

TEST ID : 801
MAX. MARKS : 500
EXAM DURATION : 2 HOURS

Roll No.
Name :

Exam Date :

M-STAR[★]

Momentum Scholarship Test for Admission & Rewards

8th Edition, 2023-24

Talent HUNT Exam



**Class VIII Studying Students
Mathematics, Science & Logical Reasoning**

INSTRUCTIONS FOR CANDIDATE

1. This booklet is your Question Paper. Do not open this booklet before being instructed to do so by the invigilator.
2. You may complete Your Name, Roll No. on the cover page.
3. Blank spaces and blank pages are provided in this booklet for your rough work. No Additional sheet will be provided for rough work.
4. Blank papers, clipboards, log tables, slide rules, calculators, cameras, cellular phones, pagers and electronic gadgets are NOT allowed inside the examination hall.
5. **Using a Blue/Black Pen, Darken the bubbles on the OMR sheet**
6. DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET
7. In the booklet, check that all the 100 questions and corresponding answer choices are legible.
8. Write your name, class and the Father's name in the boxes provided on the right part of the OMR. Do not write any of this information anywhere else. Darken the appropriate bubble under each digit of your Roll Number and Test ID Number.
9. The question paper consists of three sections. **Section A** consists of **Mathematics**, **Section B** consists of **Science** and **Section C** consists **Logical Reasoning Questions**.
10. **Section A** contain 35 multiple choice questions, **Section B** contain 40 multiple choice questions and **Section C** contains 25 multiple choices questions. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.
11. Marking Scheme: **+5** for correct answer, **0** for unattempted and **-1** for wrong attempt.
12. On completion of the test, the candidate must hand over the **OMR Sheet** to the invigilator on duty in the Room/Hall.



MOMENTUM

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SECTION-A : MATH

This section contains **35 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

1. Find the value of $\sqrt{1053 - \sqrt{860 - \sqrt{378 - \sqrt{289}}}}$.

- A. 36
- B. 38
- C. 34
- D. 32

2. If 45% of a number x is equal to the 27% of an another number y , then x is what percent of y ?

- A. 50%
- B. 60%
- C. 70%
- D. 40%

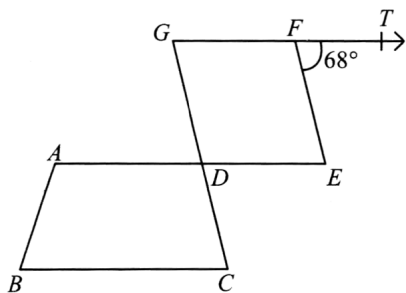
3. Factorise : $(7a - 4b)^2 + 9(7a - 4b) + 20$.

- A. $(7a - 4b + 5)(7a - 4b + 4)$
- B. $(7a - 4b)(3a + 2b + 6)$
- C. $(7a + 4b + 5)(7a + 4b + 4)$
- D. $(7a + 4b)(3a - 2b - 6)$

4. A number is selected from the numbers 1 to 50. Find the probability of not getting a perfect square.

- A. $\frac{37}{51}$
- B. $\frac{43}{51}$
- C. $\frac{43}{50}$
- D. $\frac{37}{50}$

5. In the given figure (not drawn to scale), $ABCD$ is a trapezium and $DEFG$ is a rhombus. Find the value of $\angle BCD$.



- A. 78°
- B. 68°
- C. 64°
- D. 74°

6. The sum of the additive inverse and multiplicative inverse of $\frac{1}{5}$ is _____.

- A. $\frac{24}{5}$
- B. $-\frac{24}{5}$
- C. 25
- D. -25

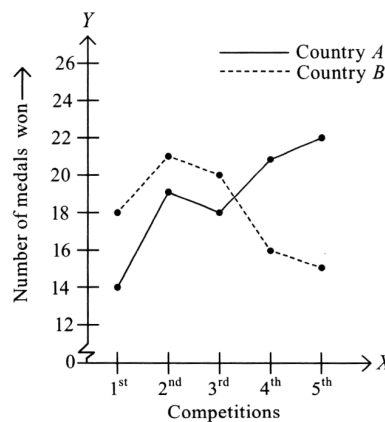
7. Two numbers are in the ratio of 2 : 3. If smaller number is increased by 7 and greater number is decreased by 7, then both numbers become equal. Find the sum of the digits of the smaller number.

- A. 9
- B. 6
- C. 10
- D. 7

8. Which of the following numbers becomes a perfect cube when we divide the number by 5?

- A. 125
- B. 25
- C. 625
- D. 3125

Direction (09-10) : The graph shows the number of medals won by two different countries A and B in five competitions in the Olympics. Read the graph carefully and answer the following questions.



9. Which country has won more medals and by how many more in all five competitions together?

- A. Country B, 7
- B. Country B, 5
- C. Country A, 7
- D. Country A, 4

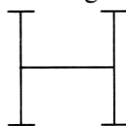
10. In how many competitions, country B performed better than Country A?

- A. 3
- B. 2
- C. 1
- D. 0

11. Subtract the sum of $5x^2 + 7x - 3y + 7$ and $-7y^2 + 3x^2 - 8x + 5$ from $x^2 + 7x - y^2 + 23$.

- A. $-7x^2 + 6y^2 + 8x + 3y + 11$
- B. $7x^2 - 6y^2 + 8x + 3y + 11$
- C. $-5x^2 + 7y^2 + 6x + 5y + 13$
- D. $5x^2 - 7y^2 + 6x + 5y + 13$

12. What is the sum of lines of symmetry and order of rotational symmetry of the given figure?



- A. 6
- B. 5
- C. 4
- D. 3

13. A student was asked to divide a number by 3.2. But instead of dividing it, he multiplied it by 3.2 and got the answer as 13.44. What was the correct answer?

- A. 1.3125
- B. 0.51
- C. 0.61
- D. None of these

14. Two numbers x and y are in the inverse proportion. When the values of x are 8 and 12, then the values of y are 9 and 6 respectively. What will be the value of y when x is 3.6?

- A. 18
- B. 20
- C. 24
- D. 40

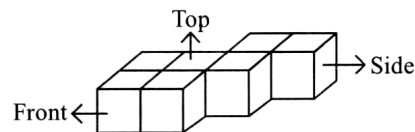
15. The volume of a cylinder is 2079 cm^3 . If area of base of the cylinder is 346.50 cm^2 , then find the height of the cylinder.

- A. 9 cm
- B. 5 cm
- C. 7 cm
- D. 6 cm

16. Find the value of x , if $\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{11} = \left(\frac{8}{5}\right)^{2x} \times \left(\frac{5}{8}\right)^{-4}$.

- A. 11
- B. 5
- C. 7
- D. 9

17. Which of the following is the side view of the given figure?

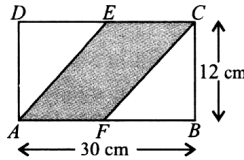


- A.
- B.
- C.
- D.

18. Simple interest on a certain amount is $\frac{9}{16}$ of the principal. If the numbers representing the rate of interest (in percent) and time (in years) be equal, then time for which the principal is lent out, is _____.

- A. $5\frac{1}{2}$ years
- B. $6\frac{1}{2}$ years
- C. 7 years
- D. $7\frac{1}{2}$ years

19. Find the area of the shaded part of the given figure (not drawn to scale), if E and F are the mid-points of DC and AB respectively.



- A. 170 cm^2
 B. 150 cm^2
 C. 120 cm^2
 D. 180 cm^2
20. Solve the given equation and find the value of x .

$$3(2x + 11) = \left(\frac{5x + 4}{3}\right) - 3$$

- A. 9
 B. -8
 C. 4
 D. -7
21. A shopkeeper allows a discount of 15% on the marked price of an article. If the selling price of the article is ₹ 765, then find its marked price.
- A. ₹ 850
 B. ₹ 1000
 C. ₹ 900
 D. ₹ 1050
22. In a fort, there is sufficient food for 1000 men for 20 days. A few men left and the food lasted for 25 days. How many men left?
- A. 100
 B. 200
 C. 300
 D. 250
23. A swimming pool is of dimensions $24 \text{ m} \times 12 \text{ m} \times 4 \text{ m}$. What is the quantity of water in the pool, if water is filled up to a depth of 2.5 m?
- A. 720 kL
 B. 720 L
 C. 1152 kL
 D. 110 L

24. A prize of certain amount is distributed among three participants A , B and C . A got $\frac{4}{9}$ and B got $\frac{7}{18}$ of total amount of prize money. If C got ₹ 70701, then find the total amount of prize money.

- A. ₹ 575480
 B. ₹ 328504
 C. ₹ 225560
 D. ₹ 424206
25. Age of Rahul is 3 years more than half the age of his father. Five years ago, Rahul was 21 years younger than his father. Find the present age of Rahul.

- A. 21 years
 B. 27 years
 C. 22 years
 D. 25 years
26. In a class of 35 students, 7 students got more than 75% marks, 13 students got between 60% and 75% marks and rest students got less than 60% marks. If one student is selected at random from the class, then what is the probability that his marks are below 60%?

- A. $\frac{3}{7}$
 B. $\frac{22}{35}$
 C. $\frac{5}{7}$
 D. $\frac{13}{35}$
27. Mohit gave a problem to Samrath.

Difference of two perfect cubes is 189. If the cube root of the smaller of the two numbers is 3, then find the cube root of the larger number.

Help Samrath to answer the question.

- A. 4
 B. 6
 C. 8
 D. 10

28. 45% population of a village is below 18 years and rest are adults. From the adults, the ratio of number of men to number of women is 3 : 2. If total population of the village is 18700, then find the number of men.

- A. 6171
B. 5842
C. 7254
D. 8468

29. Sonali purchased two types of wires. If she purchased 7 m of first type of wire at ₹ 45.50 and 5 m of second type of wire at ₹ 43.75, then what is the total cost of 1 m wire of first type and 1 m wire of second type?

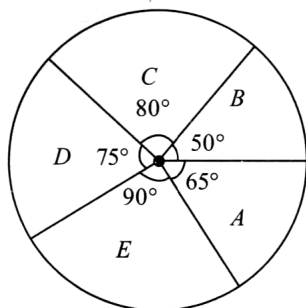
- A. ₹ 18.75
B. ₹ 14.45
C. ₹ 15.25
D. ₹ 19.55

30. The average weight of 12 boys is 46 kg. If a boy of 79 kg weight is excluded, then what will be the average weight of remaining boys?

- A. 41 kg
B. 38 kg
C. 39 kg
D. 43 kg

31. The given pie chart shows the distribution of seats of sports complex among the students of five different schools *A, B, C, D* and *E*. Study the pie chart carefully and answer the following questions.

Total number of seats of sports complex = 936



- (i) What percent of total seats occupied by students of school *D*?
- (ii) What fraction of total seats is allotted to students of school *A*?
- (iii) How many more seats are allotted to students of school *E* than students of school *B*?

	(i)	(ii)	(iii)
A.	$15\frac{5}{6}\%$	$\frac{7}{36}$	84
B.	$18\frac{3}{7}\%$	$\frac{19}{72}$	112
C.	$17\frac{2}{3}\%$	$\frac{11}{36}$	92
D.	$20\frac{5}{6}\%$	$\frac{13}{72}$	104

32. Answer the following questions and select the correct option.

- (i) Abhinav borrowed ₹ 6000 from bank for 2 years. If rate of interest was 10% per annum, then what will be the compound interest if interest is compounded annually?
- (ii) Sushant bought a cell phone for ₹ x . If the cost of cell phone in 2 years is depreciated to ₹ 12000 at 20% per annum, then find the value of x .

	(i)	(ii)
A.	₹ 1300	₹ 16000
B.	₹ 960	₹ 17500
C.	₹ 1260	₹ 18750
D.	₹ 1050	₹ 18000

33. Match the expression given in Column - I to one of their factors given in Column - II and select the correct option.

Column - I	Column - II
(P) $16x^2 - 9$	(i) $(7 + 5x)$
(Q) $5x^2 + 32x + 35$	(ii) $(3x + 2)$
(R) $7x^2 + 6x - 16$	(iii) $(4x - 3)$
(S) $9x^2 + 12x + 4$	(iv) $(-8 + 7x)$
A.	(P) → (iii); (Q) → (i); (R) → (iv); (S) → (ii)
B.	(P) → (ii); (Q) → (i); (R) → (iv); (S) → (iii)
C.	(P) → (iii); (Q) → (iv); (R) → (i); (S) → (ii)
D.	(P) → (iii); (Q) → (iv); (R) → (ii); (S) → (i)

34. Read the given statements carefully and select the correct option.

Statement - I : If $\frac{3(x-5)}{2} = 7 - \frac{x}{2}$, then the value of x is $\frac{-1}{3}$.

Statement - II : If $0.75(2t - 6) = 0.25(t - 8)$, then the value of t is 2.

- A. Statement - I is true but Statement - II is false.
- B. Statement - I is false but Statement - II is true.
- C. Both Statement - I and Statement - II are true.
- D. Both Statement - I and Statement - II are false.

35. Fill in the blanks and select the correct option.

- (i) P is the least number that should be multiplied by 576 to make it a perfect cube number.
- (ii) The unit digit of the cube of 7683 is Q.
- (iii) The sum of the digits of cube root of 2744 is R.

	P	Q	R
A.	4	9	9
B.	3	7	5
C.	5	8	4
D.	7	6	6

SECTION-B : SCIENCE

This section contains **40 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

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

Column I	Column II
P. Satellite revolves around the Earth	(i) Magnetic force
Q. An archer stretches the bow	(ii) Buoyant force
R. The doorbell rings when we press the button	(iii) Gravitational force
S. A gas filled balloon moving up in air	(iv) Muscular force

A. P – (i), Q – (iv), R – (iii), S – (ii)
 B. P – (iii), Q – (iv), R – (i), S – (ii)
 C. P – (ii), Q – (iii), R – (i), S – (iv)
 D. P – (iv), Q – (ii), R – (iii), S – (i)

37. Read the given statements and select the correct option.

Statement I - Liquid conducts current due to presence of ions.

Statement II - Direction of current is same as the direction of movement of negative ions in the liquid.

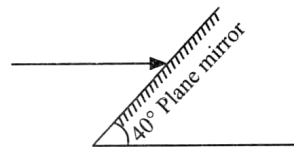
- A. Only Statement I is correct
 B. Only Statement II is correct
 C. Both Statements I and II are correct
 D. Both Statements I and II are incorrect
38. The surface area of the base of a brick X is 100 cm^2 . The surface area of the base of a brick Y is 250 cm^2 . Each brick weighs 100 N . Which of the following is correct, if P_1 and P_2 are the pressures exerted by the bricks X and Y respectively?
- A. $P_1 = P_2$ B. $P_1 > P_2$
 C. $P_1 < P_2$ D. $P_1 = P_2 = 0$

39. Niara runs her toy car on dry marble floor, wet marble floor, newspaper and towel spread on the floor. The force of friction acting on the car due to different surfaces in decreasing order will be

- A. Wet marble floor, dry marble floor, newspaper, towel
 B. Newspaper, towel, wet marble floor, dry marble floor

- C. Towel, newspaper, dry marble floor, wet marble floor
 D. Towel, wet marble floor, dry marble floor, newspaper.

40. A plane mirror is inclined at 40° to the floor as shown in the figure. An incident ray parallel to the floor strikes the plane mirror and gets reflected. If the angle of inclination is increased to 52° without changing the direction of the incident ray, what is the change in the angle of incidence and the angle of reflection?

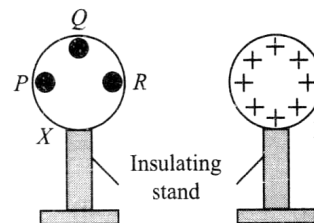


- | Change in angle of incidence | Change in angle of reflection |
|------------------------------|-------------------------------|
| A. 15° | 18° |
| B. 10° | 20° |
| C. 12° | 12° |
| D. 20° | 15° |

41. A parallel beam of light is incident on a converging lens parallel to its principal axis. As one moves the source of light away from the lens on its principal axis, the intensity of light

- A. Remains constant
 B. Continuously increases
 C. Continuously decreases
 D. First increases then decreases.

42. The diagram shows a positively charged conducting sphere Y , which is placed near a neutral conducting sphere X . At which point(s) one can ground the sphere X , to make it negatively charged?

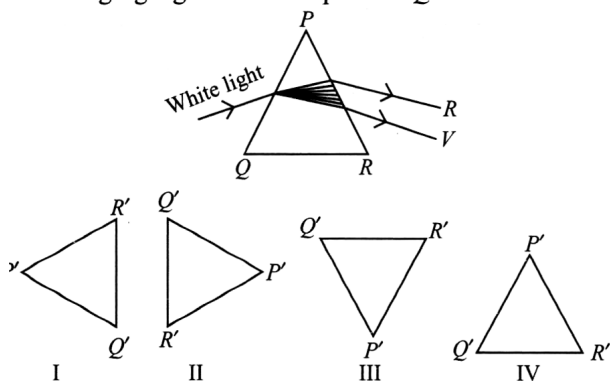


- A. R only B. Q only
 C. Either P or R D. Either P , Q or R

43. Which of the following statements about Venus is/are correct?

- I. It is called morning star and evening star.
 - II. On this planet, the Sun rises in the East and sets in the West.
 - III. It is called the Earth's twin.
 - IV. It is the third nearest planet to the Sun and second nearest to the Earth.
 - V. It is the hottest planet of the solar system.
- A. I only
 B. I and II only
 C. I, III and V only
 D. I, II, III and IV only

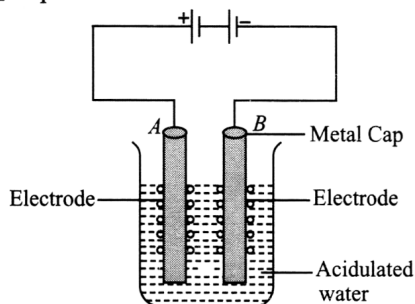
44. Two identical prisms PQR and $P'Q'R'$ are given. White light is passed through PQR as shown in the figure. Which of the following positions of $P'Q'R'$ will again yield white light when placed in the path of emerging light from the prism PQR ?



- A. I
 B. II
 C. III
 D. IV

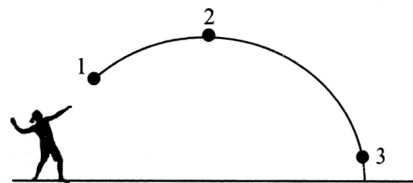
45. Read the given paragraph and select the correct option that correctly fills in the blanks.

The given diagram shows electrolysis of water. The electrodes are made of (i). A is the positive electrode called (ii). B is the negative electrode called (iii). (iv) is produced at anode and (v) is produced at cathode.



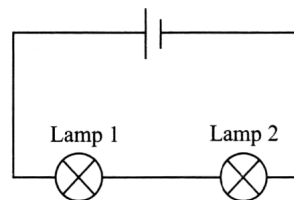
- | | | | | | |
|----|----------|---------|---------|----------|----------|
| | (i) | (ii) | (iii) | (iv) | (v) |
| A. | Oxygen | Cathode | Anode | Hydrogen | Carbon |
| B. | Carbon | Cathode | Anode | Hydrogen | Oxygen |
| C. | Hydrogen | Anode | Cathode | Oxygen | Carbon |
| D. | Carbon | Anode | Cathode | Oxygen | Hydrogen |

46. A person throws a ball and the path of its motion is as shown in the figure. Which of the following statements is/are true? (Neglect the effect of air)

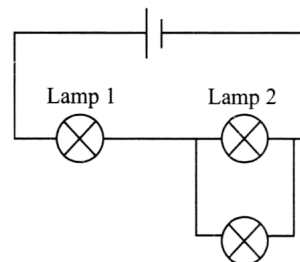


- I. The speed of the ball at point 2 is zero.
 - II. The ball is faster at point 3 than at point 2.
 - III. The acceleration of the ball at all points along the path of its motion is the same.
 - IV. The kinetic energy of the ball at all points along the path of its motion is the same.
- A. I only
 B. II and III only
 C. I and II only
 D. I, III and IV only

47. Two identical lamps 1 and 2 light up with normal brightness, when connected in series to a battery as shown.



If a third lamp is then connected to one of the lamps as shown, then which of the following options is correct for brightness of both the lamps?



- | | | |
|----|---------------|---------------|
| | Lamp 1 | Lamp 2 |
| A. | Brighter | Brighter |
| B. | Dimmer | Dimmer |
| C. | Brighter | Dimmer |
| D. | Dimmer | Brighter |

48. If a body travels a total distance of 15 km in first hour, 30 km in the second hour and 45 km at the end of third hour, the body
- Is in uniform motion
 - Is in non-uniform motion
 - May be in uniform or non-uniform motion
 - Is moving with non-zero acceleration.

49. Which of the following statements regarding radiation is/are correct?

- Radiation is the only process of heat transfer that can occur in the absence of any form of medium.
 - Radiation cannot pass through solids.
 - Thermal energy can be transferred via infra-red radiations.
- II only
 - III only
 - I and II only
 - I and III only

50. Which of the following statements are incorrect?

- Wind current occurs due to the uneven heating of the Earth by the Sun.
 - It is safe to lie on the ground in thunderstorm.
 - Increased wind speed results in reduced air pressure.
 - High pressure prevailing at the centre of the cyclone is called the eye.
- I and III only
 - II and IV only
 - I, II and IV only
 - II, III and IV only

51. Which of the following statements is incorrect?

- Producer gas is a mixture of carbon monoxide and hydrogen.
- Coal tar is a black, thick liquid obtained as a by-product during the processing of coal.
- Lubricating oil, a petroleum product is used for lubrication.
- Gasoline is obtained during the fractional distillation of petroleum.

52. A few substances are given in the box.

Graphite, lamp black, coke, coal, fullerene, sugar charcoal, gas carbon, wood charcoal, diamond

The total number of amorphous forms of carbon among the given substances is

- 6
- 5
- 3
- 1

53. Priyanka classified few substances into acids and bases as shown:

Acids

- Lemon juice
- Caustic soda
- Tamarind juice

Bases

- Sugar
- Curd
- Detergent solution

Which of these have been classified incorrectly?

- 1, 3 and 6 only
- 4 and 5 only
- 2, 4 and 5 only
- 2, 5 and 6 only

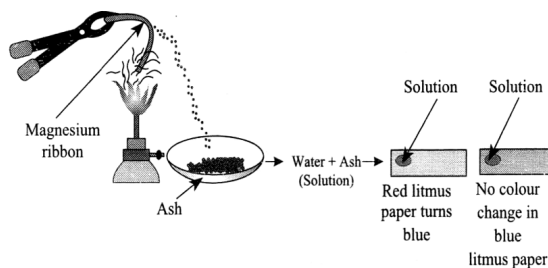
54. Calorific values of some fuels are given as:

Fuel	Calorific value (kJ/kg)
Coal	25000-33000
Diesel	45000
LPG	55000
CNG	50000

On the basis of this data, find out the correct order of efficiency of fuels.

- LPG > CNG > Diesel > Coal
- Coal > Diesel > LPG > CNG
- Diesel > CNG > Coal > LPG
- CNG > LPG > Diesel > Coal

55. Observe the following figure carefully.



Read the given passage and fill in the blanks by selecting an appropriate option.

The above activity represents a (i) change. The ash formed after burning magnesium ribbon is dissolved in water to obtain (ii) which is (iii) in nature.

- | | (i) | (ii) | (iii) |
|----|----------|---------------------|--------|
| A. | Physical | MgO | Acidic |
| B. | Chemical | MgO | Basic |
| C. | Physical | Mg(OH) ₂ | Acidic |
| D. | Chemical | Mg(OH) ₂ | Basic |

56. Read the given statements and select the option that correctly identifies them as true (T) and false (F) ones.

- I. A combustible substance cannot catch fire as long as its temperature is lower than its ignition temperature.
- II. The head of the matchstick contains arsenic trisulphide and potassium chloride.
- III. Burning of white phosphorus at room temperature is an example of rapid combustion.
- IV. The calorific value of kerosene is higher than that of coal.

	I	II	III	IV
A.	T	T	F	F
B.	T	F	T	F
C.	T	F	F	T
D.	F	T	T	F

57. Which of the following processes (i-vi) are chemical and irreversible changes?

- (i) Setting of cement
 - (ii) Breaking of a flower vase
 - (iii) Drying of a wet floor
 - (iv) Respiration
 - (v) Filling of a container with milk
 - (vi) Baking of a cake
- A. (ii), (iv) and (vi) only
 - B. (i), (iv) and (vi) only
 - C. (i), (v) and (vi) only
 - D. (ii), (iii) and (v) only

58. Match the columns and select the correct option from the given codes.

	Column I		Column II
P.	Bitumen	(i)	Vaseline, ointments, candles
Q.	Paraffin wax	(ii)	Black gold
R.	Petroleum	(iii)	Motor fuel
S.	Petrol	(iv)	For metalling roads

- A. P-(iii), Q-(i), R-(iv), S-(ii)
- B. P-(i), Q-(ii), R-(iv), S-(iii)
- C. P-(iv), Q-(i), R-(ii), S-(iii)
- D. P-(iii), Q-(ii), R-(iv), S-(i)

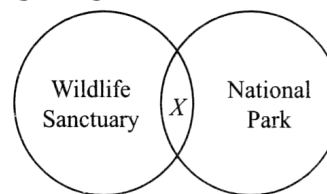
59. Read the given statements and select the option that correctly fills the blanks.

- (i) _____ is a kharif crop.
 - (ii) The crops sown in winter season (between October and December) and harvested by March are called _____ crops.
 - (iii) _____ is an example of zaid crop.
- | | (i) | (ii) | (iii) |
|----|------------|--------|------------|
| A. | Linseed | Kharif | Gram |
| B. | Soybean | Rabi | Watermelon |
| C. | Watermelon | Rabi | Linseed |
| D. | Maize | Kharif | Gram |

60. Viruses which infect bacteria are called _____.

- A. Bacteriophages
- B. Phycophages
- C. Cyanophages
- D. Mycophages

61. Refer to the given Venn diagram and select the correct statement regarding X.



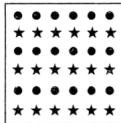
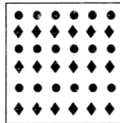
- A. X could be located in Gujarat and it provides shelter to Asiatic lions.
- B. X could be located in Karnataka and it provides shelter to Royal Bengal Tiger.
- C. X could be located in Uttarakhand and is famous for one-horned rhinoceros.
- D. None of these


62. Select the incorrect statement.

- A. Anthrax is a bacterial disease that affects humans and cattle.
- B. *Clostridium botulinum* is a bacteria that causes food poisoning.
- C. Citrus canker is a viral disease that affects citrus fruits.
- D. Bhendi yellow vein mosaic disease is a viral disease that affects okra.

63. In which of the following agricultural practices, the nutrient requirements of one crop are fulfilled by the other crop?

Note :
★ Green bean
● Maize
◆ Rice
◇ Pea

A.  B. 

C.  D. Both A and C

64. Match the columns and select the correct option from the given codes.

Column I	Column II
(i) Keoladeo National Park (formerly Bharatpur Bird Sanctuary)	P. One-horned rhinoceros
(ii) Sundarbans National Park	Q. Siberian crane
(iii) Desert National Park	R. Chinkara
(iv) Kaziranga National Park	S. Royal Bengal Tiger

A. (i)-Q, (ii)-P, (iii)-S, (iv)-R
 B. (i)-S, (ii)-R, (iii)-P, (iv)-Q
 C. (i)-Q, (ii)-S, (iii)-R, (iv)-P
 D. (i)-Q, (ii)-R, (iii)-P, (iv)-S

65. _____ is called as the true stomach of ruminants.

- A. Omasum B. Abomasum
 C. Rumen D. Reticulum

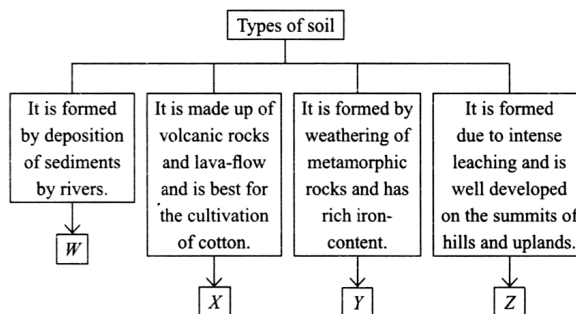
66. *X* and *Y* are two animals and they both undergo internal fertilisation. *X* lays eggs while *Y* gives birth to young ones. Which of the following statements holds true for *X* and *Y*?

- A. The process of parturition takes place in case of animal *X* whereas the process of brooding occurs in case of animal *Y*.
 B. Young ones of both *X* and *Y* look totally different from the parent.
 C. Young ones of both *X* and *Y* undergo metamorphosis to transform into adults.
 D. Animal *X* could be crocodile whereas animal *Y* could be dog.

67. Which of the following are not the adaptive features of a penguin?

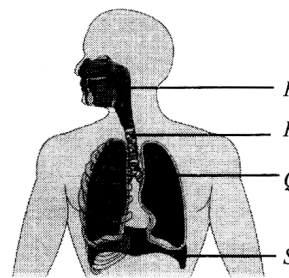
- (i) Camouflage (ii) Subcutaneous fat
 (iii) Prehensile tail (iv) Sticky pads
 (v) Large ears (vi) Streamlined body
- A. (iii) and (iv) only
 B. (i), (ii) and (vi) only
 C. (ii), (iv) and (v) only
 D. (iii), (iv) and (v) only

68. Refer to the given classification chart and select the option that correctly identifies *W*, *X*, *Y* and *Z*.



- A. *W*-Black soil, *X*-Alluvial soil, *Y*-Laterite soil, *Z*-Red soil
 B. *W*-Alluvial soil, *X*-Black soil, *Y*-Red soil, *Z*-Laterite soil
 C. *W*-Laterite soil, *X*-Black soil, *Y*-Red soil, *Z*-Alluvial soil
 D. *W*-Red soil, *X*-Laterite soil, *Y*-Alluvial soil, *Z*-Black soil

69. The given diagram shows the sectional view of human respiratory system. Identify the parts labelled as *P*, *Q*, *R* and *S* and select the correct statement regarding them.



- A. *P* opens during breathing and exchange of gases takes place here.
 B. *Q* has C-shaped cartilaginous rings that provide support.
 C. *R* is the common passage for both food and air.
 D. *S* becomes flat during inhalation and therefore increases the volume of thoracic cavity.

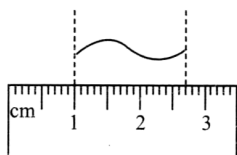
70. Read the given paragraph. Identify *X* and *Y* and select the correct option.

Process *X* is used to transport food prepared by leaves to all parts of the plant. Process *X* takes place through the cells of *Y* that has elongated tubes placed one above the other.

- | | |
|------------------|----------|
| X | Y |
| A. Translocation | Phloem |
| B. Transpiration | Phloem |
| C. Ascent of sap | Xylem |
| D. Guttation | Phloem |

Direction (Q. No. 71 and 72) : Read the given sentence and answer the following questions.

The snapshot of a wave is taken at a certain instant and measured through a scale as shown in the figure.



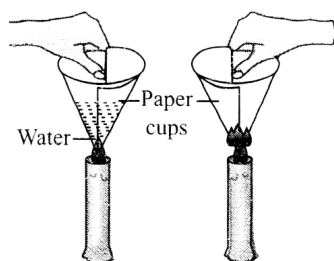
71. What is the wavelength of the wave?

- | | |
|-----------|-----------|
| A. 1.7 cm | B. 0.5 cm |
| C. 2.5 cm | D. 1.3 cm |

72. If the frequency of the wave is doubled, then what would be the wavelength of the wave?

- | | |
|------------|-----------|
| A. 2.85 cm | B. 3.4 cm |
| C. 0.85 cm | D. 1.7 cm |

73. Raghav made two paper cups by folding a sheet of paper. He filled water in one of the cups and kept the other cup empty. He placed each of the paper cups over two burning candles as shown in the following figure.



He observed that the empty cup starts burning immediately, but the cup containing water does not burn. Rather, the water in the cup starts boiling when continued to heat for some more time.

What could be the most appropriate reason for this?

- A. The heat supplied to the empty paper cup was not sufficient enough to overcome its ignition temperature.
- B. The heat was unable to reach the paper cup filled with water, hence it does not burn.
- C. The heat supplied to the cup is transferred to water via conduction and thus, in the presence of water, the ignition temperature of paper is not reached.
- D. Excess of oxygen is present in the paper cup containing water, due to which water starts boiling.

74. Read the given paragraph where few words have been italicised and select the correct statement regarding them.

Species is a group or class of organisms having *different* characteristics that clearly distinguish it from other groups and can interbreed. A species that is confined to a particular geographical area is called *exotic* species whereas the species introduced into new geographical area from some other area is called *endemic* species. Species of animals that travel to long distances to escape unfavourable conditions are called *migratory* species.

- A. *Different* should be replaced with *common*.
- B. *Exotic* and *endemic* should be interchanged.
- C. *Migratory* should not be replaced as it is correctly mentioned.
- D. All of these

75. Study the given table and select the option that correctly identifies any two among *P*, *Q*, *R* and *S*.

Step of nitrogen cycle	Organism involved
Atmospheric biological nitrogen fixation	<i>P</i>
<i>Q</i>	<i>Nitrosomonas</i>
Conversion of nitrites to nitrates	<i>R</i>
<i>S</i>	<i>Pseudomonas</i>

- A. *P* - *Nitrobacter*, *S* - Conversion of nitrogen compounds to ammonia
- B. *P* - *Anabaena*, *Q* - Conversion of ammonia to nitrites
- C. *R* - *Rhizobium*, *S* - Conversion of nitrates to free molecular nitrogen
- D. *Q* - Conversion of nitrites to ammonia, *R* - *Nitrobacter*

SECTION-C : LOGICAL REASONING

This section contains **25 multiple choice questions**. Each question has 4 choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

76. Find the missing number, if a certain rule is followed either row-wise or column-wise.

4	5	3
0	1	2
3	4	6
343	1000	?

- A. 1331
- B. 121
- C. 1150
- D. 1911

77. In a certain code language, if DEFENSIVE is coded as FCHCPQKTG, then how will PROTECTED be coded in the same code language?

- A. TORPEDETC
- B. RTQUDARCB
- C. RPQRGAVCF
- D. EFUDFUPSQ

78. Select the correct mirror image of the given combination of letters and numbers, if mirror is placed vertically to the left.

SO73CC22ER

- A. Я22CC3E02
- B. Я22CC2ER
- C. Я22CC2ER
- D. Я22CC3ER

79. How many 3's are there in the given sequence, each of which is immediately preceded by an odd digit but not immediately followed by an even digit?

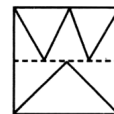
4 5 8 3 4 6 2 5 3 7 9 8 1 0 2 3 4 9 6 8 1 3 5 5

- A. None
- B. One
- C. Two
- D. Three

80. A, B, C, D, E, F, G and H are eight friends sitting around a circular table facing the centre. A sits second to the left of D, who is third to the left of E. C sits third to the right of G, who is not an immediate neighbour of E. H sits third to the right of B, who sits second to the right of G. Who sits between D and C?

- A. B
- B. H
- C. G
- D. E

81. A square transparent sheet with a pattern and a dotted line on it is given. Select a figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



- A.
- B.
- C.
- D.

82. Find the number of triangles formed in the given figure.



- A. 13
- B. 14
- C. 15
- D. More than 15

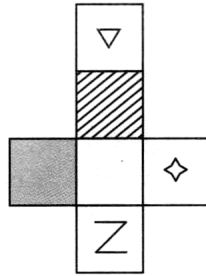
83. If '-' stands for '+', '+' stands for '-', 'x' stands for '÷' and '÷' stands for 'x', then which of the following is correct?

- A. $40 - 10 + 20 \times 10 \div 4 = 40$
- B. $10 - 8 \div 4 \times 8 + 9 = 5$
- C. $31 + 5 \times 3 \div 4 - 9 = 21$
- D. $40 - 30 \times 10 + 5 \div 7 = 10$

84. If 'M x N' means 'M is the daughter of N', 'M + N' means 'M is the father of N', 'M ÷ N' means 'M is the mother of N' and 'M - N' means 'M is the brother of N', then in the expression 'P ÷ Q + R - T x K', how is P related to K?

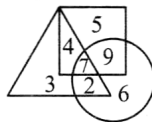
- A. Daughter-in-law
- B. Mother-in-law
- C. Aunt
- D. Mother

85. Select a box from the options that is similar to the box formed when the given sheet of paper is folded to form a box.



- A.
- B.
- C.
- D.

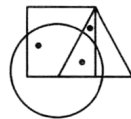
86. In the given Venn diagram, square represents persons who like banana, triangle represents persons who like strawberry and circle represents persons who like apple.



How many persons like banana and strawberry but not apple?

- A. 4
- B. 5
- C. 9
- D. 2

87. Select a figure from the options which satisfies the same conditions of placement of dots as in the given figure.



- A.
- B.
- C.
- D.

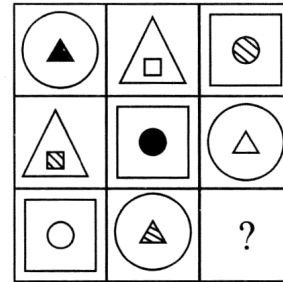
88. Select the odd one out.

- A.
- B.
- C.
- D.

89. After walking 6 km, Mohit turned right and covered a distance of 2 km, then turned left and covered a distance of 10 km. If in the end, he was facing towards the North, then towards which direction did Mohit start his journey?

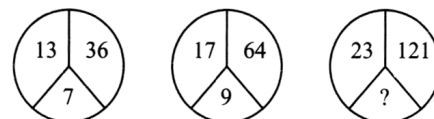
- A. North
- B. South
- C. East
- D. West

90. Select a figure from the options which will complete the given figure matrix.



- A.
- B.
- C.
- D.

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



- A. 11
- B. 12
- C. 13
- D. 10

92. Select the correct mirror image of the given combination of symbols and numbers, if the mirror is placed vertically to the right.

19#@47\$

- A. 27A@#01
- B. 72@A#01
- C. 27@A#01
- D. 2@7A#01

93. How many such pairs of letters are there in the word "TWINKLING" each of which has as many letters between them in the word as in the English alphabets?

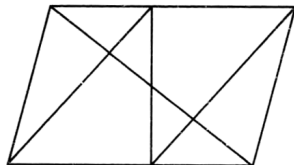
- A. Five
- B. Four
- C. Three
- D. More than five

94. Which of the following two signs must be interchanged to make the given equation correct?

$$15 + 9 \div 3 - 6 \times 2 = 39$$

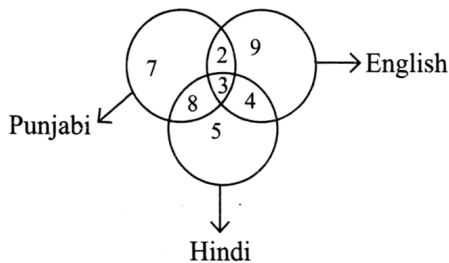
- A. + and ×
- B. × and +
- C. + and ÷
- D. ÷ and -

95. Find the number of triangles formed in the given figure.



- A. 10
- B. 11
- C. 12
- D. More than 12

96. The given Venn diagram shows the number of people who can speak three different languages English, Punjabi and Hindi.

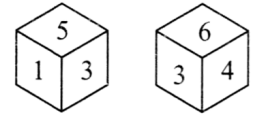


Find the number that represents the people who speak English and Punjabi but not Hindi.

- A. 2
- B. 3
- C. 4
- D. 5

97. Two positions of a dice are shown below. Find the number on the face opposite to the face having number 6.

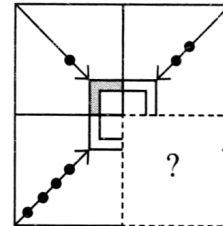
- A. 1
- B. 2
- C. 3
- D. 4



98. In a certain code language, 'TEACHER' is coded as 'SFIDBFU'. How will 'STUDENT' be coded in the same code language?

- A. TUVFEDU
- B. UOFEVUT
- C. TUVDDMS
- D. TNEDUTS

99. Which of the following figures will complete the pattern in the given figure?



- A.
- B.
- C.
- D.

100. Pointing to a girl, Reema said, "She is the only sister of the only son-in-law of my mother's husband". How is that girl related to Reema, if Reema has no sister?

- A. Sister
- B. Sister-in-law
- C. Mother
- D. Niece

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