## SSLC MATHS MODEL QUESTION PAPER -06: 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 correctfrom them and write it along with serial letter. $08 \times 01=08$

1) Coordinates of origin
A) $(1,1)$
B) $(2,2)$
C) $(0,0)$
D) $(3,3)$
2) The $\mathrm{n}^{\text {th }}$ term of an arithmetic progression is $4 \mathrm{n}^{2}-1$. The $2^{\text {nd }}$ term is
A) 0
B) 2
C) 15
D) 10
3) In two linear equations if $\frac{a_{1}}{a_{2}}=\frac{b_{1}}{b_{2}}=\frac{c_{1}}{c_{2}}$ then, those two straight lines are
A)intersecting
B) coincident
C) parallel
D) all of these
4) Which one of the following is equal to $\sin 30^{\circ}$ ?
A) $\sqrt{3}$
B) $\frac{\sqrt{3}}{2}$
C) $\frac{1}{2}$
D) 0
5) $5^{\text {th }}$ term of the arithmetic progression $5,9,13 \ldots \ldots$.....is
A) 36
B) 21
C) 13
D) 25
6) If $(x+4)(x-3)=0$ then, roots are
A) $(-4,3)$
B) $(-4,-3)$
C) $(4,3)$
D) $(0,0)$
7) Number of zeroes of the polynomial represented by the following graph
A) 1
B) 2
C) 3
D) 4
8) Irrational number among the following numbers
A) $\sqrt{16}-\sqrt{9}$
B) $\frac{3}{4}$
C) 0.3333 ...
D) $2+\sqrt{3}$


## II. Answer the following questions.

$08 \times 01=08$
9) Write the formula of finding the length of the arc of a circle with angle at the centre' $\theta$ ' and radius ' $r$ '.
10) Find the surface area of a sphere having radius 7 cm .
11) $\triangle A B C$ and $\triangle D E F$ similar triangles. Their areas are $25 \mathrm{~cm}^{2}$ and $16 \mathrm{~cm}^{2}$ respectively. Find the ratio of their corresponding sides.
12) Write the formula of finding the volume of frustum of a cone.
13) Find the distance between origin and the point $(5,-4)$.
14) Find the discriminant of the quadratic equation $2 x^{2}-3 x-7=0$.
15) Write the degree of the polynomial $p(x)=x^{3}-3 x^{4}+x^{2}+x-3$.
16) L. C. M of 24 and 36 is 72 . Find H.C.F.

## III. Answer the following questions.

$08 \times 02=16$
17) Find the zeroes of the polynomial $x^{2}-2 x-8=0$ and verify the relationship between the zeroes and the coefficients.
18) A box contains 50 discs which are numbered from 1 to 50 . A child picks up one card at random. What is the probability of picking a perfect square numbered disc ?
19) Find the sum of first 24 terms of the arithmetic progression $5,8,11,14, \ldots \ldots$
20) In the figure shown below $\triangle A B C$ and $\triangle D B C$ are two triangles on the same base $B C$. AD intersects BC at ' O '. If $A L \perp$ $B C$ and $D M \perp B C$ then prove that $\frac{\text { Area of } \triangle A B C}{\text { Area of } \triangle D B C}=\frac{A O}{D O}$.


## OR

In the figure $X Y \| B C, A X=p-3, B X=$ $2 p-2$ and $\frac{A Y}{C Y}=\frac{1}{4}$. Find the value of 'p'

21) If $15 \cot A=8$, find $\sin A$ find $\sec A$.
22) Solve: $10 x+3 y=75,6 x-5 y=11$
23) Prove that $3-\sqrt{5}$ is a irrational number.

## OR

Find the H. C.F of135and 225 using Euclid's division algorithm.
24) Construct a pair of tangents to a circle of radius 4 cm which are inclined to each other at an angle of $70^{\circ}$.
25) In the figure $A B C$ is a quadrant of the circle of radius 14 cm and a semicircle is drawn with BC as diameter. Find the area of the shaded region.

26) Vertices of a rhombus are $(3,0),(4,5),(-1,4)$ and $(-2,-1)$. Find its area.

## OR

Check whether $(5,-2),(6,4)$ and $(7,-2)$ are the vertices of an isosceles triangle.
27) Divide $3 x^{2}-x^{3}-3 x+5$ by $x-1-x^{2}$ and verify the division algorithm.

## OR

On dividing $x^{3}-3 x^{2}+x+2$ by a polynomial $g(x)$, the quotient and remainder were $(x-2)$ and $(-2 x+4)$ respectively. Find $g(x)$.
28) Prove that $\frac{1-\tan ^{2} A}{1+\tan ^{2} A}=1-2 \sin ^{2} A$
29) From the top of a 24 m high building, the angle of elevation of the top of a tower is $60^{\circ}$ and the angle of depression of its foot is $30^{\circ}$. Determine the height of the tower.
30) In an arithmetic progression the sum of $4^{\text {th }}$ and $8^{\text {th }}$ terms is 24 and the sum of $6^{\text {th }}$ and $10^{\text {th }}$ is 44 . Find the first 3 terms.

OR
In an arithmetic progression the ratio between the $7^{\text {th }}$ and the $3^{\text {rd }}$ term is $12: 5$. Find the ratio between $13^{\text {th }}$ and $4^{\text {th }}$ term.
31) For the following data draw more than type ogive.

| Class <br> Interval | $40-45$ | $45-50$ | $50-55$ | $55-60$ | $60-65$ | $65-70$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Frequency | 4 | 6 | 16 | 20 | 30 | 24 |

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

## OR

Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.
33) Solve graphically: $3 x+y=11, x-y=1$

## V. Answer the following questions.

34)In a hospital sewage water is collected in a cylindrical tank having diameter 2 m and altitude 5 m . The water is used to irrigate a park having length 25 m and breadth 20 m . If the cylindrical tank was completely filled with water find the height of the water in the park.
35) The mode of the following data is 15 . Find the Mean of this data. By using empirical relationship between mean,median and mode, find median.

| Class Interval | Frequency |
| :---: | :---: |
| $1-5$ | 7 |
| $5-9$ | 2 |
| $9-13$ | 2 |
| $13-17$ | 8 |
| $17-21$ | 1 |

36)Two pipes together can fill a tank in 6 hours 20 minutes. One tap takes 3hours more than the other to fill the tank separately, find the time in which each tap can separately fill the tank.

## OR

Students of $10^{\text {th }}$ standard of a school planned a picnic at the cost of Rs. 480 . Had 3 more students join the picnic the cost of the picnic for each student would have decreased by Rs.8. How many students participated in the picnic.
37)Draw a $\triangle A B C$ with side $A B=5 \mathrm{~cm}, B C=7 \mathrm{~cm}$ and $\angle B=60^{\circ}$. Then construct a triangle whose sides area $\frac{3}{5}$ times the corresponding sides of $\triangle A B C$.
VI. Answer the following questions.
$01 \times 05=05$
38)State and prove Pythagoras theorem.

