

SSLC MATHS MODEL QUESTION PAPER -08: 2019-20

No. of questions:38

Time: 3 hours

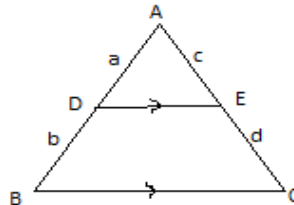
Subject Code: 81E

Max. Marks : 80

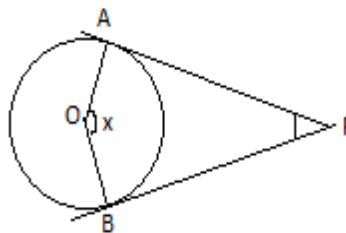
I. Four alternatives are given to the following questions or incomplete statements.

Choose the correct from them and write it along with serial letter. $08 \times 01 = 08$

- 1) H.C.F and L.C.M of 12 and 18 are respectively
A) 6 and 18
B) 12 and 18
C) 18 and 36
D) 6 and 36
- 2) If $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ then, number of solutions for the pair of linear equations is
A) 0
B) 1
C) 2
D) ∞
- 3) The value of discriminant of the equation $x^2 + 2x - 8 = 0$ is
A) 12
B) 2
C) 36
D) 48
- 4) If $a_n = 2n + 3$ then, the value of S_3 is
A) 15
B) 17
C) 21
D) 24
- 5) If $13 \sin \theta = 5$, the value of $\tan \theta$ is
A) $\frac{5}{12}$
B) $\frac{12}{5}$
C) $\frac{12}{13}$
D) $\frac{5}{13}$
- 6) The distance of the point $(-3, 4)$ from the origin is
A) 3 units
B) 4 units
C) 5 units
D) 6 units
- 7) If $BC \parallel DE$, $\frac{a}{a+b}$ is is



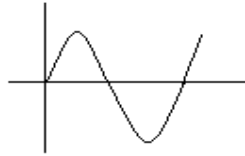
- A) $\frac{a}{c}$
B) $\frac{c}{c+d}$
C) $\frac{a}{a+b}$
D) $\frac{a}{c+d}$
- 8) AP and BP are tangents to the circle. If $\angle AOB = x^\circ$, the value of $\angle APB$ is



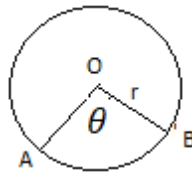
- A) $(x - 180)^\circ$
B) $(180 - x)^\circ$
C) $(90 - x)^\circ$
D) $(90 + x)^\circ$

II. Answer the following questions.**08 × 01 = 08**

- 9) State the fundamental theorem of arithmetic.
10) If one of the zeroes of the polynomial $p(x) = x^2 - x + k$ is 2, find the value of k .
11) What is the number of zeroes of the polynomial represented by the following graph ?



- 12) Find the 10th term of the arithmetic progression 5, 9, 13, . . .
13) If the points (3, 2), (3, 6) and (k, 9) are collinear then find the value of 'k'.
14) Write the formula of finding the total surface area of a hemisphere.
15) The ratio of areas of two spheres are 4: 9, find the ratio of their volumes.
16) Write the formula to find the length of arc AB in the figure given below.

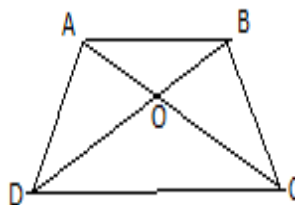
**III. Answer the following questions.****08 × 02 = 16**

- 17) Prove that $2 - \sqrt{3}$ is an irrational number.
18) Solve using formula : $2x^2 + 3x - 5 = 0$
19) Solve : $2x + 3y = 7$, $x - 2y = 7$
20) Which term of the arithmetic progression 3, 7, 11, 15, . . . is 95? (Use the suitable formula
21) Find the value of $\sin 18^\circ \cdot \cos 72^\circ + \cos 18^\circ \cdot \sin 72^\circ$

OR

If $(1 + \cos \theta)(1 - \cos \theta) = \frac{16}{25}$ then, find the value of $\sin \theta$.

- 22) In a trapezium ABCD, $AB \parallel DC$ and $AO:OC = 2:3$. If the area ΔAOB is 48cm^2 find the area of ΔDOC .

**OR**

A vertical pole of length 6m casts a shadow 4m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower?

23) A jar contains 24 marbles, some are green and others are blue. If a marble is drawn at random from the jar, find the probability that it is green $\frac{2}{3}$. Find the number of blue balls in the jar.

24) Construct a circle of radius 3cm. Construct two tangents from an external point which is 8cm away from the centre.

IV. Answer the following questions.

09 × 03 = 27

25) Divide $(2x^3 + 3x^2 - 6x - 4)$ by $(x - 3)$ and find the quotient and remainder. Verify by using Euclid's division algorithm.

OR

The quotient and remainder obtained when $x^3 - 4x^2 + x + 2$ is divided by $g(x)$ are $x - 2$ and $-2x + 4$ respectively. Find $g(x)$.

26) If 12th and 22nd terms of an arithmetic progression are 42 and 62 respectively find the 25th term.

OR

Three angles of a triangle are in an arithmetic progression. If the largest angle is 75° , find the remaining angles.

27) Prove that $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta$

OR

Prove that $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\operatorname{cosec} A - 1}{\operatorname{cosec} A + 1}$

28) The angle of elevation of the top of a pole of height $100\sqrt{3}$ m from a point on the ground is 30° . How far is the point from the foot of the pole?

29) Find the area of a triangle having vertices (3, 2), (9, -1) and (5, 7).

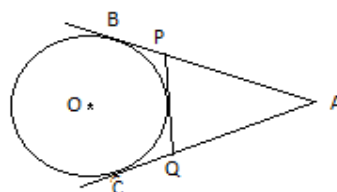
30) Draw less than type of ogive to the data given below.

Class Interval	Frequency	Cumulative Frequency
100 – 110	3	3
110 – 120	7	10
120 – 130	6	16
130 – 140	4	20
140 – 150	5	25
150 – 160	5	30

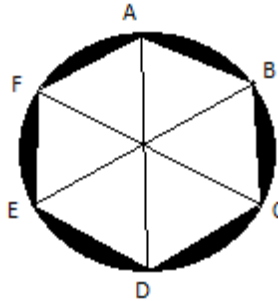
31) Prove that the lengths of tangents drawn from an external point to any circle are equal.

OR

In the figure shown below AB, AC and PQ are tangents to a circle with centre O. Prove that perimeter of $\triangle APQ = 2AB$.



- 32) Construct a $\triangle ABC$ with $AB = 6\text{cm}$, $BC = 7\text{cm}$, $AC = 6.5\text{cm}$ and then a triangle similar to it whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.
- 33) A regular hexagon $ABCDEF$ is inscribed in a circle of radius 7cm . Find the area of the shaded region.



V. Answer the following questions.

$04 \times 04 = 16$

- 34) If the sum of squares of three consecutive even numbers is 116, find those numbers.

OR

The hypotenuse of a right angled triangle is 13cm . If its base is 7cm more than its altitude, find the base and altitude.

- 35) Solve graphically : $2x + y = 6$, $x - 2y = 2$
- 36) A tanker is made by joining two hemispheres of radius 3.5m each to each of the ends of a cylinder having height 27m and radius 7m . Petrol from this completely filled tanker is transformed into hemispherical vessels of radius 1.75m . Find the number of hemispherical vessels.
- 37) Find the median and the mode for the following data.

Class Interval	Frequency
10 – 20	6
20 – 30	10
30 – 40	23
40 – 50	5
50 – 60	9

VI. Answer the following questions.

$01 \times 05 = 05$

- 38) State Pythagoras theorem and prove it.