IMPORTANT INSTRUCTIONS

- The maximum marks are **300.** Time allotted is **90 MINTUES.**
- There are three sections in the question paper having total **75 questions:**
  - Section – A : Maths (25 Questions)
  - Section – B : Science (25 Questions)
  - Section – C : Aptitude (25 Questions)
- Each question carries **4 marks** each
- **Negative Marking** : **1/4 (one-fourth) marks** will be deducted for every incorrect answer.
- **Use only BLUE/BLACK pen to fill the circles in bubble sheet.**
- Use of pencil is strictly **not allowed.**
- **Do not use marker or white fluid** to hide the marks.

Section – I Mathematics

1. Which of the following Roman numerals is correct?

(a) XC (b) XD (c) DM (d) VL

2. The LCM of two co-prime numbers is their

(a) sum (b) difference (c) product (d) quotient

3. $\frac{289}{391}$ when reduced to lowest term is

(a) $\frac{13}{17}$ (b) $\frac{17}{19}$ (c) $\frac{17}{23}$ (d) $\frac{17}{21}$

4. Additive inverse of 36 is

(a) $\frac{1}{36}$ (b) 0 (c) -36 (d) none of these

5. The number of whole numbers between the smallest whole number and the greatest 2-digit number is

(a) 88 (b) 98 (c) 99 (d) 101

6. What should be added to 16 to get (-31)?

(a) 15 (b) -15 (c) 47 (d) -47

7. Find the sum: $\frac{5}{6}+\frac{7}{8}+\frac{11}{12}$ is:

(a) $\frac{21}{8}$ (b) $\frac{25}{8}$ (c) $\frac{15}{8}$ (d) $\frac{60}{24}$

8. $\frac{3}{8}$ and $\frac{5}{12}$ on comparison give

(a) $\frac{3}{8} > \frac{5}{12}$ (b) $\frac{3}{8} < \frac{5}{12}$ (c) $\frac{3}{8} = \frac{5}{12}$ (d) None of these

9. $3\frac{3}{4} - 1\frac{1}{2} =$

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

10. $16 - 2 \div 7 + 6 \times 2 = ?$

(a) 16 (b) 14 (c) $27\frac{5}{7}$ (d) none of these

11. $\frac{3}{25} = ?$

(a) 1.2 (b) 0.12 (c) 0.012 (d) none of these

12. Among 2.6, 2.006, 2.66 and 2.08, the largest number is

(a) 2.006 (b) 2.08 (c) 2.6 (d) 2.66

13. Coefficient of a in -7abc is

(a) -7abc (b) -7bc (c) -7 (d) -7ac

14. Mona's father is thrice as old as Mona. After 12 years, his age will be twice that of his daughter. Find their present ages.

(a) Mona's = 12 years, Father's = 36 years (b) Mona's = 10 years, Father's = 34 years

(c) Mona's = 12 years , Father's = 34 years (d) None of these

15. If $\frac{1}{3} \times x + 5 = 8$, then $x = ?$

(a) 3 (b) 6 (c) 9 (d) 12

16. If $36 : x :: x : 16$, find the value of x.

(a) 22 (b) 24 (c) 18 (d) 20

17. Two numbers are in the ratio 3 : 5 and their sum is 96. The larger number is

(a) 37 (b) 42 (c) 60 (d) 70

18. $\frac{3}{2}$ right angles = ……

(a) 115° (b) 135° (c) 230° (d) 270°

19. A quadrilateral having two pairs of equal adjacent sides but unequal opposite sides is called a

(a) parallelogram (b) rectangle (c) trapezium (d) kite

20. The letter Z of the English alphabet has

(a) no line of symmetry (b) one line of symmetry

(c) two lines of symmetry (d) none of these

21. The area of square is $256cm^2$. The perimeter of square is

(a) 16 cm (b) 32 cm (c) 48 cm (d) 64 cm

22. If no point is common to two given lines, then they are said to be –

(a) segments (b) parallel lines (c) rays (d) none of these

23. If there are 36-spokes in a bicycle wheel, then the angle between a pair of adjacent spokes is

(a) 15° (b) 12° (c) 10° (d) 18°

24. Two angles of a triangle are complementary. The third angle is

(a) 60° (b) 45° (c) 36° (d) 90°

25. Which of the following statements is true?

(a) Diameter = 2 × (Radius)

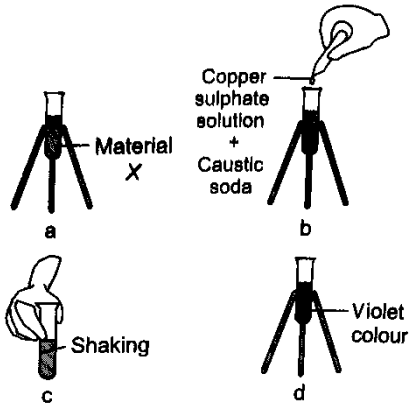
(b) All the diameter of a circle meet at the centre of the circle

(c) The perimeter of a circle is called its circumference

(d) All of these

Section – II
SCIENCE

26. Observe the given experimental figures carefully. What does this experiment prove?



(a) Material X contains proteins.
(b) Material X contains carbohydrates.
(c) Material X contains fats.
(d) Material X contains iodine.

27. Refer to the given paragraph and select the correct option regarding X, Y and Z. The process of making yarn from fibres is called X. Yarn are used for making fabrics. Two main processes are used to make fabrics from yarn. In process Y, two sets of yarn are arranged together to make a fabric while in process Z single yarn is used to make a piece of fabric.

(a) X: Knitting;	Y: Spinning;	Z: Weaving
(b) X: Spinning;	Y: Weaving;	Z: Knitting
(c) X: Weaving;	Y: Spinning;	Z: knitting
(d) X: Spinning;	Y: Knitting;	Z: Weaving

28. A science teacher labelled three glass slides as P, Q and R. She painted slide Q with light blue colour, slide R with black colour and slide P was left as such.
Then she asked students to put the slide on a white paper having (X) mark on it.
Students will be able to see the mark clearly (or partially)
(a) In slide P as it is translucent
(b) In slide Q as it is translucent
(c) In slide R as it is opaque
(d) In all the slides as paint does not change the nature of glass

29. What is common among the following phenomena?
(1) Blinking of traffic lights
(2) Rotation of blades of a fan
(3) Swinging of pendulum of a clock

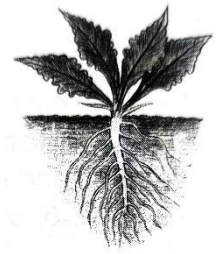
(a) All are chemical changes.	(b) All are periodic changes.
(c) All are undesirable changes.	(d) All are irreversible changes.

30. Match column I with column II and select the correct option from the given codes.

	Column I		Column II
(A)	Hinge joint	(i)	Neck joint
(B)	Gliding joint	(ii)	Hip joint
(C)	Pivot joint	(iii)	Knee joint
(D)	Ball and socket joint	(iv)	Wrist joint

(a) (A) – (iii), (B) – (iv), (C) – (i), (D) – (ii)
(b) (A) – (iv), (B) – (i), (C) – (iii), (D) – (ii)
(c) (A) – (i), (B) – (ii), (C) – (iv), (D) – (iii)
(d) (A) – (ii), (B) – (iii), (C) – (i), (D) – (iv)

31. Which of the following statements hold true for the root system shown in the given figure?

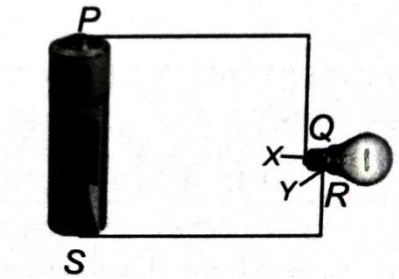


(i) It is a fibrous root system.
(ii) The branches that arise from the main root are called fibrous roots.
(iii) It is a tap root system.
(iv) Examples of this type of root system are pea, tulsi, radish, carrot and turnip.
(a) (i) and (iii) only (b) (ii) and (iv) only
(c) (iii) and (iv) only (d) (ii) and (iii) only

32. Which of the following statements is correct?
(a) Motion of soldiers on march past is a periodic motion.
(b) Motion of a train along a curved track on hills is an example of curvilinear motion.
(c) Every periodic motion is also an oscillatory motion.
(d) Hockey player running after a ball is a combined motion.

33. The mirror image of 'TRANSPARENT' will be
(a) TЯA□Ƨ□AЯƎ□T (b) TRANSPARENT
(c) T□ƎЯA□Ƨ□AЯT (d) TNERAPSNART

34. Look at the given figure. It consists of a cell, a bulb with the two terminals X and Y and wires with ends P and Q; and S and R. The direction of current will be



(a) PQRS (b) SRQP (c) PRQS (d) SQRP

35. Which of the following statements is incorrect?

(a) To increase the magnetic strength, increase the number of strokes while creating magnets.

(b) To increase the magnetic strength, increase the number of coils around the nail.

(c) Magnetic force is a pulling force only.

(d) Magnet may lose its magnetic property when heated to a very high temperature.

36. Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
(A)	Floods	(i)	Aquifers
(B)	Groundwater	(ii)	Salt water
(C)	Ocean	(iii)	Rain
(D)	Precipitation	(iv)	Condensation
(E)	Clouds	(v)	Excess rain

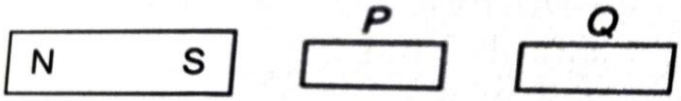
(a) (A) – (i), (B) – (ii), (C) – (iii), (D) – (iv), (E) – (v)

(b) (A) – (v), (B) – (i), (C) – (ii), (D) – (iii), (E) – (iv)

(c) (A) – (i), (B) – (v), (C) – (iii),(D) – (ii), (E) – (iv)

(d) (A) – (v), (B) – (i), (C) – (iii), (D) – (ii), (E) – (iv)

37. The figure shows two pieces of steel P and Q arranged in line with a bar magnet.

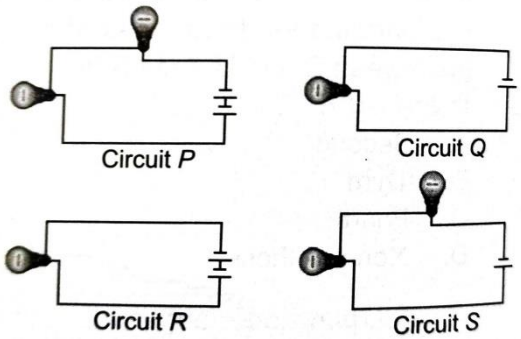


Which of the following is true about the magnetic forces on P and Q ?

	Force on P	Force on Q
(a)	Attractive	Repulsive
(b)	Attractive	Attractive
(c)	Repulsive	Repulsive
(d)	Repulsive	Attractive

38. There are four different circuits with bulbs (identical) and batteries as shown here.

In which circuit will the bulb(s) be the brightest?



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

39. Match column I with column II and select the correct option from codes given below.

	Column I		Column II
(A)	Tea leaves	(i)	Farmer's friend
(B)	Earthworm	(ii)	Greenhouse gas
(C)	Microorganisms	(iii)	Changes into compost
(D)	Polythene bags	(iv)	Cannot be changed into compost
(E)	Methane	(v)	Bacteria

(a) (A) – (iii), (B) – (i), (C) – (v), (D) – (iv), (E) – (ii)
(b) (A) – (iii), (B) – (v), (C) – (i), (D) – (iv), (E) – (ii)
(c) (A) – (ii), (B) – (v), (C) – (i), (D) – (iii), (E) – (iv)
(d) (A) – (ii), (B) – (i), (C) – (iv), (D) – (v), (E) – (iii)

40. In which of the following a permanent magnet is not used?
(a) In magnetic door catchers (b) Loudspeakers
(c) In compasses (d) None of these

41. Sakshi wanted to test the quality of her dupatta. She pulled a small strand of yarn from the dupatta and burned it. It smelled like a burning paper. She inferred that the dupatta is made of pure
(a) Wool (b) Cotton (c) Silk (d) None of these

42. Aarushi took two food samples X and Y in separate test tubes. She added 2-3 drops of Benedict's solution in food sample X and heated it while she added two drops of copper sulphate solution and few drops of caustic soda solution in food sample Y. She observed that sample Y turned brick-red white sample Y turned purple.
Which of the following is correct regarding X and Y?
(a) X consists of protein while Y consists of starch.
(b) X consists of sugar while Y consists of protein.
(c) X consists of starch while Y consists of protein
(d) X consists of sugar while Y consists of starch.

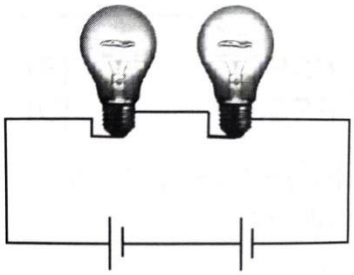
43. Match column I with column II and select the correct option from the given codes.

Column I	**Column II**
P. Chalk-water mixture	(i) A gaseous mixture
Q. Glucose solution	(ii) A solid-gas mixture
R. Fizzy drink	(iii) A homogeneous solid-liquid mixture
S. Smoke	(iv) A heterogeneous solid-liquid mixture
T. Air	(v) A gas-liquid mixture

(a) P-(iii), Q-(iv), R-(v), S-(i), T-(ii) (b) P-(v), Q-(iii), R-(iv), S-(ii), T-(i)

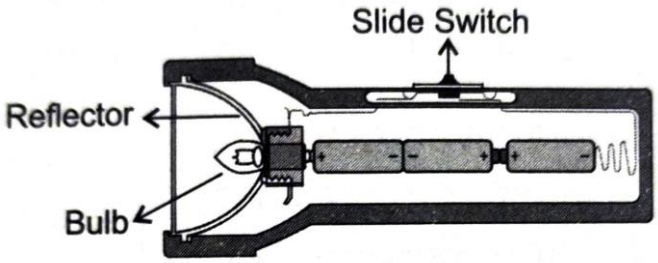
(c) P-(ii), Q-(i), R-(iv), S-(v), T-(iii) (d) P-(iv), Q-(iii), R-(v), S-(ii), T-(i)

44. Nidhi has two bulbs connected across two cells in a simple circuit as shown. How can she make the bulbs glow dimmer?



(a) Replace one cell with a piece of chalk (b) Replace one cell with a piece of wire
(c) Replace one bulb with a piece of wire (d) Replace one bulb with another cell

45. Given diagram shows the lateral section of a torch containing cells. The torch is not glowing when the switch is ON. Which of the following statements may be correct regarding the reasons?



(i) Bulb of the torch is fused.
(ii) Cells are not connected properly.
(iii) The metal parts of the torch do not make proper contact with the cell.
(a) Only (i) and (ii) (b) Only (ii) and (iii) (c) Only (i) and (iii) (d) All (i), (ii) and (iii)

46. The different steps of vermicomposting are given below randomly.
(i) Spread sand on the floor of the pit (ii) Place red worms in the pit
(iii) Cover with a grass (iv) Sprinkle water to keep it moist
(v) Dig a pit in a suitable place (vi) Add vegetable peels and fruit waste in the pit
Which of the following represents the correct sequence of steps?
(a) (v) → (vi) → (i) → (iii) → (ii) → (iv) (b) (v) → (i) → (vi) → (iii) → (iv) → (ii)
(c) (v) → (i) → (iii) → (vi) → (ii) → (iv) (d) (v) → (ii) → (iii) → (iv) → (i) → (vi)

47. Which of the following statements are incorrect?
I. Mixture of kidney beans and chick peas can be separated by winnowing.
II. Salt from sea water can be obtained on a large scale by evaporation.
III. An alloy is a homogeneous mixture of a metal with another metal or non-metals.
IV. Seeds of wheat can be separated from a bundle of wheat stalks by sieving.
(a) II and III only (b) I and IV only (c) I, III and IV only (d) None of these

48. Study the given list of adaptations in plants.

(a) Leaves reduced into spines
(b) Drip tips
(c) Sloping branch
(d) Fleshy stem
(e) Thick waxy layer on stem
(f) Cone shaped trees
(g) Photosynthetic stem

Which of the given adaptations are of plants inhabiting rainforests (X), mountains (Y) and deserts (Z)?

	X	Y	Z
A.	(g), (f)	(a), (d), (e)	(b), (c)
B.	(b), (g), (f)	(d), (e)	(a), (c)
C.	(a), (b), (g)	(d), (e)	(c), (f)
D.	(b)	(c), (f)	(a), (d), (e), (g)

49. Study the given table.

Vitamin	Source	Deficiency
B_1	(i)	Beri-beri
(ii)	Carrot	Night blindness
D	Sunlight	(iii)
C	Orange	(iv)

Select the correct option for (i), (ii), (iii) and (iv).

	(i)	(ii)	(iii)	(iv)
(A)	Milk	A	Scurvy	Rickets
(B)	Milk	E	Rickets	Scurvy
(C)	Whole grains	A	Rickets	Scurvy
(D)	Whole grains	A	Scurvy	Rickets

50. Tripti made four sets of different plants based on their edible parts as shown here.

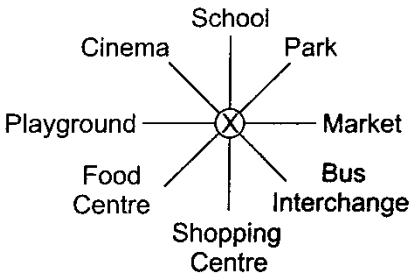
Set	Stem	Root	Leaf	Seed
I.	Potato	Turnip	Lettuce	Rice
II.	Turmeric	Ginger	Spinach	Sesame
III.	Colocasia	Onion	Broccoli	Mustard
IV.	Ginger	Radish	Cabbage	Almond

Which of these sets are correct?

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

Section – III
Mental Ability

51. Priya is standing at the point marked X in the figure below. She is facing the food centre.



What will she face if she turns 180° anti clockwise and then 135° clockwise?

(a) Cinema (b) Shopping centre (c) Market (d) Playground

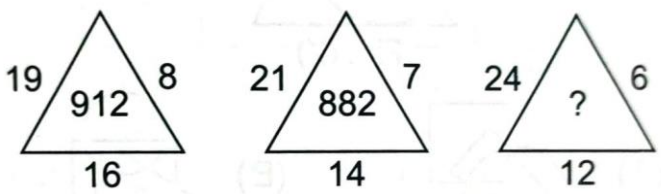
52. If the code of COULD is BNTKC and the code of MARGIN is LZQFHM, then what is the code of MOULDING?

(a) CHMFINTK (b) LNKTCHMF (c) LNTKCHFM (d) NITKHCMF

53. Riya moves a distance of 7 km towards South-East, then she moves towards West and travels a distance of 14 km. from here she moves towards North-West a distance of 7 km and finally she moves a distance of 4 km towards East. How far is she now from the starting point?

(a) 3 km (b) 4 km (c) 10 km (d) 11 km

54. Find the missing number, if the same rule is followed in the following figures.



(a) 1356 (b) 862 (c) 1234 (d) 864

55. In a certain code, meaning of some words are as follows.

(i) 'ho na ta' means 'food is great'.

(ii) 'sa ta la' means 'eat food regularly'.

(iii) 'da na ja' means 'keep good health'.

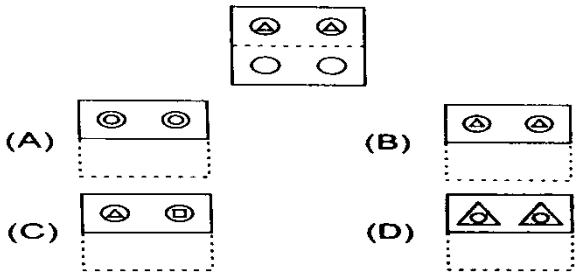
Which of the following means 'food' in that code language?

(a) la (b) ta (c) na (d) da

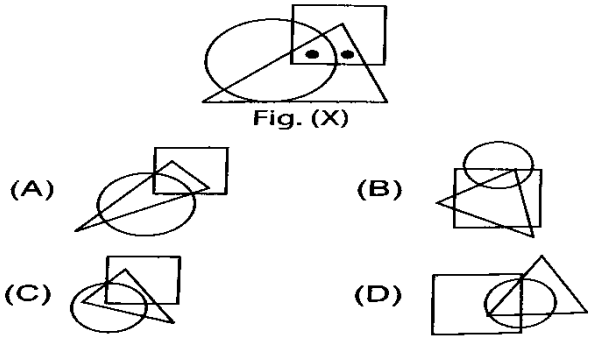
56. A boy introduced a woman as the only daughter of the father of his mother. How is the boy related to the woman?

(a) Brother (b) Father (c) Uncle (d) Son

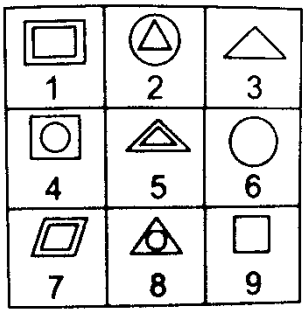
57. A square transparent sheet with a pattern is given. Find the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



58. Which of the following options does not satisfy the same conditions of placement of dots as in the given Fig. (X)?



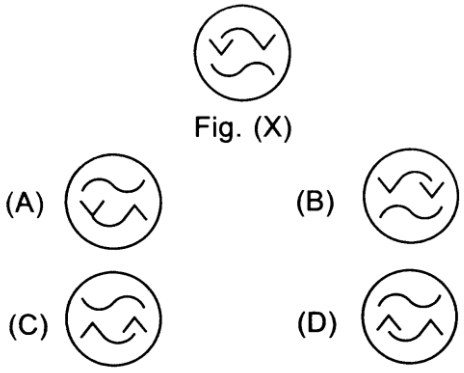
59. In the following question, group the given figures into three classes using each figure only once.



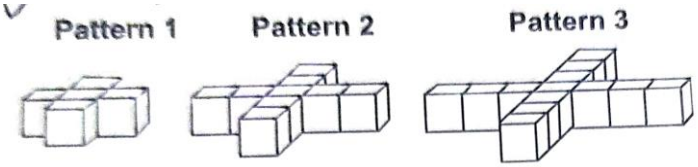
(a) 1, 5, 7; 2, 4, 6; 3, 9, 8 (b) 1, 5, 7; 2, 4, 8; 3, 6, 9

(c) 1, 5, 7; 4, 9, 8; 2, 3, 6 (d) 1, 5, 7; 3, 6, 4; 2, 9, 8

60. Select the correct water image of the Fig. (X).



61. Study the given pattern.



How many cubes are needed to form pattern 25?

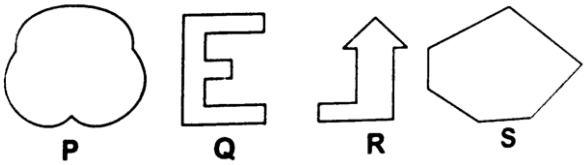
(a) 101 (b) 97 (c) 100 (d) 104

62. Find the missing number, if the wheel is rotated in the given direction.



(a) 8 (b) 4086 (c) 16 (d) 4096

63. Which of the following figures has a line of symmetry?



(a) Only P (b) Only R (c) Both P and Q (d) Both P and S

64. What will be the third word, if the given words are arranged according to a dictionary?

Wrinkle, Wriggle, Writhe, Wretch, Wrath

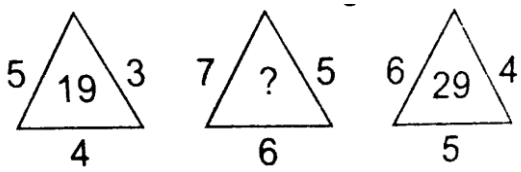
(a) Wrath (b) Writhe (c) Wriggle (d) Wretch

65. Which element is eighth to the left of seventeenth element from the left end in the given arrangement?

5 H I 7 $ K J 4 % L A T 3 8 @ F 6 U # V P 1 E * 9 D 2

(a) 4 (b) % (c) L (d) 6

66. Find the missing number, if same rule is followed in all the three figures.



(a) 25 (b) 37 (c) 41 (d) 47

67. Find the correct mirror image of Fig. (X), if mirror is placed along MR.

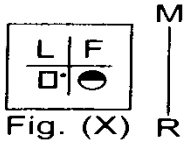


Fig. (X)

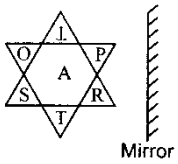
(A) 

(B) 

(C) 

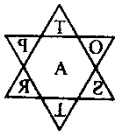
(D) 

68. Find the correct mirror image of the given figure.



A. 

B. 

C. 

D. 

69. If $\begin{bmatrix} D & K \\ N & Z \end{bmatrix}$ is related to $\begin{bmatrix} 4 & 11 \\ 14 & 26 \end{bmatrix}$ in some way, then in the same way $\begin{bmatrix} G & I \\ R & W \end{bmatrix}$ is related to _____.

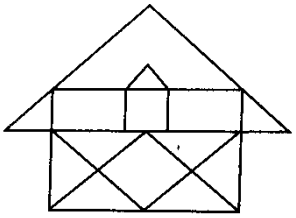
A. $\begin{bmatrix} 7 & 9 \\ 5 & 13 \end{bmatrix}$

B. $\begin{bmatrix} 7 & 9 \\ 8 & 23 \end{bmatrix}$

C. $\begin{bmatrix} 7 & 9 \\ 18 & 23 \end{bmatrix}$

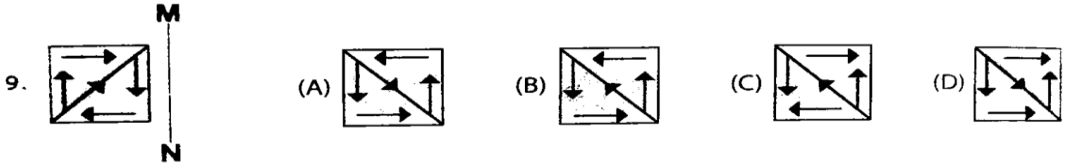
D. $\begin{bmatrix} 7 & 9 \\ 8 & 5 \end{bmatrix}$

70. Count the number of triangles in the given figure

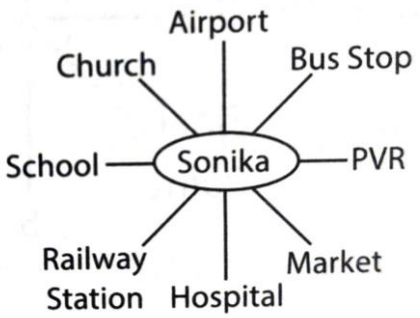


(a) 20 (b) 16 (c) 22 (d) None of these

71. Find the correct mirror image if mirror is placed along MN.



72. Sonika is facing the PVR. She turns 45° clockwise and then turns 180° anticlockwise. What will she be facing now?



(a) Market (b) Church (c) Hospital (d) Bus Stop

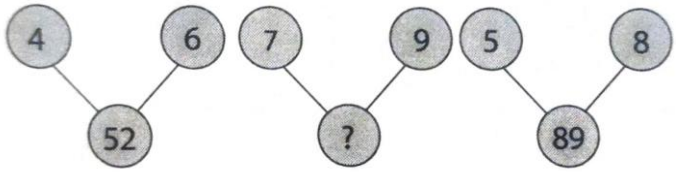
73. Sanchi, Aman, Trishi and Megha are cousins. Sanchi is shorter than Megha. Trishi is the tallest of all. Aman is taller than Megha. Who is the shortest of all?

(a) Sanchi (b) Megha (c) Aman (d) Trishi

74. If MISSISSIPI is coded as LERRERREOE, then in the same code language OLYMPIC is coded as _____.

(a) UMZNQJB (b) IKXLOEB (c) IKXLOHC (d) EKYLEUC

75. Find the missing number, if same rule is followed in all the three figures.



(a) 127 (b) 130 (c) 141 (d) 137