

10th STD	III Revision EXAMINATION - 2019-20	Reg No [] [] [] [] [] []
Time : 3.00 hrs.	MATHEMATICS	Marks : 100

Instructions: 1. Check the question paper for fairness of printing. If there is any lack of fairness inform the Hall Supervisor immediately.

2. Use blue or black ink to write and underline and pencil to draw diagrams.

Note: This question paper contains Four parts.

PART - I

Note: I) Answer all the 14 questions:

14x1=14

II) Choose the most suitable answer from the given Four alternatives and write the option code with the corresponding answer:

1. If $\{(a, B), (6, b)\}$ represents an identity function then the value of a and b are respectively
 a) (8, 6) (b) (8, 8) (c) (6, 8) (d) (6, -6)
2. If $f: A \rightarrow B$ is a bijective function and if $n(B) = 7$, then $n(A)$ is equal to
 (a) 7 (b) 49 (c) 1 (d) 14
3. $7^{4k} \equiv \text{-----} \pmod{100}$ (a) 1 (b) 2 (c) 3 (d) 4
4. In an A.P., the first term is 1 and the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?
 (a) 6 (b) 7 (c) 8 (d) 9
5. Find the matrix X' if $2X + \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} = \begin{bmatrix} 5 & 7 \\ 9 & 5 \end{bmatrix}$
 (a) $\begin{bmatrix} -2 & -2 \\ 2 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & 2 \\ 2 & -1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & 2 \\ 2 & 2 \end{bmatrix}$ (d) $\begin{bmatrix} 2 & 1 \\ 2 & 2 \end{bmatrix}$
6. If three planes are parallel then the number of possible point(s) of intersection is/are—
 (a) 0 (b) 1 (c) 2 (d) 3
7. In a right angle triangle the sum of other two angles is ———
 (a) 0 (b) 90° (c) 180° (d) 70°
8. The slope of the line which is perpendicular to a line joining the points (0,0) and (-8, 8) is
 (a) -1 (b) 1 (c) 1/3 (d) -8
9. When proving that a quadrilateral is a trapezium, it is necessary to show
 (a) Two sides are parallel (b) Two parallel and two non-parallel sides
 (c) Opposite sides are parallel (d) All sides are of equal lengths
10. $\tan \theta \operatorname{Cosec}^2 \theta - \tan \theta$ is equal to
 (a) $\sec \theta$ (b) $\cot^2 \theta$ (c) $\sin \theta$ (d) $\cot \theta$
11. The curved surface area of a right circular cone of height 15cm and base diameter 16cm is
 (a) $60 \pi \text{ cm}^2$ (b) $68 \pi \text{ cm}^2$ (c) $120 \pi \text{ cm}^2$ (d) $136 \pi \text{ cm}^2$
12. The total surface area of a hemi-sphere is how much times the square of its radius
 (a) π (b) 4π (c) 3π (d) 2π
13. The range of the data 8,8,8,8,88 is
 (a) 0 (b) 1 (c) 8 (d) 3
14. Which of the following is incorrect?
 (a) $P(A) > 1$ (b) $0 \leq P(A) \leq 1$ (c) $P(\phi) = 0$ (d) $P(A) + P(\bar{A}) = 1$

PART - II (Marks : 20)

II. Answer 10 questions. Question No.28 is compulsory.

10 x 2 = 20

15. A function f is defined by $f(x) = 3-2x$. Find x such that $f(x^2) = [f(x)]^2$
16. The distance S (In Kms) travelled by a particle in time 't' hours is given by $s(t) = \frac{t^2 + t}{2}$. Find the distance travelled by the particle after (i) three and half hours (ii) eight hours and fifteen minutes.
17. Find the sum of $1+3+5+\dots+27$.
18. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 7 & 0 \\ 1 & 3 & 1 \\ 2 & 4 & 0 \end{bmatrix}$. Find $A + B$.

19. If $A = \begin{bmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{bmatrix}$, Find the value of $3A - 9B$.
20. What length of ladder is needed to reach a height of 7ft along the wall when the base of the ladder is 4ft from the wall? Round off your answer to the next tenth place.
21. Find the equation of a line through the given pair of points (2, 3) and (-7, -1).
22. Find the slope of the straight line $6x+8y+7=0$.
23. A kite is flying at a height of 75m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60° . Find the length of the string assuming that there is no slack in the string.
24. Find the volume of a cylinder whose height is 2m and whose base area is 250m^2
25. The slant height of a frustum of a cone is 7cm and radii of its ends are 6 cm and 2 cm. Find its curved surface area.
26. Find the range of the following distribution.

Age (in years)	16-18	18-20	20-22	22-24	24-26	26-28
Number of Students	0	4	6	8	2	2

27. Write the sample space for tossing three coins using tree diagram.
28. Find the sum to infinity of $9+3+1+\dots$

PART - III (Marks : 50)

- III. Answer 10 questions. Question No.42 is compulsory. 10x5=50**
29. Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets. Let $f : A \rightarrow B$ be a function given by $f(x) = 3x - 1$. Represent this function. (a) by arrow diagram (b) in a table form (c) as a set of ordered pairs (d) in a graphical form
30. Consider the functions $f(x)$, $g(x)$, $h(x)$ as given below. Show that $(f \circ g) \circ h = f \circ (g \circ h)$ in $f(x) = x - 4$, $g(x) = x^2$, and $h(x) = 3x - 5$.
31. Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.
32. Find the largest number which divides 1230 and 1926 leaving remainder 12 in each case.
33. There is square field whose side is 10m. A square flower bed is prepared in its centre leaving a travel path all round the flower bed. The total cost of laying the flower bed and gravelling the path at ₹.3 and ₹.4 per square metre respectively is ₹.364. Find the width of the gravel path.
34. If $A = \begin{bmatrix} 1 & 1 \\ -1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ -4 & 2 \end{bmatrix}$, $C = \begin{bmatrix} -7 & 6 \\ 3 & 2 \end{bmatrix}$. Verify that $A(B+C) = AB + AC$.

35. A circle is inscribed in $\triangle ABC$ having sides 4 cm, 5 cm and 7 cm as show in figure, Find AD, BE and CF.



36. Find the equation of a line which passes through (5, 7) and makes intercepts on the axes equal in magnitude but opposite in sign.
37. Show that the given points form a parallelogram: A(2.5, 3.5), B(10, -4) C(2.5, -2.5) and D(-5, 5).
38. From a point on a bridge across a river, the angle of depression of the banks on opposite sides at the river are 30° and 45° respectively. If the bridge is at a height of 3 m from the banks. Find the width of the river.
39. The radius of a conical tent is 7 m and the height is 24 m. Calculate the length of the canvas used to make the tent if the width of the rectangular canvas is 4 m?
40. A card is drawn from a pack of 52 cards. Find the probability of getting a king or a heart or a red card.
41. Find the coefficient of variation of 24, 26, 33, 37, 29, 31.

42. If $\frac{\cos \alpha}{\cos \beta} = m$ and $\frac{\cos \alpha}{\cos \beta} = n$ then prove that $(m^2 + n^2) \cos^2 \beta = n^2$.

PART - IV (Marks :16)

- IV. Answer both questions: 2x8=16**
43. (a) Construct a $\triangle ABC$ such that $AB = 5.5$ cm, $\angle C = 25^\circ$ and the altitude from C to AB is 4cm

(OR)

(b) Draw a circle of diameter 6cm from a point P, which is 8cm and away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

44. (a) Graph the following quadratic equations and state their nature of solutions. $x^2 - 4x + 4 = 0$

(OR)

(b) Draw the graph of $y = 2x^2$ and hence solve $2x^2 - x - 6 = 0$.