SSLC MATHS MODEL QUESTION PAPER - 05: 2019-20

No. of questions: 38   **Subject Code: 81E**
Time: 3 hours   **Max. Marks : 80**

I.Four alternatives are given to the following questions or incomplete statements. Choose the correct from them and write it along with serial letter. $08 \times 01 = 08$

1) The area of two congruent triangles having radius $'r'$ is

   A) $2\pi r^2$ B) $2\pi r$

   C) $\frac{1}{2}\pi r^2$ D) πr^2

2) The distance between the points $P(x_1, y_1)$ and $Q(x_2, y_2)$ is

   A) $\sqrt{(x_1 + x_2)^2 + (y_1 + y_2)^2}$ B) $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

   C) $\sqrt{(x_1 - x_2)^2 - (y_1 - y_2)^2}$ D) $\sqrt{(x_1 + x_2)^2 - (y_1 + y_2)^2}$

3) Zeroes of the polynomial $p(x) = x^2 - 9$ are

   A) ± 3 B) ± 2

   C) ± 9 D) ± 1

4) The maximum number of tangents that can be drawn to a circle from an external point is

   A) 1   B) 2

   C) 3   D) 4

5) If the value of discriminant of a quadratic equation $b^2 - 4ac = 0$ then the nature of roots is

   A) real and distinct   B) roots are equal

   C) no real roots   D) roots are unequal and rational

6) The value of $\cos 48° - \sin 42°$

   A) 0   B) $\frac{1}{4}$

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

7) If $P(A) = 0.05$ then $P(\bar{A})$

   A) 0.59   B) 0.95

   C) 1   D) 1.05

8) Curved surface area of frustum of a cone is

   A) $\pi(r_1 + r_2)l$ B) $\pi(r_1 + r_2)h$

   C) $\pi(r_1 - r_2)l$ D) $\pi(r_1 - r_2)h$

II. Answer the following questions. $08 \times 01 = 08$

9) Express 3025 as the product of prime factors

10) If the HCF of 24 and 36 is 12 then what is their LCM?

11) Write the coordinates of the midpoint of the line segment joining the points (6, 2) and (4, 4).

12) $\triangle ABC \sim \triangle DEF$, the area of $\triangle ABC$ is 64cm² and the ratio of the corresponding sides is 4:6. Find the area of $\triangle DEF$.

13) Find the common difference of the AP $-10, -3, 4 \ldots$

14) If the nth term of an AP is $n^2 + 1$ find its 6th term.

15) Write the quadratic equation $(x + 1)^2 = 2(x - 3)$ in standard form.

16) If the length, breadth and height of a cuboid are 10cm, 5cm and 2cm find its volume.

III. Answer the following questions. $08 \times 02 = 16$

17) Prove that $2 - \sqrt{3}$ is an irrational number.

18) Find the zeroes of polynomial $x^2 - 15$ and verify the relation between zeroes and coefficients.

OR

Write the polynomial whose sum and product of zeroes are -3 and 2.

19) Solve: $2x + y = 5, 3x - 2y = 4$

20) Find the number of two digit multiples of 3.

21) Evaluate: $2\tan^2 45° + \cos^2 30° - \sin^2 60°$

22) In the figure, if DE ∥ AC and DF ∥ AE prove that $\dfrac{BF}{FE} = \dfrac{BE}{EC}$
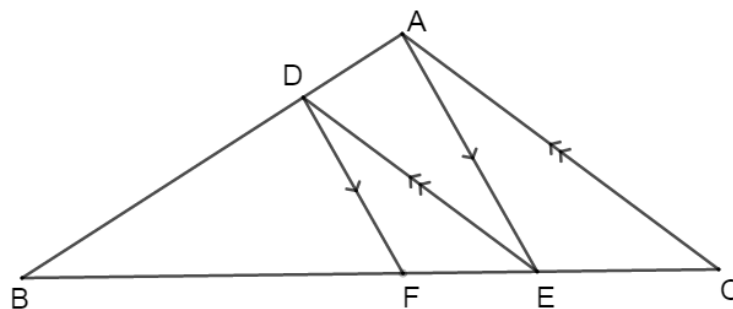
OR

A vertical pole of height 6m casts a shadow of length 4m. At the same time if a building casts a shadow of length 28m find the height of the building.

23) A jar contains 24 marbles. Some of them are green and the remaining are blue. When a marble is taken out of the jar randomly, if the probability of getting a green marble is $\dfrac{2}{3}$ find the number of blue marbles in the jar.

24) Construct two tangents to a circle of radius 3cm such that the angle between the tangents is 50°.

## IV. Answer the following questions. $09 \times 03 = 27$

25) The sum of first 9 terms of an AP is 81 and the sum of first 15 terms is 225. Find the sum of first n terms.

OR

In an AP, if the 10th term is 21 and the sum of first 10 terms is 120 find the nth term.

26) Prove that $\sqrt{\dfrac{1+sinA}{1-\sin A}} = secA + tanA$

27) Slant height of a cone is 8cm and half of its vertical angle is 60° as shown in the figure. Find the radius of the base of the cone.
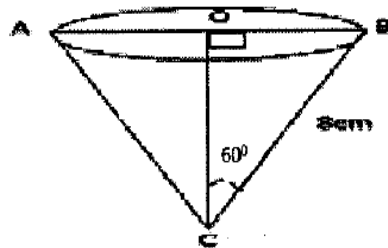
28) Find the area of triangle whose vertices are A(5, 2), B(4, 7) and C(7, -4)

OR

If the points $(7,-2),(5,1)$ and $(3,k)$ are collinear find the value of k.

29) Draw a more than type ogive for the following data.

Class Interval	$0-20$	$20-40$	$40-60$	$60-80$	$80-100$
Frequency	6	11	17	12	4

30) Find the median for the following data.

Class Interval	$15-20$	$20-25$	$25-30$	$30-35$	$35-40$
Frequency	2	3	6	4	5

OR

Find the mode for the following data.

Class Interval	$1-3$	$3-5$	$5-7$	$7-9$	$9-11$
Frequency	7	8	2	2	1

31) Prove that a tangent drawn at any point on a circle is perpendicular to the radius at the point of contact.

OR

The radii of two concentric circles are 5cm and 3cm. Find the length of chord of bigger circle which touches the inner circle.

32) Construct ΔABC with sides $AB = 6cm$, $BC = 7cm$ and $\angle B = 60°$. Then construct another triangle similar to the first triangle such that the sides of this triangle are $\dfrac{3}{5}$ the sides of first triangle.

33) In the figure ABCD is a square of side 14cm. If APB and BPC are semicircles find the area of shaded region.
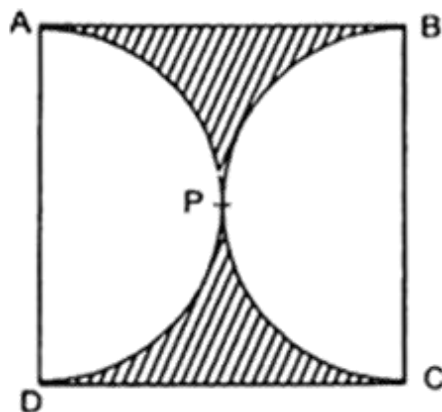
V. Answer the following questions. $\qquad\qquad 04 \times 04 = 16$

34) Divide $(3x^2 - x^3 - 3x + 5)$ by $(x - 1 - x^2)$ and verify by using division algorithm.

OR

If -3 and 4 are two zeroes of the polynomial $x^3 - 13x - 12$ find all its zeroes.

35) A student bought some books for Rs.60. Had he bought 2 books less for the same amount the cost of each book would have been 1 rupee more. Find the number of books bought by the student.

36) Find the solution to the following pair of linear equations graphically. $2x + y = 5$ and $x - y = 1$

37) When some marbles of diameter 1.4cm each are dropped into a cylindrical vessel of radius 7cm containing some water in it, the water level rises in the vessel to 28cm. Find the number of marbles dropped.

VI. Answer the following questions. $\qquad\qquad 01 \times 05 = 05$

38) State and prove Thale's theorem.