Reader's Sign _____ Date _____

ORANGE GLOBAL OLYMPIAD

School Level Examination
SLE 2024

SET: I

GRADE 7

MATHEMATICS

Subject Code: 2 0 1

Total Questions: 40 **Total Marks:** 40 **Time:** 1 hour

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED TO DO SO

- All questions are compulsory.
- Read the instructions on the **ANSWER SHEET** and fill in your **NAME**, **CLASS** and **OTHER INFORMATION**.
- To mark your choice of answer by darkening the circles in the **ANSWER SHEET**, use a **BLUE/BLACK BALL PEN** only.
- You **MUST** record your answers on the **ANSWER SHEET** only.
- There are **40 MULTIPLE CHOICE QUESTIONS**. Use the information provided to choose the **BEST** possible answer among the four options. On your **ANSWER SHEET** fill in the circle that matches your answer.
- Marks are **NOT** deducted for incorrect answers.
- Return the **ANSWER SHEET** to the invigilator at the end of the examination.
- You are **NOT** allowed to use a calculator. You may use a ruler and spare paper for rough work.

GRADE 7

This question paper contains a total of 40 questions divided into three sections – A, B and C.

Section A (Logical Reasoning)

1. A man walks 100 metres in front and 100 metres to the right. Then every time turning to his left, he walks 50, 150 and 150 metres respectively. How far is he now from his starting point?

   (A) 50 m (B) 350 m

   (C) 200 m (D) 150 m

2. How many such pairs of letters are there in the word BRIGHTER, each of which has as many letters in the same sequence between them as in the English alphabet?

   (A) 2 (B) 1

   (C) 3 (D) More than 3

3. If P denotes ÷, Q denotes ×, R denotes + and S denotes –, find the value of 18 Q 12 P 4 R 5 S 6 when simplified.

   (A) 36 (B) 53

   (C) 59 (D) 65

4. Prashant Jain has three children–Gauri, Vibha, and Arun. Arun married Kanika, the eldest daughter of Mr. and Mrs. Mittal. Mittals married their youngest daughter to the eldest son of Mr. and Mrs. Sharma and they had two children named Akash and Shreya. Mittals have two more children, Shan and Rinki, both elder to Vanshika. Sameer and Ajay are sons of Arun and Kanika. Rashmi is the daughter of Akash. What is the surname of Rashmi?

   (A) Sharma (B) Mittal

   (C) Jain (D) None of these

5. If 'wall' is called 'window', 'window' is called 'door', 'door' is called 'floor', 'floor' is called 'roof' and 'roof' is called 'ventilator', then where will a person stand on?

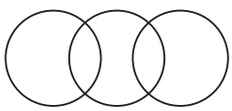
   (A) Window (B) Wall

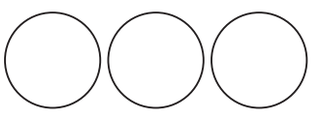
   (C) Floor (D) Roof

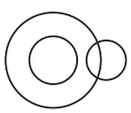
6. In the following question, three words are given followed by four alternatives. Identify which may describe it best.

   Fish, Snakes, Birds

   (A) 

   (B) 

   (C) 

   (D) 

7. Select a figure from the options that exactly fits in the given figure to form a complete square.

(A) 

(B) 

(C) 

(D) 

8. In a certain language, 'RAMESH' is coded as 'ZQUTVP' and 'MEMBER' is coded as 'UTUWTZ'. Then, which of the following would be coded as 'WTUTVP'.

(A) BEEMSH (B) BMEESH

(C) BEMESH (D) MEBESH

Section B (Subject Specific)

9. If A and B are two positive integers and E and F are the multiplicative inverses of A and B respectively, then the value of EB + FA is _____.

(A) $\frac{E^2 + F^2}{E + F}$ (B) $\frac{A^2 + B^2}{AB}$

(C) $\frac{A^2 + B^2}{A + B}$ (D) $\frac{E^2 + B^2}{FB}$

10. Which symbol is located at –1 on the number line shown below?

(A) ◇ (B) ○

(C) ♡ (D) □

11. The value of $\left[5\frac{1}{2}+\left(-3\frac{2}{3}\right)\right]+\left[5\frac{1}{2}+\left(-3\frac{2}{3}\right)\right]$ + ... up to 36 times is _____.

(A) 66 (B) – 66

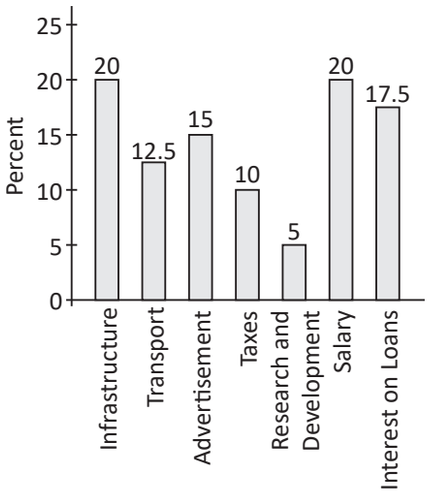
(C) $33\frac{11}{66}$ (D) $-33\frac{11}{66}$

12. If $\frac{5}{6}$ of a number is 45, what is one-fifth of the same number?

(A) 54 (B) 5.4

(C) 10.8 (D) 108

13. The given bar graph shows the percentage distribution of total expenditures of a company under various expenses heads during 2023.



If the interest on loans amounted to ₹2.45 crores, then the total amounts of expenditures on advertisement, taxes, and research and development is _____.

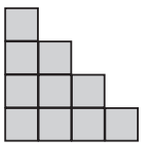
(A) ₹7 crores

(B) ₹5.4 crores

(C) ₹4.2 crores

(D) ₹3 crores

14. The given figure is made up of 10 squares of the same size. The area of the figure is 40 cm^2. Find the perimeter of the figure.



(A) 32 cm (B) 28 cm

(C) 24 cm (D) 36 cm

15. My mother's age is thrice the age of my sister. My father is thirty years older than me. I was five years old when my sister born. If my sister is 16 years old, then the difference in the ages of my parents is _____.

(A) 3 years (B) 5 years

(C) 6 years (D) 7 years

16. The median of observations 11, 12, 14, 18, x + 2, 20, 22, 35 and 51, arranged in ascending order is 21. The value of x is _____.

(A) 18 (B) 19

(C) 20 (D) None of these

17. If a = 3 and b = –1, then the value of $(a + b)^b$ is _____.

(A) –2 (B) $-\frac{1}{2}$

(C) $\frac{1}{2}$ (D) 6

18. The number of boys in a class is 1 less than twice the number of girls. If there are 35 students in the class, the number of boys is _____

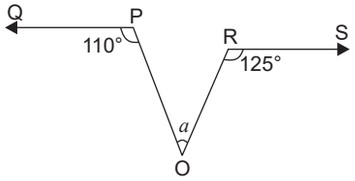
(A) 12 (B) 19

(C) 23 (D) 21

19. Two angles are making a linear pair. If one of them is two-thirds of the other, then angles are _____.

(A) 45°, 135°
(B) 60°, 120°
(C) 64°, 116°
(D) 72°, 108°

20. In the given figure, PQ || RS, find the value of a.

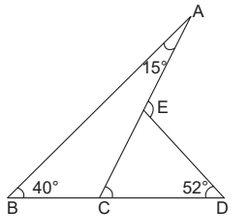


(A) 70°
(B) 55°
(C) 65°
(D) None of these

21. In ΔABC, if AB + BC = 12 cm, BC + CA = 14 cm and CA + AB = 16 cm, then the perimeter of the triangle is _____.

(A) 21 cm
(B) 42 cm
(C) 35 cm
(D) None of these

22. In the given figure, $\angle AED$ is equal to _____.

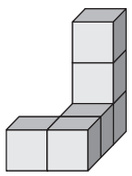


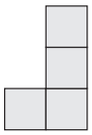
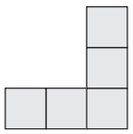
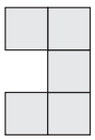
(A) 55°
(B) 92°
(C) 67°
(D) 107°

23. A square pyramid has _____ vertices, _____ edges and _____ faces.

(A) 4, 4, 6
(B) 4, 8, 5
(C) 5, 8, 5
(D) 5, 5, 8

24. Which of the following is the front view of given figure?



(A) 
(B) 
(C) 
(D) 

25. The four numbers are such that x is 15% of y, y is 10% of z, and z is 5% of w. If the value of x is 450, then the value of w is _____.

(A) 600
(B) 6,00,000
(C) 6,000
(D) 60,000

26. Each symbol given below represents an algebraic expression.

△ = $8m - 7n + 6p^2$, ◯ = $-3m - 4n - p^2$, □ = $2m + 4n - 3p^2$ and ⬡ = $-m - n - p^2$

Find the expression which is represented by □ + ⬡ − △ − ◯.

(A) $-4m + 14n - 9p^2$
(B) $4m - 14n - 9p^2$
(C) $4m + 14n - 9p^2$
(D) $-4m - 14n - 9p^2$

27. When simplified, the product $\left(2-\frac{1}{3}\right)\left(2-\frac{3}{5}\right)\left(2-\frac{5}{7}\right)\ldots\left(2-\frac{997}{999}\right)$ is equal to ____.

(A) $\frac{5}{999}$ (B) $\frac{1001}{999}$

(C) $\frac{1001}{3}$ (D) $\frac{100}{3}$

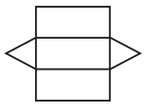
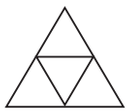
28. If $2^{n+2} - 2^{n+1} + 2^n = C \times 2^n$, find the value of C.

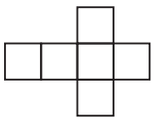
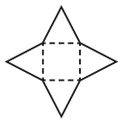
(A) 1 (B) 2

(C) 3 (D) 4

Instruction: Q. 29 to 33 are two-key-based questions, having four options A, B, C, and D out of which TWO are correct.

29. Which of the given nets can be folded to make a pyramid?

(A)  (B) 

(C)  (D) 

30. Which of the following statements are true?

(A) The ratio 2 : 5 converted into percentage is 60%.

(B) If SP of an article is ₹540 and loss is ₹40, then its CP is ₹500.

(C) 80% of 450 m is equal to 360 m.

(D) $6\frac{1}{4}\%$ expressed as a fraction is $\frac{1}{16}$.

31. Which of the following statements are true?

(A) The rational number $\frac{17}{5}$ lies to the left of zero on the number line.

(B) The rational number $\frac{-7}{9}$ lies to the right of zero on the number line.

(C) The rational numbers $\frac{-5}{-7}$ and $\frac{7}{-9}$ lie on opposite sides of zero on the number line.

(D) The rational numbers $\frac{-7}{-6}$ and $\frac{+8}{15}$ lie on the same side of zero on the number line.

32. The value of $(729^3 \div 27^2) \div 3^3$ =

(A) 3^9 (B) 3^6

(C) 27^3 (D) 9^3

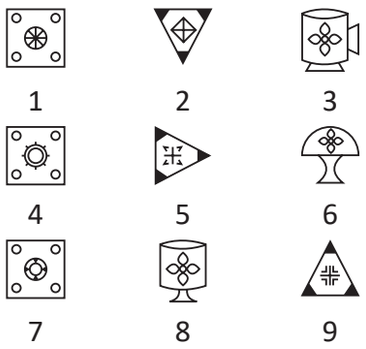
33. If side of a square is increased by 50%, then its perimeter will increase by _____ and area will increase by _____.

(A) 25% (B) 50%

(C) 125% (D) 100%

Section C (Competency Enhancement)

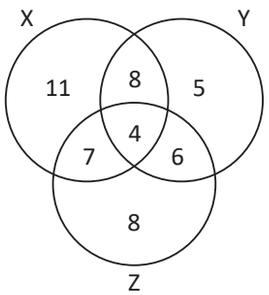
34. Group the given figures into three classes using each figure only once.



(A) 1, 4, 7; 3, 6, 9; 2, 5, 8 (B) 1, 6, 9; 2, 4, 7; 3, 5, 8

(C) 1, 4, 7; 2, 5, 9; 3, 6, 8 (D) 1, 5, 7; 2, 6, 9; 3, 4, 8

35. The numbers in the Venn diagram indicate the number of persons watching the news shows. The diagram is drawn after surveying 50 persons. In a population of 10,000, how many can be expected to watch at least two news shows.



(A) 4200

(B) 5000

(C) 5400

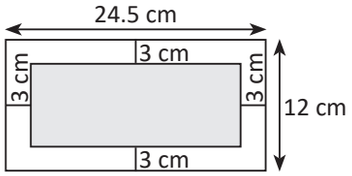
(D) Cannot find.

36. Rani was writing $2^5 \times 9^2$ but in hurry she wrote 2592. What is the numerical difference between the two?

(A) 2 (B) 1

(C) 0 (D) 3

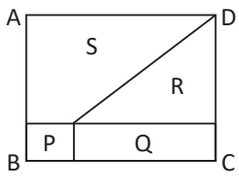
37. The length of a rectangular painting with border is 24.5 cm and its width is 12 cm. The width of the border is 3 cm. Find the area of the painting.



(A) 111 cm^2 (B) 100 cm^2

(C) 133 cm^2 (D) 294 cm^2

38. The given figure shows the rectangle ABCD (not drawn to scale). R is thrice the size of P and $\frac{1}{2}$ the size of S. Q is twice the size of P. What fraction of the whole figure is the sum of Q and S?



(A) $\frac{1}{3}$ (B) $\frac{2}{3}$

(C) $\frac{4}{5}$ (D) $\frac{6}{5}$

39. Three concentric circles are formed to create a beautiful rangoli pattern, having diameters of 4 cm, 21 cm, and 35 cm, respectively. The boundary of each circle was covered using diyas measuring 0.7 cm in diameter. What is the total number of diyas (approx.) required to cover the boundary of the middle and outermost circles?

(A) 176 (B) 251

(C) 252 (D) 250

40. Match the column I (measures of angles of a triangle with condition) to column II (values of angles).

Column I	Column II
(a) The measures of three angles of a triangle are in the ratio 5 : 3 : 1	(i) 30°, 50°, 100°
(b) If $\angle A + \angle B = 150°$ and $\angle B + \angle C = 75°$ in ΔABC, then the angles are _____.	(ii) 20°, 60°, 100°
(c) If one of the exterior angles of a triangle is 80° and the interior opposite angles are in the ratio 3 : 5, then the angles are _____.	(iii) 105°, 45°, 30°

(A) a–ii, b–i, c–iii (B) a–ii, b–iii, c–i

(C) a–i, b–ii, c–iii (D) a–i, b–iii, c–ii