# SSLC MATHS MODEL QUESTION PAPER - 04: 2019-20

No. of questions: 38 Time: 3 hours	Subject Code: 81E Max. Marks : 80
I.Four alternatives are given to the following que	stions or incomplete statements.
Choose the correct from them and write it alon	g with serial letter. $08 \times 01 = 08$
1) If the first term of an AP is 3, common dif	ference is 2 then its 20 <sup>th</sup> term is
A) 39	B) 41
C ) 42	<i>D</i> ) 43
2) If $\sin \theta = \frac{1}{13}$ then the value of $\csc \theta$ is	
(4) $\frac{12}{12}$	B) <u>5</u>
<sup>1</sup> / <sub>13</sub>	12
$C)\frac{13}{-}$	$D)\frac{13}{12}$
3) The distance between origin and a point I	$^{-12}$
$\sqrt{x^2 + y^2}$	(x, y) in a plane is $P(x^2 + y^2)$
$A) \sqrt{x^2 + y^2}$	$B = \frac{y}{x + y}$
C) x + y	$D)\sqrt{x+y}$
4) If the length of longest chord in a circle is	8cm then the radius of circle is
$A) \delta$	B) 4 D) 16
5) In the figure PO $\parallel$ BC then the value of 'v'	<i>D</i> ) 10
5) In the lighte, i Q    be then the value of x	15
1.8 ×	7.2 C
A) 4.2 ಮಾನಗಳು	B)2.4 ಮಾನಗಳು
<i>C</i> ) 21.6 ಮಾನಗಳು	D) 1.6 ಮಾನಗಳು
6) The condition for parallelism of two s equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y$ $a_1$ $b_1$ $c_1$	straight lines represented by the + $c_2 = 0$ is $a_1$ , $b_1$ , $c_1$
A) $\frac{1}{a_2} = \frac{1}{b_2} = \frac{1}{c_2}$	B) $\frac{1}{a_2} \neq \frac{1}{b_2} = \frac{1}{c_2}$
C) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	D) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$
7) The prime factors of 120 are	
A) $2^3 \times 3 \times 5$	$B) 2 \times 3^2 \times 5$
$C) 2 \times 3 \times 5^{3}$	$D) 2^2 \times 3^2 \times 5^2$
8) The degree of quadratic polynomial is	
A) 1	B) 2
C) 3	<i>D</i> ) 4

#### II. Answer the following questions.

- 9) Write the formula to find the curved surface area of frustum of a cone.
- 10) The area of the base of a cylinder is 44cm<sup>2</sup> and its volume is 440cm<sup>3</sup>. Find the height of cylinder.
- 11)Write the formula to find the area of sector in a circle which makes an angle ' $\theta'$  at the centre.
- 12) Find the value of  $\sin 30^\circ \cdot \cos 60^\circ \tan^2 45^\circ$
- 13) The total cost of 5 pencils and 7 pens is Rs.50. Write an equation involving two variables representing this statement.
- 14) What is the maximum number of zeroes of the polynomial  $x^3 + 1$ ?
- 15) Find the zeroes of the polynomial  $x^2 + 5x + 6$
- 16) State the fundamental principle of arithmetic.

## III. Answer the following questions.

- 17) Solve: 2x + 3y = 8, 3x + y = 5
- 18) Find the number of terms in the AP 7,13,19, ... 205.

## OR

How many two digit natural numbers are divisible by 3?

19)Prove that  $\sqrt{2}$  is an irrational number.

## OR

Find the HCF of 728 and 216 by using Euclid's division algorithm.

- 20) Find the roots by using the formula:  $x^2 + 7x + 12 = 0$
- 21)Draw a circle of radius 3.5cm. Construct two tangents to this circle from an external point 6cm away from the centre.
- 22)In  $\triangle$ ABC,  $\angle$ A is right angle. AB, BC and AC are the tangents to a circle of radius 2cm as shown in the figure. If AB=8cm and AC=6cm find the area of shaded region.



24) The angle of elevation to the top of a tower from a point 30m away from the foot of tower on the ground is 30°. Find the height of tower.

# IV. Answer the following questions.

- 25)Prove that  $(\sin A + \csc A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$
- 26)In an AP, if the 2nd and 3rd terms are 14 and 18 respectively, find the sum of first 51 terms.
- 27) Divide  $p(x) = x^3 + 6x^2 - 5x + 3$  by g(x) = x + 2 and verify the relation  $p(x) = g(x) \times q(x) + r(x)$

 $08 \times 02 = 16$ 



Find the sum and product of zeroes of the polynomial  $2x^2 - x - 1$  and verify the relation with the coefficients.

28)A girl of height 90cm walks away from the foot of a lamp post at 1.2m/s. If the lamp is at a height of 3.6m from the ground find the length of shadow of girl after 4 seconds.

#### OR

An aeroplane starts from an airport and moves towards north with a speed of 1000km/h. At the same time another aeroplane moves towards west with the speed 1200km/h. What is distance between the two aeroplanes after  $1\frac{1}{2}$  hour?

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

#### OR

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

30)The weights of 35 pupils in a class are given below. Draw an ogive to this data

Weight (in kg)	Number of pupils
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

- 31)The chits numbered from 2 to 101 are mixed and put into a box. If a chit is drawn randomly then find the probability of the following.
  - a) Getting an even number
  - b) Getting a perfect square number
- 32)Construct a triangle with sides 5cm, 6cm and 7cm. Then construct another triangle similar to the first triangle such that the sides of this triangle are  $1\frac{2}{5}$  the sides of first triangle.

### 33)Calculate the mean of the following data.

	0	
Class Interval	Frequency	
10 - 25	2	
25 - 40	3	
40 - 55	7	
55 — 70	6	
70 - 85	6	
85 - 100	6	

#### OR

Calculate the mode of the following data.

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

## V. Answer the following questions.

34)An aeroplane covers a distance of 720km with a uniform speed. If its speed is increased by 10km/h it would have taken 1 hour less to cover the same distance. Find the speed of aeroplane.

#### OR

Area of a rectangular garden is 400cm<sup>2</sup>. If its length is twice the breadth find the dimensions of garden.

35)State and prove Thale's theorem.

36) If A(-5, 7), B(-4, -5), C(-1, -6) and D(4, 5) are the vértices of a parallelog ram

ABCD find its area.

37)Solve graphically: 2x + y = 7, 2x - y = 1

## VI. Answer the following questions.

38)A hemisphere of radius 60cm is surmounted by a cone of height 120cm and radius 60cm. This solid is immersed in a cylinder containing water such that it touches the bottom of cylinder as shown in the figure. If the radius of cylinder is 60cm and the height is 180cm find the volume of remaining water.



#### $01 \times 05 = 05$

#### $04 \times 04 = 16$