



School Level Examination
SLE 2022

GRADE
10

MATHEMATICS

Subject Code:

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Total Questions: 50

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 **50 MULTIPLE CHOICE QUESTIONS**.
Use the information provided to choose the **BEST** answer among the four possible 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.

Section A (Logical Reasoning)

(This section contains 10 multiple choice questions. Each question has four choices (A), (B), (C) and (D), out of which only ONE is correct.)

1. Find the missing number.

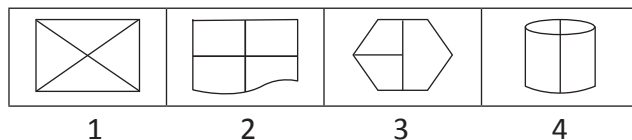
- (A) 2
(B) 4
(C) 6
(D) 8

2	2	5
2	5	6
2	?	9

2. Two men A and B, starting at the same point walk in perpendicular directions, A walks 16 metres and B walks 30 metres, the distance between A and B at the point of time is _____.

- (A) 46 m
(B) 23 m
(C) 34 m
(D) 36 m

3. Find the odd one out.



- (A) 1
(B) 3
(C) 4
(D) 2

4. Look carefully for the pattern, and then choose which pair of numbers comes next.

28, 25, 5, 21, 18, 5, 14

- (A) 11, 5
(B) 10, 7
(C) 11, 8
(D) 5, 11

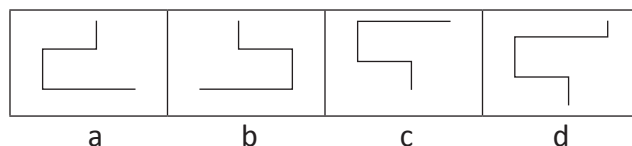
5. Two statements numbered I and II are given. There may be cause and effect relationship between the two statements. These two statements may be the effect of the same cause or independent causes. These statements may be independent causes without having any relationship. Read both the statements and mark your answer.

(i) The school authority has asked the X Std. students to attend special classes to be conducted on Sundays.

(ii) The parents of the X Std. students have withdrawn their wards from attending private tuitions conducted on Sundays.

- (A) Statement (I) is the cause and statement (II) is its effect.
(B) Statement (II) is the cause and statement (I) is its effect.
(C) Both the statements (I) and (II) are effects of independent causes.
(D) Both the statements (I) and (II) are effects of some common cause.

6. Choose the figure that is different.



- (A) a (B) b
(C) c (D) d
7. **Statement:** Should India encourage exports, when most things are insufficient for internal use itself?
Arguments: 1. Yes. We have to earn foreign exchange to pay for our imports.
2. No. Even selective encouragement would lead to shortages.
- (A) Only argument 2 is strong (B) Only argument 1 is strong
(C) Either 1 or 2 is strong (D) Both 1 and 2 are strong
8. Which pair of numbers should come next?
1, 10, 7, 20, 13, 30, 19, _____.
- (A) 25, 31 (B) 40, 50
(C) 40, 25 (D) 29, 36
9. **Statement 1:** X costs less than Y.
Statement 2: Z costs more than X.
On the basis of the given statements select the correct option.
- (A) X is the least costly. (B) Z costs less than Y.
(C) Y and Z cost equal. (D) Z is the cheapest.
10. Rohan is taller than Anand but shorter than Seema. Krishna is taller than Pushpa but shorter than Anand. Dhiraj is taller than Krishna but shorter than Seema. Who among them is the tallest?
- (A) Rohan (B) Krishna
(C) Seema (D) Cannot be determined

Section B (Subject Specific)

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

11. If a number is divided by 5, its remainder can be _____.
(A) 5 (B) 4
(C) -10 (D) 6
12. Find $\frac{p}{q}$, if 2 is added to p and q, it becomes $\frac{9}{10}$ and if 3 is subtracted from the p and q, it becomes $\frac{4}{5}$.
(A) $\frac{8}{7}$ (B) $\frac{7}{8}$
(C) $\frac{3}{2}$ (D) $\frac{2}{3}$

13. What should be added to the polynomial $x^2 - 5x + 4$, so that 3 is the zero of the resulting polynomial?
 (A) 1 (B) 2
 (C) 4 (D) 5
14. The length of the shadow of a 30m high pole at some instant is $10\sqrt{3}$ m. The angle of elevation of the sun is _____.
 (A) 45° (B) 60°
 (C) 30° (D) 15°
15. A kite is flying at a height $50\sqrt{2}$ m above the level ground, attached to string inclined at 45° to the horizontal, the length of string is _____.
 (A) 100m (B) 50m
 (C) 150m (D) 75m
16. A tree is broken at a height of 10m above the ground. The broken part touches the ground and makes an angle of 30° with the horizontal. The height of the tree is _____.
 (A) 15m (B) 10m
 (C) 30m (D) 20m
17. The three vertex of the rectangle ABCD are A(4, 2), B(-2, 2), C(-2, -2), then D is _____.
 (A) (-2, 3) (B) (4, -2)
 (C) (2, 2) (D) (5, -2)
18. A walking track in a circular ground has an inner circumference as 121m and outer circumference as 154m. The width of the walking track is _____.
 (A) 10.5cm (B) 5.25cm
 (C) 7m (D) 6m
19. If the diameter of circle is increased by 100%, the area is increased by _____.
 (A) 200% (B) 300%
 (C) 10000% (D) 400%
20. (0, 0), (4, 5), (9, 9) and (5, 4) are the co-ordinates of a _____.
 (A) Square (B) Rhombus
 (C) Trapezium (D) Rectangle
21. A circle drawn with origin as a centre, passes through $\left(\frac{11}{2}, 0\right)$. The point which does not lie in the interior of the circle is _____.
 (A) $\left(\frac{-5}{2}, 1\right)$ (B) $\left(1, \frac{2}{3}\right)$
 (C) $\left(3, \frac{-1}{2}\right)$ (D) $\left(-6, \frac{5}{2}\right)$
22. If $1 - \sin^2\theta = \frac{3}{4}$, then the value of $\cos\theta$ is _____.
 (A) $\frac{1}{2}$ (B) $\frac{\sqrt{3}}{2}$
 (C) $\frac{\sqrt{3}}{2}$ (D) 0

23. The relationship with the given positive integers a and b , there exists unique q and r where $0 \leq r < b$ is _____.
- (A) $br + q$ (B) $a = bq + r$
(C) $a = bq - r$ (D) $b = aq + r$
24. If D and E are points on the sides AB and AC respectively of $\triangle ABC$, such that $AD = 3$ cm, $DB = 6$ cm, $AE = 4$ cm and $EC = 8$ cm, then the relationship between DE and BC is _____.
- (A) $BC = 3DE$ (B) $DE = 3BC$
(C) $BC = 2DE$ (D) $DE = 2BC$
25. The mean of 1, 3, 4, 5, 7, 4 is m . The number 3, 2, 2, 4, 3, 3, p have mean $(m - 1)$ and median q . Then $p + q$ equals
- (A) 4 (B) 5
(C) 6 (D) 7
26. Value of $\frac{1}{\operatorname{cosec}\theta} + \cos\theta$ is always _____.
- (A) equal to 1 (B) less than 1
(C) negative (D) more than or equal to 1
27. A person standing on the bank of a river finds that the angle of elevation of the top of a tower on the opposite bank is 45° . Which of the following statements is correct?
- (A) Breadth of the river is twice the height of the tower.
(B) Breadth of the river is half of the height of the tower.
(C) Breadth of the river is same as the height of the tower.
(D) None of the above
28. If a line segment of length 7.2 cm is drawn and divided in the ratio 5:3, then the measure of two parts will be
- (A) 5.4 cm, 1.8 cm (B) 4.5 cm, 2.7 cm
(C) 2.4 cm, 4.8 cm (D) none of these

Study the text given below and answer the questions from 29 to 31.

A real number ' α ' is called a root of the quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$, if $a\alpha^2 + b\alpha + c = 0$. $x = \alpha$ is a solution of the quadratic equation or that ' α ' satisfies the quadratic equation

29. The common root of the equation $x^2 - 7x + 10 = 0$ and $x^2 - 10x + 16 = 0$ is _____.
- (A) 2 (B) -2
(C) 3 (D) 5
30. If the sum and product of the roots of the equation $kx^2 + 6x + 4k = 0$ are equal, then k is _____.
- (A) $\frac{3}{2}$ (B) $\frac{-3}{2}$
(C) $\frac{2}{3}$ (D) $\frac{-2}{3}$
31. If $\frac{1}{2}$ is a root of the equation $x^2 + kx - \frac{5}{4} = 0$, then the value of k is _____.
- (A) 2 (B) -2
(C) $\frac{1}{4}$ (D) $\frac{1}{2}$

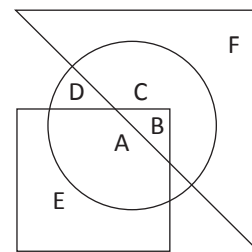
32. In a group of 8 students, what is the probability of each one of them having birthday on the different days of week?

(A) 1 (B) $\frac{1}{7}$
(C) $\frac{1}{8}$ (D) 0

33. In the given figure, the triangle represents girls, the square represents sports persons and the circle represents coaches. The region in the figure which represents girls who are sports persons as well as coaches is labelled a

_____.

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



34. From a light house the angles of depression of two ships on opposite sides of the light house are observed to be 30° and 45° . If the height of the light house is h metres, the distance between the ships is _____.

(A) $(\sqrt{3} + 1)h$ metres (B) $(\sqrt{3} - 1)h$ metres
(C) $\sqrt{3}h$ metres (D) $\left(1 + \frac{1}{\sqrt{3}}\right)h$ metres

35. If $(\sin \alpha + \operatorname{cosec} \alpha)^2 + (\cos \alpha + \sec \alpha)^2 = k + \tan^2 \alpha + \cot^2 \alpha$, then k is _____.

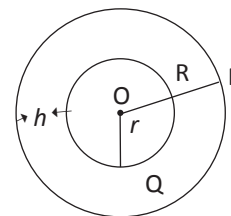
(A) 9 (B) 7
(C) 5 (D) 3

Section C (Competency Based)

(This section contains 15 multiple choice questions. Each question has four choices (A), (B), (C) and (D), out of which TWO are correct.)

36. The area of a circular path of uniform width ' h ' surrounding a circular region of radius ' r ' is _____.

(A) $\pi r(2r + h)$ (B) $\pi h(2r + h)$
(C) $\pi h(h + 2r)$ (D) $\pi h(R - r)$



37. The base of a prism is a right angled triangle, the length of whose hypotenuse is 10 cm. If the lateral surface area of the prism be 384 cm^2 and its height be 16 cm, then the other two sides of its base are _____.

(A) 8 cm (B) 10 cm
(C) 5 cm (D) 6 cm

38. If the roots of $5x^2 - px + 1 = 0$ are real and distinct, then _____.

(A) $-2\sqrt{5} < p < 2\sqrt{5}$ (B) $p > 2\sqrt{5}$
(C) $p > -2\sqrt{5}$ (D) $p < -2\sqrt{5}$

39. If a, b, c are in AP, then $a^3 + 4b^3 + c^3$ is equal to _____.
 (A) $3b(c^2 - a^2)$ (B) $3b^2(a^2 + c^2)$
 (C) $3b(a^2 - c^2)$ (D) $6b(2b^2 - ac)$
40. A copper wire 4 mm in diameter is evenly wound about a cylinder whose length is 24 cm and diameter is 20 cm, so as to cover the whole surface.
 (A) The length of wire is 1200π cm (B) The length of wire is 1400π cm
 (C) The volume of wire is $46\pi^2$ cm³ (D) The volume of wire is $48\pi^2$ cm³
41. If the HCF and LCM of X and Y are equal, then _____.
 (A) $x = y$ (B) $x = 2y$
 (C) $2x = y$ (D) $2x = 2y$
42. If three points $(0, 0)$, $(5, \sqrt{5})$ and $(5, S)$ form an equilateral triangle, then S is _____.
 (A) $\sqrt{5}$ (B) $-\sqrt{5}$
 (C) 5 (D) -5
43. A man bought an article for ₹ x and sold it for ₹16, thereby making a loss of x percent. Find the cost price of the article.
 (A) 80 (B) 70
 (C) 30 (D) 20
44. The sum of two numbers is 48 and its product is 432. Find the numbers.
 (A) 12 (B) 36
 (C) 24 (D) 68
45. Which of the following formula will give area of an equilateral triangle?
 (A) side^2 (B) $\frac{\sqrt{3} \text{side}^2}{4}$
 (C) $\sqrt{\frac{3}{16}} \text{Side}^2$ (D) $\left(\sqrt{\frac{3}{2}} \text{Side}\right)^2$
46. Which of the following is formula for area of a triangle?
 (A) $\frac{1}{2} \times b \times h$ (B) $\sqrt{S(S-a)(S-b)(S-c)}$
 (C) S^2 (D) S^3
47. The value of $(\sin 45^\circ + \cos 45^\circ)$ is _____.
 (A) $1/\sqrt{2}$ (B) $2/\sqrt{2}$
 (C) $\sqrt{3}/2$ (D) $\sqrt{2}$
48. The value of $(\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ)$ is _____.
 (A) 0 (B) $2/2$
 (C) 1 (D) $\sqrt{2}/2$
49. Rahul and Rohan have 45 marbles together. After losing 5 marbles each, the product of the number of marbles they both have now is 124. Find out how many marbles each had in the beginning.
 (A) 39 (B) 36
 (C) 9 (D) 34
50. The areas of two similar triangles are in the ratio 25 : 9, then their corresponding _____.
 (A) Altitudes are in the ratio 5 : 3 (B) Altitudes are in the ratio 3 : 5
 (C) Bases are in the ratio 5 : 3 (D) Medians are in the ratio 3 : 5

