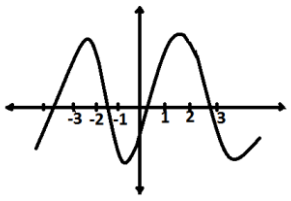
SSLC MATHS MODEL QUESTION PAPER - 07: 2019-20

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) If a and b are real numbers, q and r are quotient and remainder respectively, then which of the following is correct according to Euclid's Division Lemma
   A) b = aq – r B) b = cq + r
   C) c = ab + r D) a = bq + r

2) In the graph the number of zeroes of polynomial between -2 and 1 is
   A) 1 B) 2
   C) 3 D) 4



3) The nature of roots of quadratic equation $4x^2-4x+1=0$ is
   A) real and equal B) real and distinct
   C) complex numbers D) prime numbers

4) The value of $\cos0°\times\cos1°\times\cos2°\times\cos3°\times \ldots \times\cos90°$ is
   A) -1 B) $\frac{1}{\sqrt{2}}$
   C) 0 D) 1

5) When a dice is rolled the probability of getting an odd number is
   A) $\frac{3}{4}$ B) $\frac{1}{2}$
   C) $\frac{1}{4}$ D) $\frac{5}{6}$

6) The number of solutions of a pair of linear equations in two variables representing intersecting lines is
   A) 1 B) 2
   C) 3 D) 4

7) The distance between origin and a point (6, -8) is
   A) 10 units B) 14 units
   C) 20 units D) 100 units

8) The formula used to find the volume of frustum of a cone is
   A) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1^2r_2^2)$ B) $\frac{1}{3}\pi h(r_1^2 + r_2^2 + r_1r_2)$
   C) $\frac{1}{3}\pi l\,(r_1^2 + r_2^2 + r_1r_2)$ D) $\frac{1}{3}\pi h(r_1 + r_2 + r_1r_2)$

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

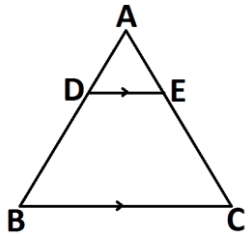
9) If the ratio of corresponding sides of two similar triangles is 9:16 then what is the ratio of areas of those triangles?
10) If $2\sin\theta = \sqrt{3}$ and θ is an acute angle, find the value of θ.
11) Write the next three terms of the A.P. a, 2a, 3a, 4a, . . .
12) Find the value of $\frac{\tan 18°}{\cot 72°}$

13) If the area of the base of a cone is $24cm^2$ and its height is 6cm, find the volume.

14) Express 210 as the product of its prime factors.

15) If the sector of a circle has an angle 60° at the centre and its area $20cm^2$ then find the area of same circle.

16) In ΔABC, DE∥BC. If AD=3cm, BD=6cm and EC=4cm find AE.



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

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

18) If the sum of two numbers is 10 and their difference is 6, find the numbers.

19) Construct a pair of tangents to a circle of radius 4cm such that the angle between the tangents is 60°.

20) Solve the quadratic equation $x^2-7x+11=0$ by using formula.

21) Which term of the AP 3, 15, 27, 39, . . . is 132 more than its 54^{th} term?

OR

In an AP if the first term is 10 and the common difference is 10, find the first four terms of the AP.

22) The length and breadth of a rectangular park are 14m and 7m respectively. Two semicircular ponds are made inside the park by taking the breadth of park as diameter and a flower garden is made in the remaining portion. Find the area of flower garden.

23) If α, β, γ are the zeroes of a polynomial x^3+2x^2-8x+2 find the value of $\alpha^{-1}+\beta^{-1}+\gamma^{-1}$.

OR

If the sum and product of zeroes of a polynomial $px^2+qx+12$ are 5 and 6 respectively find the values of p and q.

24) A box contains 5 red marbles, 8 white marbles and 4 green marbles. If a marble is drawn randomly from the box find the probability of not getting a green marble.

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

25) Find the zeroes of a quadratic polynomial $4s^2-4s-1$ and the verify the relationship between the zeroes and the coefficients.

OR

Find the quotient and remainder by dividing the polynomial $(3x^3-5x^2-11x-3)$ by $(x-3)$.

26) Calculate the median of the data given below.

C.I.	0-10	10-20	20-30	30-40	40-50
Frequency	5	12	14	11	8

27) From a point on the ground, the angles of elevation of the top and bottom of a transmission tower fixed at the top of a 20m high building are 60° and 45° respectively. Find the height of the tower.

28) Draw a less than type ogive for the following data.

C.I.	0-20	20-40	40-60	60-80	80-100
Frequency	6	11	17	12	4

29) An insect 8m away from the foot of a lamp post which is 6m tall, crawls towards it. After moving through a distance, its distance from the top of the lamp post is equal to the distance it has moved. How far is the insect away from the foot of the lamp post?

OR

A lotus is 20cm above the water surface in a pond and its stem is partly below the water surface. As the wind blew, the stem is pushed aside so that the lotus touched the water at 40cm away from the original position of the stem. Originally how much of the stem was below the water surface?

30) Prove that the lengths of tangents drawn from an external point to a circle are equal.

OR

Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that ∠PTQ=2∠OPQ.

31) Draw a triangle ABC with sides BC=6cm, AB=5cm and ∠ABC=60°. Then construct a triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the triangle ABC.

32) The base of a triangle is 4cm more than its height. If the area of triangle is 48 cm^2 find its base and height.

33) Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$

OR

Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

V. Answer the following questions. **$04 \times 04 = 16$**

34) Subba Rao started work in 2015 at an annual salary of Rs.50,000 and received an increment of Rs.2,000 each year. In which year did his income reach Rs.70,000? (Use the principle of AP)

OR

A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find

(i) the production in the 10^{th} year.

(ii) the total production in first 7 years.

35) Solve the following equations by using graph.

$2x + y = 10$ and $2x - y = 6$

36) Prove that if the corresponding angles of two triangles are equal, then their corresponding sides are in the same ratio.

37) Find the area of ΔPQR obtained by joining the mid points of the sides of ΔABC whose vertices are (0, -1), (2, 1) and (0, 3). Also find the ratio of areas of ΔPQR and ΔABC.

VI. Answer the following questions. **$04 \times 04 = 16$**

38) A cone and a hemisphere are joined on either sides of a cylinder. These solids have radius 7cm each. If the total height of the solid is 61cm and the height of the cylinder is 30cm, find the cost of painting the outer surface of the solid at the rate of Rs.10 per $100cm^2$.