the red balls are numbered 1 and 40% of them are numbered 3. Similarly, among the black balls, 45% are numbered 2 and 30% are numbered 3. A boy picks a ball at random. He wins if the ball is red and numbered 3 or if it is black and numbered 1 or 2. What are the chances of his winning? 1 (a) -2

- (a)  $\frac{1}{2}$             (b)  **$\frac{4}{7}$**             (c)  $\frac{5}{9}$             (d)  $\frac{12}{13}$

7. Two persons, A and B are running on a circular track. At the start, B is ahead of A and their positions make an angle of  $30^\circ$  at the centre of the circle. When A reaches the point diametrically opposite to his starting point, he meets B. What is the ratio of speeds of A and B, if they are running with uniform speeds?

- (a)  **$6 : 5$**             (b)  $4 : 3$             (c)  $6 : 1$             (d)  $4 : 2$

8. A student has to get 40% marks to pass in an examination. Suppose he gets 30 marks and fails

by 30 marks, then what are the maximum marks in the examination?

- (a) 100            (b) 120            (c) **150**            (d) 300

9. 19 boys turn out for playing hockey. Of these, 11 are wearing hockey shirts and 14 are wearing

hockey pants. There are no boys without shirts and pants. What is the number of



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boys wearing  
full uniform?

- (a) 3            (b) 5            (c) 6            (d) 8

## Directions for the following 6 (six) items:

Read the information given below and answer the six items that follow.

A, B, C and D are students. They are studying in four different cities, viz., P, Q, R and S (not necessarily in that order). They are studying in Science college, Arts college, Commerce college and Engineering college (not necessarily in that order), which are situated in four different States, viz., Gujarat, Rajasthan, Assam and Kerala (not necessarily in that order). Further, it is given that—

- (i) D is studying in Assam
- (ii) Arts college is located in city S which is in Rajasthan
- (iii) A is studying in Commerce college
- (iv) B is studying in city Q
- (v) Science college is located in Kerala

10. A is studying in

- (a) Rajasthan            **(b) Gujarat**            (c) city Q            (d) Kerala

11. Science college is located in

- (a) city Q            **(b) city S**            (c) city R            (d) city P

12. C is studying in

- (a) Science college            **(b) Rajasthan**            (c) Gujarat            (d) city Q



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13. Which one of the following statements is correct?

- (a) **D is not studying in city S.**
- (b) A is studying in Science college.
- (c) A is studying in Kerala.
- (d) Engineering college is located in Gujarat.

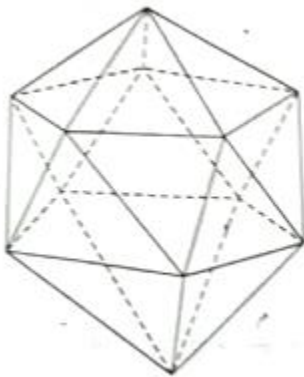
14. Which one of the following statements is correct regarding Engineering college?

- (a) C is studying there.
- (b) B is studying there.
- (c) It is located in Gujarat.
- (d) **D is studying there.**

15. Which one of the following statements is correct?

- (a) **Engineering college is located in Assam.**
- (b) City Q is situated in Assam
- (c) C is studying in kerala.
- (d) B is studying in Gujarat.

16. Consider the following three- dimensional figure



How many triangles does the above figure have?



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- (a) 18      **(b) 20**      (c) 22      (d) 24

17. Consider the following sum:

$$\bullet + 1 + \bullet + 2 + \bullet + \bullet + 3 + \bullet + 1 = 21 + \bullet$$

In the above sum,  $\bullet$  stands for

- (a) 4      (b) 5      (c) 6      **(d) 8**

18. Consider the following pattern of numbers :

8 10 15 13

6 5 7 4

4 6 8 8

6 11 16 ?

What is the number at? in the above pattern?

- (a) 17**      (b) 19      (c) 21      (d) 23

19. How many diagonals can be drawn by joining the vertices of an octagon?

- (a) 20**      (b) 24      (c) 28      (d) 64

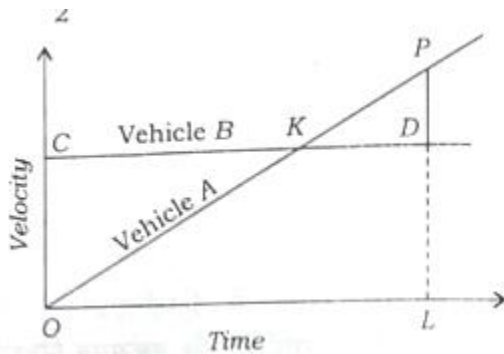
20. The figure drawn below gives the velocity graphs of two vehicles A and B. The straight line OKP represents the velocity of vehicle A at any instant, whereas the horizontal straight line CKD represents the velocity of vehicle B at any instant. In the figure, D is the point where perpendicular from P meets the horizontal line CKD such that  $PD = \frac{1}{2} LD$  :





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What is the ratio between the distances covered by vehicles A and B in the time interval OL?

- (a) 1 : 2            (b) 2 : 3            (c) 3 : 4            (d) 1 : 1

21. A grain 200 metres long is moving at the rate of 40 kmph. In how many seconds will it cross a man standing near the railway line?

- (a) 12            (b) 15            (c) 16            (d) 18

**Directions for the following 4 (four) items :**

Read the following four passage's and answer the items that follow. Your answers to these items should be based on the passages only.

## Passage-1

Global population was around 1.6 billion in 1990—today it is around 7.2 billion and growing.

Recent estimates on population growth predict a global population of 9.6 billion in 2050 and 10.9 billion in 2100. Unlike Europe and North America, where only three to four per cent of population is engaged in agriculture, around 47 per cent of India's population is dependent upon agriculture. Even if India continues to do well in the service sector and the manufacturing sector picks up, it is expected that



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around 2030 when India overtakes China as the world's most populous country, nearly 42 per cent of India's population will still be predominantly dependent on agriculture.

22. Which of the following is the most logical and rational inference that can be made from the above passage?

- (a) Prosperity of agriculture sector is of critical importance to India.
- (b) Indian economy greatly depends on its agriculture.**
- (c) India should take strict measures to control its rapid population growth.
- (d) India's farming communities should switch over to other occupations to improve their economic conditions.

Passage-2

Many pathogens that cause foodborne illnesses are unknown. Food contamination can occur at any stage from farm to plate. Since most cases of food poisoning go unreported, the true extent of global foodborne illnesses is unknown, improvements in international monitoring have led to greater public awareness, yet the rapid globalization of food production increases consumers' vulnerability by making food harder to regulate and trace. "We have the world on our plates", says an official of WHO.

23. Which of the following is the most logical corollary to the above passage?

- (a) With more options for food come more risks.**
- (b) Food processing is the source of all foodborne illnesses.
- (c) We should depend on locally produced food only.
- (d) Globalization of food production should be curtailed.



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## Passage-3

I am a scientist, privileged to be somebody who tries to understand nature using the tools of science. But it is also clear that there are some really important questions that science cannot really answer, such as : Why is there something instead of nothing? Why are we here? In those domains, I have found that faith provides a better oath to answers. I find it odd y anachronistic that in today's culture there seems to be a widespread presumption that scientific and spiritual views are incompatible.

24. Which of the following is the most logical and rational inference that can be made from the above passage?

- (a) It is the faith and not science that can finally solve all the problems of mankind.
- (b) Science and faith can be mutually complementary if their proper domains are understood.**
- (c) There are some very fundamental questions which cannot be answered by either science or faith.
- (d) In today's culture, scientific views are given more importance than spiritual views.

## Passage-4



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Though I have discarded much of past tradition and custom, and am anxious that India should rid herself of all shackles that bind and contain her and divide her people, and suppress vast numbers of them, and prevent the free development of the body and the spirit; though I seek all this, yet I do not wish to cut myself off from that past completely. I am proud of that great inheritance that has been and is, ours and I am conscious that I too, like all of us, am a link in that unbroken chain which goes back to the dawn of history in the immemorial past of India.

25. The author wants India to rid herself of certain past bonds because

- (a) he is not able to see the relevance of the past
- (b) there is not much to be proud of
- (c) he is not interested in the history of India
- (d) they obstruct her physical and spiritual growth**

## Directions for the following 8 (eight) items

Read the following eight passages and answer the items that follow. Your answers to these items should be based on the passages only.

### Passage-1

All actions to address climate change ultimately involve costs. Funding is vital in order for countries like India to design and implement adaptation and mitigation plans and projects. The problem is more severe for developing countries like India, which would be one of



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the hardest hit by climate change, given its need to finance development. Most countries do indeed treat climate change as real threat and are striving to address it in a more comprehensive and integrated manner with the limited resources at their disposal.

26. With reference to the above passage, the following assumptions have been made:

1. Climate change is not a challenge for developed countries.
2. Climate change is a complex policy issue and also a development issue for many countries.
3. Ways and means of finance must be found to enable developing countries to enhance their adaptive capacity.

Which of the above assumptions is/are valid?

- (a) 1 and 2 only                      (b) 3 only                      (c) 2 and 3 only                      (d) 1,2 and 3

## Passage-2

Cooking with biomass and coal in India is now recognized to cause major health problems, with

women and children in poor populations facing the greatest risk. There are more than 10 lakh

premature deaths each year from household air pollution due to polluting cooking fuels with

another 1.5 lakh due to their contribution to general outdoor air pollution in the country.

Although the fraction of the Indian population using clean cooking fuels, such as



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LPG, natural gas and electricity, is slowly rising, the number using polluting solid fuels as their primary cooking fuel has remained static for nearly 30 years at about 70 crore.

27. Which of the following is the most crucial and logical inference that can be made from the above passage?

- (a) Rural people are giving up the use of polluting solid fuels due to their increasing awareness of health hazards.
- (b) Subsidizing the use of clean cooking fuels will solve the problem of India's indoor air pollution.
- (c) India should increase its import of natural gas and produce more electricity.
- (d) Access to cooking gas can reduce premature deaths in poor households.**

## Passage-3

Scientific knowledge has its dangers, but so has every great thing. Over and beyond the dangers with which it threatens the present, it opens up as nothing else can, the vision of a possible happy world; a world without poverty, without war, with little illness. Science, whatever unpleasant consequences it may have by the way, is in its very nature a liberator.

28. Which one of the following is the most important implication of the passage?

- (a) A happy world is a dream of science.
- (b) Science only can build a happy world, but it is also the only major threat.
- (c) A happy world is not possible without science.**
- (d) A happy world is not at all possible with or without science.



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## Passage-4

The Arctic's vast reserves of fossil fuel, fish and minerals are now accessible for a longer period in a year. But unlike Antarctica, which is protected from exploitation by the Antarctic Treaty framed during the Cold War and is not subject to territorial claims by any country, there is no legal regime protecting the Arctic from industrialization, especially at a time when the world craves for more and more resources. The distinct possibility of ice-free summer has prompted countries with Arctic coastline to scramble for great chunks of the melting ocean.

29. Which one of the following is the most important implication of the passage?
- (a) India can have territorial claims in the Arctic territory and free access to its resources.
  - (b) Melting of summer ice in the Arctic leads to changes in the geopolitics.**
  - (c) The Arctic region will solve the world's future problem of resource crunch.
  - (d) The Arctic region has more resources than Antarctica.

## Passage-5

Being a member of the WTO, India is bound by the agreements that have been signed and ratified by its members, including itself. According to Article 6 of the Agriculture Agreement, providing minimum support prices for agricultural products is considered distorting and is subject to limits. The subsidy arising from 'minimal supports' cannot exceed 10 per cent of the value of agricultural production for developing countries. PDS in India entails minimum support prices and public stockholding of food grains, it is possible that in some years, the subsidy to producers will exceed 10 per cent of the value of agricultural production.



# SHAKTHII ACADEMY

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30. What is the crucial message conveyed by the above passage?

- (a) **India should revise its PDS.**
- (b) India should not be a member of WTO.
- (c) For India, food security collides with trade.
- (d) India provides food security to its poor.

## Passage-6

India's educational system is modelled on the mass education system that developed in the 19th century in Europe and later spread around the world. The goal of the system is to condition children as 'good' citizens and productive workers. This suited the industrial age that needed the constant supply of a compliant workforce with a narrow set of capabilities. Our educational institutes resemble factories with bells, uniforms and batch-processing of learners, designed to get learners to conform. But, from an economic point of view, the environment today is very different. It is a complex, volatile and globally interconnected world.

31. With reference to the above passage, the following assumptions have been made:

1. India continues to be a developing country essentially due to its faulty education system.
2. Today's learners need to acquire new-age skill-sets.
3. A good number of Indians go to some developed countries for education because the educational systems there are a perfect reflection of the societies in which they function.





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Which of the above assumptions is/are valid?

- (a) 1 and 3 only                      (b) **2 only**                      (c) 2 and 3 only                      (d) 1,2 and 3

## Passage-7

The practice of dieting has become an epidemic; everyone is looking out for a way to attain that

perfect body. We are all different with respect to our ethnicity, genetics, family history, gender,

age, physical and mental and spiritual health status, lifestyles and preferences.

Thereby we also

differ in what foods we tolerate or are sensitive to. So we really cannot reduce so many

complexities into one diet or diet book. This explains the failure of diets across the world in

curbing obesity. Unless the reasons for weight gain are well understood and addressed and

unless habits are changed permanently, no diet is likely to succeed.

32. What is the most logical and rational inference that can be made from the above passage?

- (a) Obesity has become an epidemic all over the world.  
(b) A lot of people are obsessed with attaining a perfect body.  
(c) Obesity is essentially an incurable disease.  
(d) **There is no perfect diet or one solution for obesity.**

## Passage-8

Monoculture carries great risks. A single disease or pest can wipe out swathes of the world's food

production, an alarming prospect given that its growing and wealthier population will eat 70%



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more by 2050. The risks are magnified by the changing climate. As the planet warms and monsoon rains intensify, farmlands in Asia will flood. North America will suffer more intense droughts, and crop diseases will spread to new latitudes.

33. Which of the following is the most logical, rational and crucial message given by the passage?

**(a) Preserving crop genetic diversity is an insurance against the effects of climate change.**

(b) Despite great risks, monoculture is the only way to ensure food security in the world.

(c) More and more genetically modified crops only can save the world from impending shortages of food.

(d) Asia and North America will be worst sufferers from climate change and the consequent shortage of food.

34. A shopkeeper sells an article at Rs. 40 and gets X% profit. However, when he sells it at Rs. 20, he faces same percentage of loss. What is the original cost of the article?

(a) Rs. 10

(b) Rs. 20

(c) **Rs. 30**

(d) Rs. 40

35. There are 24 equally spaced points lying on the circumference of a circle. What is the maximum number of equilateral triangles that can be drawn by taking sets of three points as the vertices?

(a) 4

(b) 6

(c) 8

(d) 12



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36. Consider the sequence given below:

$4/12/95, 1/1/96, 29/1/96, 26/2/96, \dots$

What is the next term of the series?

- (a)  $24/3/96$                       (b)  **$25/3/96$**                       (c)  $26/3/96$                       (d)  $27/3/96$

37. Twelve equal squares are placed to fit in a rectangle of diagonal 5 cm. There are three rows

containing four squares each. No gaps are left between adjacent squares. What is the area of each square?

- (a)  $5/7$  sq cm                      (b)  $7/5$  sq cm                      (c) 1 sq cm                      (d)  $25/12$  sq cm

38. If LSJXVC is the code for MUMBAI, the code for DELHI is

- (a) **CCIDD**                      (b) CDKGH                      (c) CCJFG                      (d) CCIFE

39. If RAMON is written as 12345 and DINESH as 675849, then HAMAM will be written

- (a) 92233                      (b) **92323**                      (c) 93322                      (d) 93232

40. If X is between -3 and -1, and Y is between -1 and 1, then  $X^2 - Y^2$  is in between which of the following?

- (a) -9 and 1                      (b) -9 and -1                      (c) **0 and 8**                      (d) 0 and 9

41. X and Y are natural numbers other than 1, and Y is greater than X. Which of the following represents the largest number?

- (a) XY                      (b) X / Y                      (c) Y / X                      (d)  $(X + Y) / XY$



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42. If E sits in his office and faces the corridor, whose office is to his left?

- (a) A            (b) **B**            (c) C            (d) D

43. Who is/are P's immediate neighbour/ neighbours?

- (a) **A only**            (b) A and D            (c) C only            (d) B and C

## Directions for the following 7 (seven) items:

Read the following four passages and answer the items that follow. Your answers to these items should be based on the passages only.

### Passage-1

'Desertification' is a term used to explain a process of decline in the biological productivity of an ecosystem, leading to total loss of productivity. While this phenomenon is often linked to the arid, semi-arid and sub-humid ecosystems, even in the humid tropics, the impact could be most dramatic. Impoverishment of human-impacted terrestrial ecosystems may exhibit itself in a variety of ways: accelerated erosion as in the mountain regions of the country, salinization of land as in the semi-arid and arid 'green revolution' areas of the country, e.g., Haryana and western Uttar Pradesh, and site quality decline—a common phenomenon due to general decline in tree cover and monotonous monoculture of rice/wheat across the Indian plains. A major consequence of deforestation is that it relates to adverse alterations in the hydrology and related soil and nutrient losses. The consequences of deforestation invariably arise out of site degradation through erosive losses. Tropical Asia, Africa and South America have the highest levels of erosion. The already high rates for the tropics are increasing at an alarming rate (e.g., through the major river systems—Ganga and



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Brahmaputra, in the Indian context), due to deforestation and ill-suited land management practices subsequent to forest clearing, in the mountain context, the declining moisture retention of the mountain soils, drying up of the underground springs and smaller rivers in the Himalayan region could be attributed to drastic changes in the forest cover. An indirect consequence is drastic alteration in the upland-lowland interaction, mediated through water. The current concern the tea planter of Assam has is about the damage to tea plantations due to frequent inundation along the flood-plains of Brahmaputra, and the damage to tea plantation and the consequent loss in tea productivity is due to rising level of the river bottom because of siltation and the changing course of the river system. The ultimate consequences of site desertification are soil degradation, alteration in available water and its quality, and the consequent decline in food, fodder and fuel-wood yields essential for the economic well-being of rural communities.

44. According to the passage, which of the following are the consequences of decline in forest cover?

1. Loss of topsoil
2. Loss of smaller rivers
3. Adverse effect on agricultural production
4. Declining of groundwater

Select the correct answer using the code given below.

- (a) **1, 2 and 3 only**      (b) 2, 3 and 4 only      (c) 1 and 4 only      (d) 1, 2, 3 and 4

45. Which of the following is/are the correct inference/ inferences that can be made from the passage?

1. Deforestation can cause changes in the course of rivers.
2. Salinization of land takes place due to human activities only.



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3. Intense monoculture practice in plains is a major reason for desertification in Tropical Asia, Africa and South America.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 and 3 only**
- (d) None of the above is a correct inference

46. With reference to 'desertification', as described in the passage, the following assumptions have been made:

- 1. Desertification is a phenomenon in tropical areas only.
- 2. Deforestation invariably leads to floods and desertification.

Which of the above assumptions is/are valid?

- (a) 1 only
- (b) 2 only**
- (c) Both 1 and 2
- (d) Neither 1 nor 2

## Passage-2

A diversity of natural assets will be needed to cope with climate change and ensure productive agriculture, forestry, and fisheries. For example, crop varieties are needed that perform well under drought, heat and enhanced CO<sub>2</sub>. But the private-sector and farmer-led process of choosing crops favours homogeneity adapted to past or current conditions, not varieties capable of producing consistently high yields in warmer, wetter, or drier conditions.



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Accelerated breeding programmes are needed to conserve a wider pool of genetic resources of existing crops, breeds, and their wild relatives. Relatively intact ecosystems, such as forested catchments, mangroves, wetlands, can buffer the impacts of climate change. Under a changing climate, these ecosystems are themselves at risk, and management approaches will need to be more proactive and adaptive. Connections between natural areas, such as migration corridors, may be needed to facilitate species movements to keep up with the change in climate.

47. With reference to the above passage, which of the following would assist us in coping with the climate change?

1. Conservation of natural water sources
2. Conservation of wider gene pool
3. Existing crop management practices
4. Migration corridors

Select the correct answer using the code given below.

- (a) 1, 2 and 3 only      (b) **1,2 and 4 only**      (c) 3 and 4 only      (d) 1,2, 3 and 4

48. With reference to the above passage, the following assumptions have been made:

1. Diversification of livelihoods acts as a coping strategy for climate change.
2. Adoption of monocropping practice leads to the extinction of plant varieties and their wild relatives.

Which of the above assumptions is/are valid?

- (a) **1 only**      (b) 2 only      (c) Both 1 and 2      (d) Neither 1 nor 2

**Passage-3**



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Today, the top environmental challenge is a combination of people and their aspirations, if the aspirations are more like the frugal ones we had after the Second World War. a lot more is possible than if we view the planet as a giant shopping mall. We need to get beyond the fascination with glitter and understand that the planet works as a biological system.

Today, the top environmental challenge is a combination of people and their aspirations, if the aspirations are more like the frugal ones we had after the Second World War. a lot more is possible than if we view the planet as a giant shopping mall. We need to get beyond the fascination with glitter and understand that the planet works as a biological system.

49. Which of the following is the most crucial and logical inference that can be made from the above passage?

- (a) **The Earth can meet only the basic needs of humans for food, clothing and shelter.**
- (b) The only way to meet environmental challenge is to limit human population.
- (c) Reducing our consumerism is very much in our own interest.
- (d) Knowledge of biological systems can only help us save this planet.

## Passage-4

Some people believe that leadership is a quality which you have at birth or not at all. This theory is false, for the art of leadership can be acquired and can indeed be taught. This discovery is made in time of war and the results achieved can surprise even the instructors. Faced with the





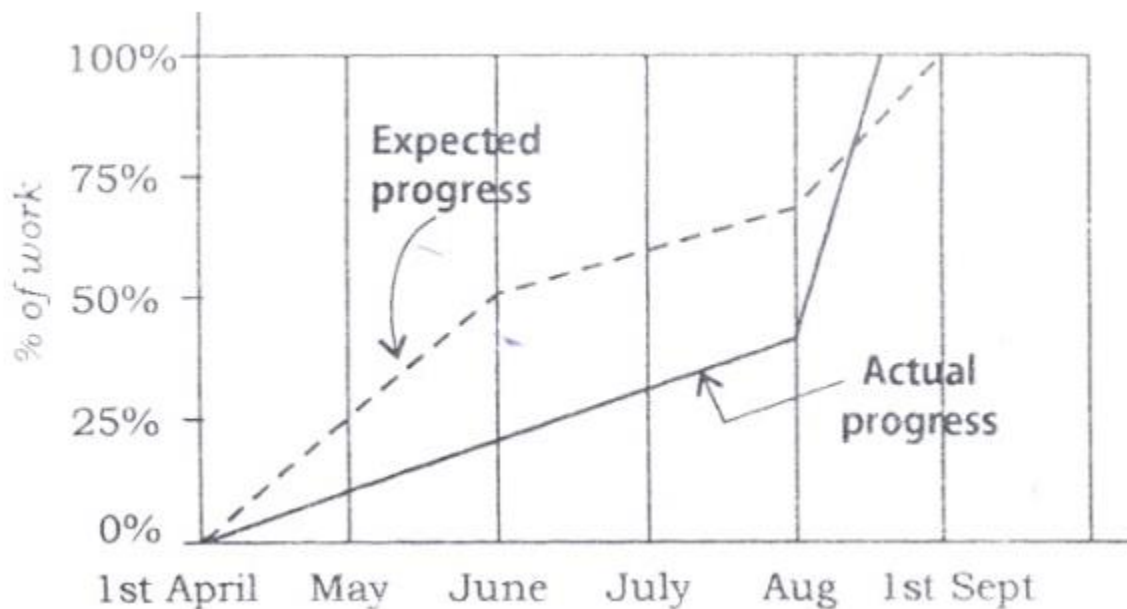
# SHAKTHII ACADEMY

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alternatives of going left or right every soldier soon grasps that a prompt decision either way is better than an endless discussion. A firm choice of direction has an even chance of being right while to do nothing will be almost certainly wrong.

50. The author of the passage holds the view that
- (a) leadership can be taught through war experience only
  - (b) leadership can be acquired as well as taught**
  - (c) the results of training show that more people acquire leadership than are expected
  - (d) despite rigorous instruction, very few leaders are produced

51. Consider the following graph :





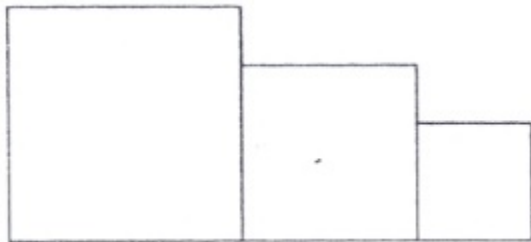
# SHAKTHII ACADEMY

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Which one of the following statements is not correct with reference to the graph given above?

- (a) On 1 st June, the actual progress of work was less than expected.
- (b) The actual rate of progress of work was the greatest during the month of August,
- (c) The work was actually completed before the expected time.
- (d) During the period from 1st April to 1st September, at no time was the actual progress more than the expected progress.**

52. For a sports meet a winners' stand comprising three wooden blocks is in the following form :



There are six different colours available to choose from and each of the three wooden blocks is to be painted such that no two of them has the same colour. In how many different ways can the winners' stand be painted?

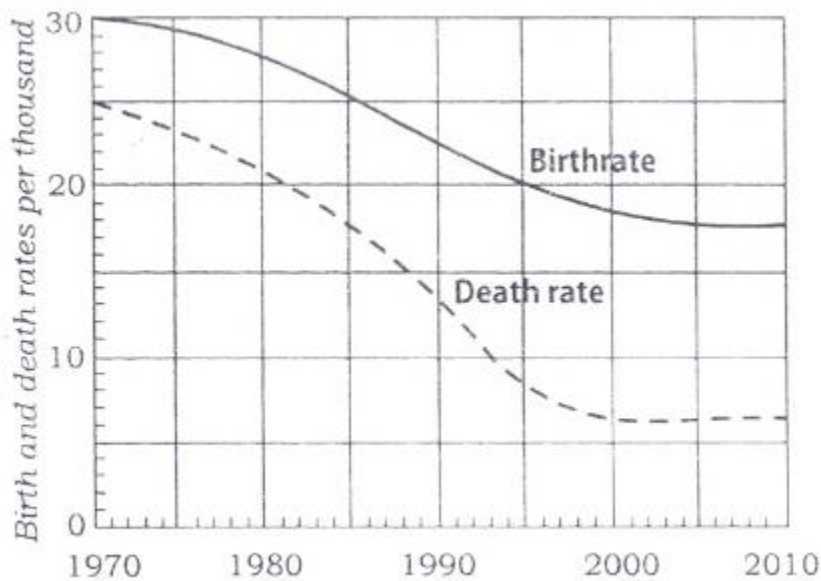
- (a) 120**
- (b) 81
- (c) 66
- (d) 36

Consider the following graph in which the birthrate and death rate of a country are given, and answer the two items that follow.



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53. Looking at the graph, it can be inferred that from 1990 to 2010

- (a) population growth rate has increased
- (b) population growth rate has decreased**
- (c) growth rate of population has remained stable
- (d) population growth rate shows no trend

54. With reference to the above graph, consider the following statements considering 1970 as base year:

1. Population has stabilized after 35 years.
2. Population growth rate has stabilized after 35 years.
3. Death rate has fallen by 10% in the first 10 years.
4. Birthrate has stabilized after 35 years.

Which of the above are the most logical and rational statements that can be made from the above graph?



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(a) 1 and 2 only

(b) 1,2 and 3

(c) 3 and 4

(d) 2 and 4

55. Average hourly earnings per year (E) of the workers in a firm are represented in figures A and B as follows:

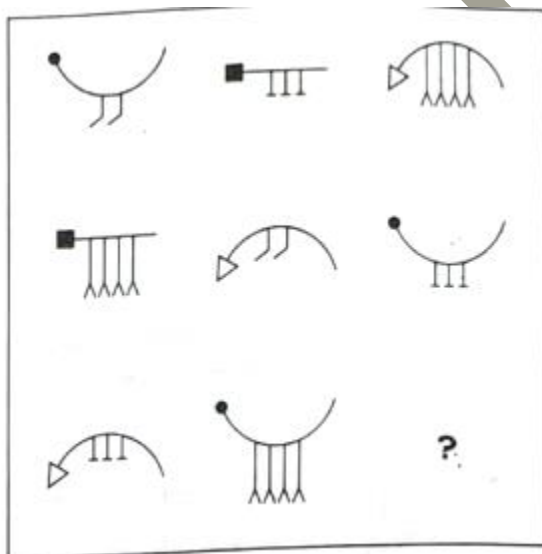
(a) values of E are different

(b) ranges (i.e.. the difference between the maximum and the minimum) of E are different

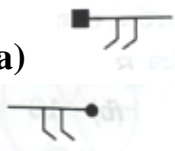
(c) slopes of the graphs are same

(d) rates of increase of E are different

56. Consider the figures given below:



(a)



(b)



(c)



(d)



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57. Consider the following figures A and B :

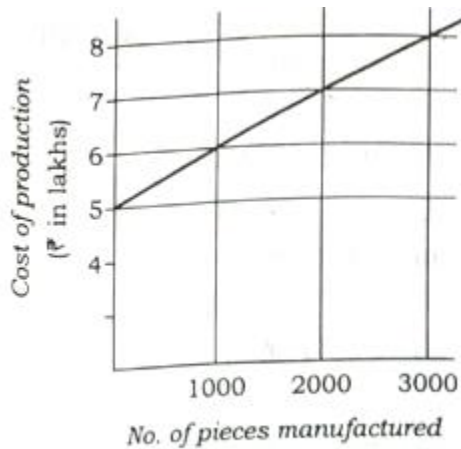


Fig. A

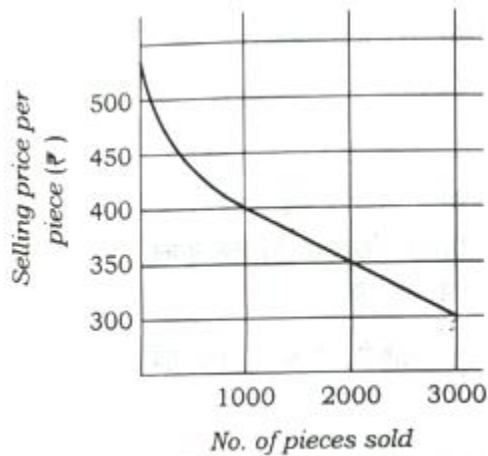


Fig. B

The manufacturing cost and projected sales for a product are shown in the above figures A and B respectively. What is the minimum number of pieces that should be manufactured to avoid a loss?

- (a) 2000                      (b) 2500                      (c) 3000                      (d) 3500



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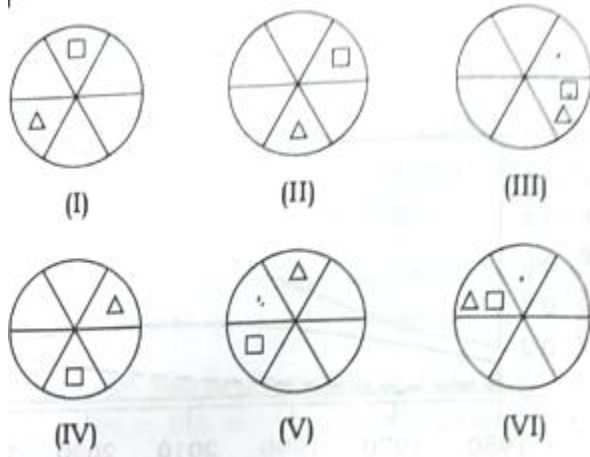
58. A lift has the capacity of 18 adults or 30 children. How many children can board the lift with 12 adults?

- (a) 6                      (b) **10**                      (c) 12                      (d) 15

59. A person bought a refrigerator worth Rs. 22,800 with 12.5% interest compounded yearly. At the end of first year he paid Rs. 8,650 and at the end of second year Rs. 9,125. How much will he have to pay at the end of third year to clear the debt?

- (a) Rs. 9,990                      (b) Rs. 10,000                      (c) Rs. 10,590                      (d) **Rs. 11,250**

60. Consider the following figures :

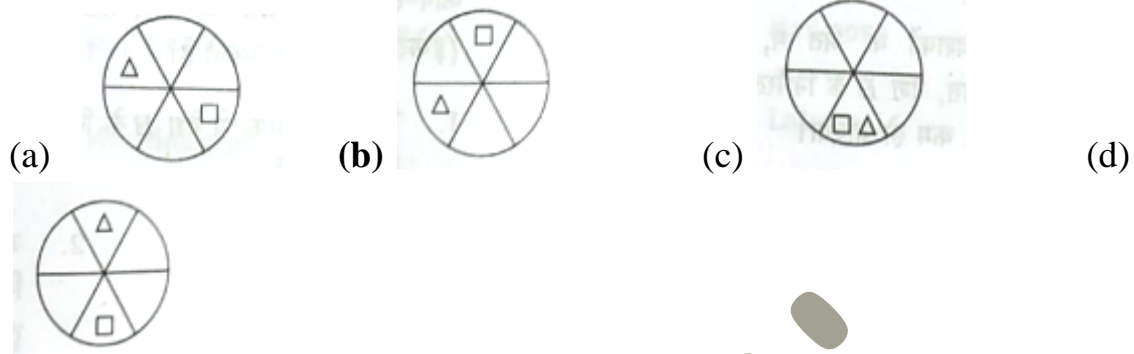


In the figures (I) to (VI) above, some parts are shown to change their positions in regular directions. Following the same sequence, which of the figures given below will appear at (VII) stage?

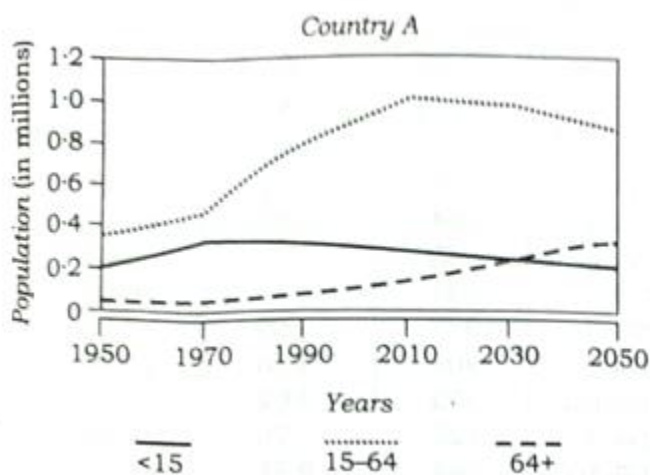


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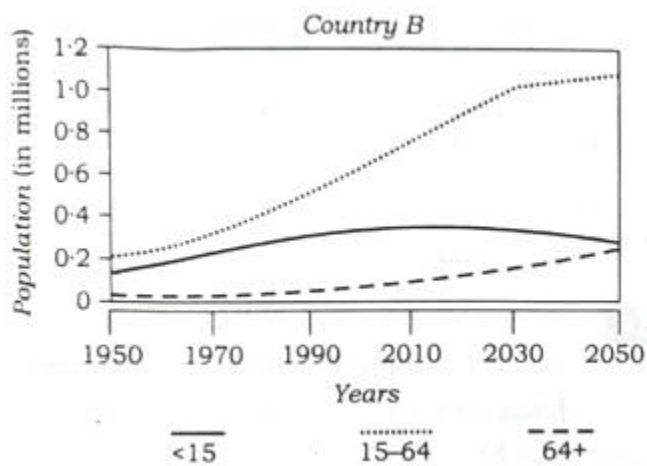
61. Consider the following graphs. The curves in the graphs indicate different age groups in the populations of two countries A and B over a period of few decades:





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With reference to the above graphs, which of the following are the most logical and rational inferences that can be made?

1. Over the last two and a half decades, the dependency ratio for country B has decreased.
2. By the end of next two and a half decades, the dependency ratio of country A will be much less than that of country B.
3. In the next two decades, the work-force relative to its total population will increase in country B as compared to country A.

Select the correct answer using the code given below.

- (a) 1 and 2 only      (b) **2 and 3 only**      (c) 1 and 3 only      (d) 1,2 and 3

62. Lakshmi, her brother, her daughter and her son are badminton players. A game of doubles is about to begin:

- (i) Lakshmi's brother is directly across the net from her daughter.





# SHAKTHI ACADEMY

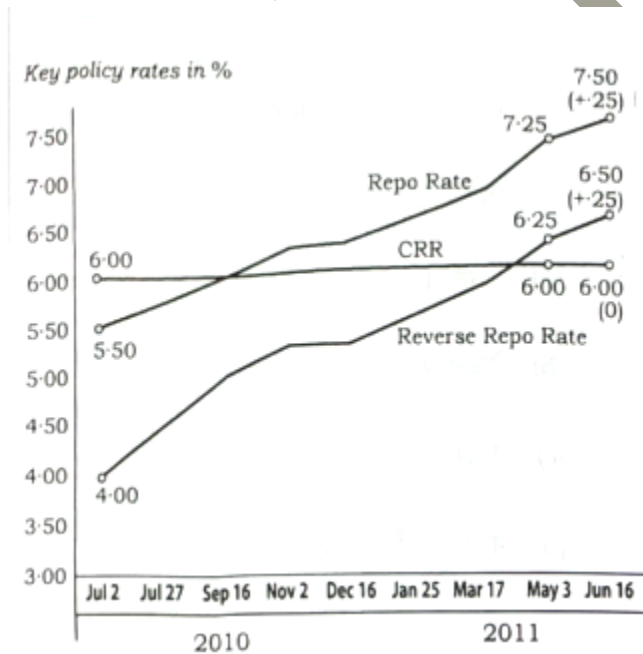
Increasing Confidence ; Reaching Goals

- (ii) Her son is diagonally across the net from the worst player's sibling.
- (iii) The best player and the worst player are on the same side of the net.

Who is the best player?

- (a) **Her brother**  
Lakshmi
- (b) Her daughter
- (c) Her son
- (d)

63. The graph given below indicates the changes in key policy rates made by the Central Bank several times in a year:



Which one of the following can be the most likely reason for the Central Bank for such an action?

- (a) Encouraging foreign investment
- (b) Increasing the liquidity
- (c) Encouraging both public and private savings
- (d) **Anti-inflationary stance**



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**Directions for the following 2 (two) items :**

The following table gives the GDP growth rate and Tele-density data of different States of a

country in a particular year. Study the table and answer the two items that follow.

| States   | Per capita income (\$) | GDP growth rate (%) | Tele-density |
|----------|------------------------|---------------------|--------------|
| State 1  | 704                    | 9.52                | 70.27        |
| State 2  | 419                    | 5.31                | 35.88        |
| State 3  | 254                    | 10.83               | 50.07        |
| State 4  | 545                    | 9.78                | 5.94         |
| State 5  | 891                    | 10.8                | 76.12        |
| State 6  | 1077                   | 11.69               | 77.5         |
| State 7  | 900                    | 8.88                | 104.86       |
| State 8  | 395                    | 5.92                | 6            |
| State 9  | 720                    | 7.76                | 82.25        |
| State 10 | 893                    | 9.55                | 96.7         |
| State 11 | 363                    | 4.7                 | 57.7         |
| State 12 | 966                    | 7.85                | 63.8         |
| State 13 | 495                    | 9.37                | 52.3         |
| State 14 | 864                    | 5.46                | 97.9         |
| State 15 | 497                    | 7.48                | 62.3         |
| State 16 | 777                    | 7.03                | 93.8         |
| State 17 | 335                    | 5.8                 | 49.9         |
| State 18 | 599                    | 7.49                | 47.84        |

64. With reference to the above table, which of the following is/are the most logical and rational inference! inferences that can be made?

1. Higher per capita income is generally associated with higher Tele-density.
2. Higher GDP growth rate always ensures higher per capita income.
3. Higher GDP growth rate does not necessarily ensure higher Tele density.

Select the correct answer using the code given below.

- (a) 1 only                      (b) 2 and 3                      (c) 1 and 3                      **(d) 3 only**



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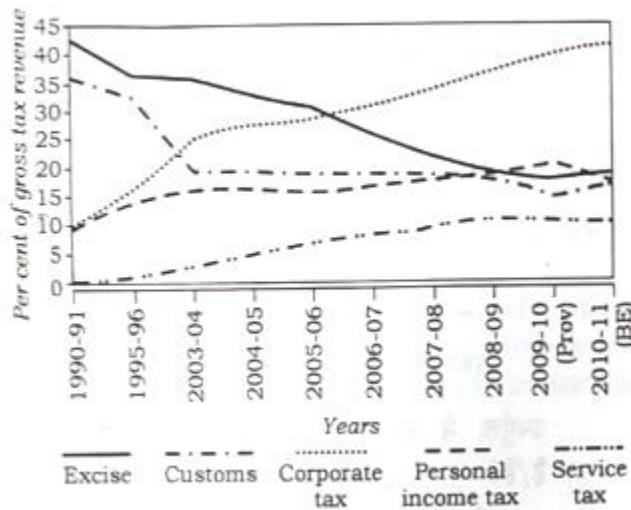
65. With reference to the above table, the following assumptions have been made:

1. Nowadays, prosperity of an already high performing State cannot be sustained without making further large investments in its telecom infrastructure.
2. Nowadays, a very high Tele-density the most essential condition for promoting the business and economic growth in a State.

Which of the above assumptions is/are valid?

- (a) 1 only                      (b) 2 only                      (c) Both 1 and 2                      (d) **Neither 1 nor 2**

66. The following graph indicates the composition of our tax revenue for a period of two decades:





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With reference to the above graph, which of the following is/are the most logical and rational inference/ inferences that can be made?

67. If  $x - y = 8$ , then which of the following must be true?

1. Both  $x$  and  $y$  must be positive for any value of  $x$  and  $y$ .
2. If  $x$  is positive,  $y$  must be negative for any value of  $x$  and  $y$ .
3. If  $x$  is negative,  $y$  must be positive for any value of  $x$  and  $y$ .

Select the correct answer using the code given below.

- (a) 1 only                      (b) 2 only                      (c) Both 1 and 2                      (d) **Neither 1 nor 2 nor 3**

**Directions for the following 3(three) items:**

Read the following two passages and answer the name that follow. Your answers to these name should be based on the passages only.

**Passage—1**

The quest for cheap and plentiful meat has resulted in farms where more and more animals are squeezed into smaller lots in cruel and shocking conditions. Such practices have resulted in many of the world's health pandemics such as the avian flu. Worldwide, livestock increasingly raised in cruel, cramped conditions, where animals spend their short live under artificial light pumped full of antibiotics and growth hormones, until the day they are slaughtered. Meat production is water intensive. 15000 litres of water is needed for every kilogram of



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meat

compared with 3400 liters for rice, 3300 litres for eggs and 256 for a kilogram of potatoes.

68. What is the most rational and crucial message given by the passage?

(a) Mass production of meat through industrial farming is cheap and is suitable for providing

protein nutrition to poor countries.

(b) Meat-producing industry violates the laws against cruelty to animals.

(c) Mass production of meat through industrial farming is undesirable and should be stopped immediately.

**(d) Environmental cost of meat production is unsustainable when it is produced through industrial farming.**

## Passage-2

A male tiger was removed from Pench Tiger Reserve and was relocated in Parma National Park.

Later, this tiger trekked toward his home 250 miles away. The trek of this solitary tiger highlights a crisis. Many wildlife reserves exist as islands of fragile habitat in a vast sea of humanity, yet tigers can range over a hundred miles, seeking prey, mates and territory. Nearly a third of India's tigers live outside tiger reserves, a situation that is dangerous for both human and animal. Prey and tigers can only disperse if there are recognized corridors of land between protected areas to allow unmolested passage.

69. Which of the following is the most rational and crucial message given by the passage?

(a) The conflict between man and wildlife cannot be resolved, no matter what efforts we make.



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**(b) Safe wildlife corridors between protected areas is an essential aspect of conservation efforts.**

(c) India needs to declare more protected areas and set up more tiger reserves.

(d) India's National Parks and Tiger Reserves need to be professionally managed.

70. With reference to the above passage, the following assumptions have been made:

1. The strategy of conversation of wildlife by relocating them from one protected area to another

is not often successful.

2. India does not have suitable legislation to save the tigers, and its conservation efforts have

failed which forced the tigers to live outside protected areas.

Which of the above assumptions is/are valid?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

**Directions for the following 3 (three) items:**

The following three items are based on the graph given below which shows imports of three

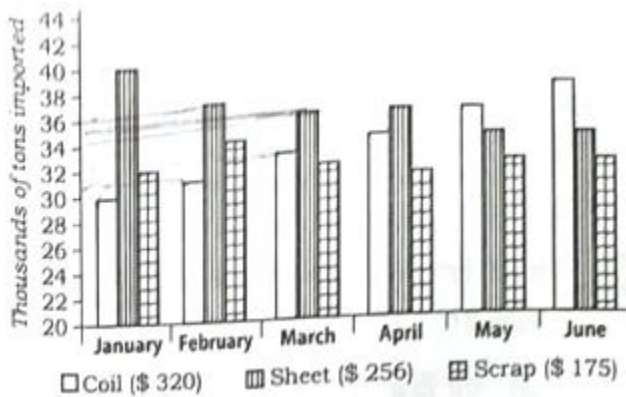
different types of steel over a period of six months of a year. Study the graph and answer the

three items that follow.



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The figures in the brackets indicate the average cost per ton over six months period.

71. By how much (measured in thousands of tons) did the import of sheet steel exceed the import of coil steel in the first three months of the year?

- (a) 11            (b) 15            (c) **19**            (d) 23

72. What was the approximate total value (in \$) of sheet steel imported over the six months period?

- (a) 45,555            (b) 50,555            (c) 55,550            (d) 65,750

73. What was the approximate ratio of sheet steel and scrap steel imports in the first three months of the year?

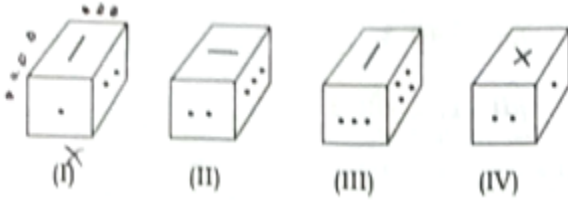
- (a) 1 : 1            (b) **1.2 : 1**            (c) 1.4 : 1            (d) 1.6 : 1

**Directions for the following 3 (three) items**



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Rotated positions of a single solid are shown below. The various faces of the solid are marked with different symbols like dots, cross and line. Answer the three items that follow the given figures

74. What is the symbol on the face opposite to that containing a single dot?  
(a) Four dots      (b) **Three dots**      (c) Two dots      (d) Cross

75. What is the symbol on the face opposite to that containing two dots?  
(a) Single dot      (b) Three dots      (c) **Four dots**      (d) Line

76. What is the symbol on the face opposite to that containing the cross?  
(a) Single dot      (b) Two dots      (c) **Line**      (d) Four dots

**Directions for the following 4 (four) items:**

Read the following passage and answer the four items that follow. Your answers to these items should be based on the passage only.

## Passage

It is no longer enough for us to talk about providing for universal access to education. Making available schooling facilities is an essential prerequisite, but is insufficient to ensure that all





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children attend school and participate in the learning process. The school may be there, but children may not attend or they may drop out after a few months. Through school and social mapping, we must address the entire gamut of social, economic, cultural and indeed linguistic and pedagogic issues, factors that prevent children from weaker sections and disadvantaged groups, as also girls, from regularly attending and complementing elementary education. The focus must be on the poorest and most vulnerable since these groups are the most disempowered and at the greatest risk of violation or denial of their right to education.

The right to education goes beyond free and compulsory education to include quality education for all. Quality is an integral part of the right to education. If the education process lacks quality, children are being denied their right. The Right of Children to Free and Compulsory Education Act lays down that the curriculum should provide for learning through activities, exploration and discovery. This places an obligation on us to change our perception of children as passive receivers of knowledge, and to move beyond the convention of using textbooks as the basis of examinations. The teaching-learning process must become stress-free; and a massive programme for curricular reform should be initiated to provide for a child-friendly learning system that is more relevant and empowering. Teacher accountability systems and processes must ensure that children are learning. And that their right to learn in a child- friendly environment is not violated Testing and redesigned to ensure that these do not force children to



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struggle between  
school and tuition centres, and bypass childhood.

77. According to the passage, which of the following is/are of paramount importance under the Right to Education?

1. Sending of children to school by all parents
2. Provision of adequate physical infrastructure in schools
3. Curricular reforms for developing child-friendly learning system.

Select the correct answer using the code given below.

- (a) 1 only                      (b) 1 and 2 only                      (c) **3 only**                      (d) None of the above

78. With reference to the above passage, the following assumptions have been made:

1. The Right to Education guarantees teachers' accountability for the learning process of children.
2. The Right to Education guarantees 100% enrolment of children in the schools.
3. The Right to Education intends to take full advantage of demographic dividend.

Which of the above assumptions is/are valid?

- (a) 1 only                      (b) 2 and 3 only                      (c) **3 only**                      (d) 1,2 and 3

79. According to the passage, which one of the following is critical in bringing quality in education?

- (a) Ensuring regular attendance of children as well as teachers in school
- (b) Giving pecuniary benefits to teachers to motivate them
- (c) Understanding the socio-cultural background of children
- (d) **Inculcating learning through activities and discovery**



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80. What is the essential message in this passage?

- (a) The Right to Education now is a Fundamental Right.
- (b) The Right to Education enables the children of poor and weaker sections of the society to attend schools.
- (c) The Right to Free and Compulsory Education should include quality education for all.**
- (d) The Government as well as parents should ensure that all children attend schools.

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