# SSLC MATHS MODEL QUESTION PAPER - 09: 2019-20

No. of questions:38 Time: 3 hours	Subject Code: 81E Max. Marks : 80
I.Four alternatives are given to the fo	llowing questions or incomplete statements.
Choose the correctfrom them and w	rite it along with serial letter. $08 \times 01 = 08$
1) If straight lines representing a	a pair of linear equations with two variables are
intersecting, then the number	r solutions
A) infinite	B) unique
C) zero	D) none of these
2) The value of discriminant of t	he quadratic equation $x^2 - 4x + 4 = 0$ is
<i>A</i> ) 0	<i>B</i> )1
<i>C</i> ) 2	<i>D</i> ) 3
3) The product of HCF and LCM	of two numbers 'a' and 'b' is equal to
<i>A</i> ) a + b	<i>B</i> ) a – b
<i>C</i> ) a × b	$D) a \div b$
4) The formula used to find th	e n <sup>th</sup> term of an arithmetic progression having
first term 'a' and common dif	ference 'd'
<i>A</i> ) a + (n + 1)d	B)a – (n + 1)d
<i>C</i> ) a – (n – 1)d	D) a + (n - 1)d
5) If $\sin \theta = \frac{1}{2}$ , the value of $\theta$ is	
A) 30 °	<i>B</i> ) 45 °
<i>C</i> ) 60 °	D) 90 °
6) Coordinates of the mid-poin and (7, 3) is	t of the line segment joining the points $(3, 5)$
A) (2,1)	B) (2,4)
<i>C</i> ) (4,5)	D) (5,4)
7) Maximum number of tange	ents that can be drawn to a circle from an
external point is	
<i>A</i> ) 1	<i>B</i> ) 2
<i>C</i> ) 3	D) 4
8) Total surface atrea of a solid her	nisphere of radius 7cm is
<i>A</i> ) 246 cm <sup>2</sup>	<i>B</i> ) 426 cm <sup>2</sup>
<i>C</i> ) 462 cm <sup>2</sup>	$D) 642 \text{ cm}^2$

#### Answer the following questions. II.

- 10) What is the degree of the polynomial  $x^3 + x^2 + x^5 7$ ?
- 11) Write the formula of to find the roots of quadratic equation  $ax^2 + bx + c = 0$
- 12) In an arithmetic progression  $a_n = 4n 3$ . Find the value of  $a_5$ .
- 13) Find the distance between the point (4,3) and the origin.
- 14) Write the formula to find the length of the arc of a sector with the angle at the centre  $\theta'$ .
- 15) Check whether pair of linear equations x + y = 5 and 2x + y = 10 are consistent.
- 16) Write the formula to find the lateral surface area of frustum of a cone.

# III. Answer the following questions.

- 17) Prove that  $5 + \sqrt{3}$  is an irrational number.
- 18) Find the zeroes of the polynomial  $p(x) = x^2 2x 8$ .

#### OR

Write the quadratic polynomial having sum and product of zeroes equal to  $\frac{1}{4}$ and -1 respectively.

- 19) Solve : x + y = 14, x y = 2
- 20) Find the sum of first 20 terms of the arithmetic progression  $1 + 4 + 7 + \cdots$
- 21) Two dice are thrown simultaneously. Find the probability of getting a sum of numbers on faces shown up is 8.

cot A-cos A \_ cosec A-1

- 22) Given  $\frac{1}{\cot A + \cos A}$ and  $\sin 3A = \cos(A - 26^\circ)$ . If 3A is an acute cosec A+1angle find the value of A.
- 23) In a circle of radius 3cm construct tangents at the end point of radius having angle between the radius equal to 110°
- 24) In the following figure OA.OB = OC.OD. Prove that  $\angle A = \angle C$  and  $\angle B = \angle D$ .



OR

In the figure shown below PQ  $\parallel$  BC, AB = 7.2 cm, AQ = 1.8 cm and CQ = 5.4 cm. Find AP.



 $08 \times 02 = 16$ 

#### IV.Answer the following questions.

25) In an arithmetic progression sum of first 3 consecutive terms is 15 and their product is 105. Find such numbers.

OR

In an arithmetic progression  $7^{th}$  and  $13^{th}$  terms are -4 and -16 respectively. Find the sum of first 20 terms.

26) Divide  $3x^2 - x^3 - 3x + 5$  by the polynomial  $x - 1 - x^2$  and verify by division algorithm.

#### OR

When  $x^3 - 3x^2 + x + 2$  is divided by a polynomial g(x), the quotient and remainder obtained are (x - 2) and (-2x + 4) respectively. Find g(x).

27) Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

OR

- 28) Prove that the lengths of tangents drawn from an external point to a circle are equal.
- 29) In the figure shown below, *ABC* is a quadrant of a circle of radius 14cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.



30) If 
$$4 \tan \theta = 3$$
 find the value of  $\frac{4 \sin \theta - \cos \theta + 1}{4 \sin \theta + \cos \theta - 1}$ 

Prove that  $\frac{\cos A}{1+\sin A} + \frac{1+\sin A}{\cos A} = 2 \sec A.$ 

- 31) Find the area of the triangle formed by joining the mid-points of the sides of the triangle ABC whose vertices are A(2,2), B(4,4) and C(2,6).
- 32) The length of the shadow of a vertical pole standing on the ground with the angle of elevation 30° at the sun is 40m more than when it is 60°. Find the height of the sun.
- 33) By changing the given distribution to 'less than type' distribution draw ogive.

Class Interval	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
Frequency	2	12	2	4	3	4	3

34) Solve graphically : 2x - y = 3, x + 2y = 4

# $\mathbf{09} \times \mathbf{03} = \mathbf{27}$

### V. Answer the following questions.

- 34)Construct a triangle with sides 5cm,6cm and 7cm.Then construct another triangle similar to this whose sides are  $\frac{7}{5}$  times the corresponding sides of the original triangle.
- 35)A wooden article was made by scooping out a hemisphere from each end of a solid cylinder. If the height of the cylinder is 10 cm and its base is of radius 3.5 cm find the total surface area of the article.
- 36)A train travels 360 km at a uniform speed. If the speed had been 5km/h more, it would have taken 1 hour less for the same journey. Find the speed of the train.

Class Interval	Frequency	
1-4	6	
4 - 7	30	
7 – 10	40	
10 - 13	16	
13 – 16	4	
16 – 19	4	
	OR	

37)Find the mode and the median of the following data.

Mean of following frequency distribution is 18. Find the missing frequency.

Class Interval	Frequency
11 – 13	7
13 – 15	6
15 – 17	9
17 – 19	13
19 – 21	f
21 – 23	5
23 – 25	4

# VI. Answer the following questions.

38) State and prove Pythagoras theorem.

 $\mathbf{01} \times \mathbf{05} = \mathbf{05}$