# S.S.L.C MIDTERM EXAMINATION (S.A-I) -2023-2024

## Subject : Mathematics Max Marks : 80 Time : 10-30 AM to 1-45 PM

**I). Four alternatives are given for each of the following questions/incomplete statements.Choose the correct alternative and write the complete answer along with its letter of alphabet** 8×1=8

1. If **10, x, 18** are in arithmetic progression then the value of 'x' is

    A**) 12**      B**) 13**      C**) 14**      D**) 16**

2. $\triangle$ ABC ~ $\triangle$ DEF But the areas of $\triangle$ ABC and $\triangle$ DEF are 121 cm$^2$ and 49 cm$^2$ respectively..What is the ratio of their corresponding sides BC & EF ?

    **A) 121 : 49**     **B) 11 : 7**     **C) 49 : 64**     **D) 7 : 49**
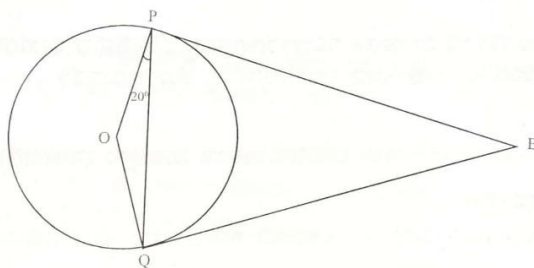
3. The graph representation of the pair of lines x + y = 5 and 3 x - y = 3 is

    A) intersecting lines          B) parallel lines

    C) coincident lines          D) perpendicular lines

4. Maximum number of tangents that can be drawn from an external point to a circle

    **A) 1**      **B) 2**      **C) 3**      **D) 4**

5. in the figure BP and BQ are tangents from B to a circle with center 'O'. If LOPQ=20$^0$ then value of LPBQ is



    A) 40$^0$      B) 160$^0$      C) 140$^0$      D) 20$^0$

6. Length of an arc of a sector of an angle 'θ' is

    A) $\frac{\theta}{360} \times \pi r^2$      B) $\frac{\theta}{360} \times 2\pi r^2$      C) $\frac{\theta}{180} \times 2\pi r$      D) $\frac{\theta}{360} \times 2\pi r$

7. What is the distance of the point P( 3, 4 ) from the X-axis

    A) 3 Units      B) 4 Units      C) 5 Units      D) 7 Units

8. When 120 is written as a product of prime factors

A) $2^3 \times 3^2 \times 5^1$    B) $2^2 \times 3^1 \times 5^1$    C) $2^3 \times 3^1 \times 5^1$    D) $2^3 \times 3^2 \times 5^1$

## II ) Answer the following questions :                              8×1=8

9.  Write the denominator of the fraction $\frac{7}{80}$ in the form $2^n \times 5^m$. and then identify and write

whether it is terminating decimal expansion or a non-terminating recurring decimal expansion.

10.  Write the highest exponent (degree) of the polynomial $p(x) = 2x^2 - x^3 + 5$

11.  State the Pythagorean Theorem.

12.  Find the 8th term of a an arithmetic progression whose nth term is $4n^2 - 1$

13.  Find the coordinates of Midpoint of the segment joining these points (3, 4) and (5, 6)

14.  Define tangent to a circle

15.  If the pair of linear equations in two variables are inconsistent, then how many

solutions do they have?

16.  Find the HCF of 7 and 11

## III) Answer the following questions :                              8×2=16

17.  Find the 20th term of the arithmetic profression 4, 7, 10,…… by using formula.

18.  Find the sum of first 10 terms of the arithmetic profression 5+8+11…..by using formula

19.  Find the solution for the given pair of linear equations.

**x + y = 10**

**2x - y = 8**

20. The radius of the segment of a circle is 6 cm and the angle of the segment is $60^0$ then

Find the area of the radius segment.

21.  In the given figure △ABC if DE ∥ BC AD=5cm BD=7cm and AC=18cm then find the value of AE
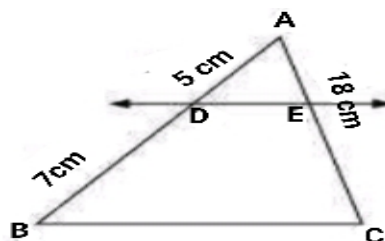
**22.** Draw a line segment of length 8 cm and divide it in the ratio 2:3 by geometric

　　　construction

**23.** Find the distance between these points (2, 3) and (4, 1) using the formula.

**24.** Using Euclid's division theorem, find the HCF of 135 and 225

## IV) Answer the following questions :　　　　　　　　　　　9×3=27

**25.** Find the coordinates of the point on the line segment joining the points A(-1, 7) and
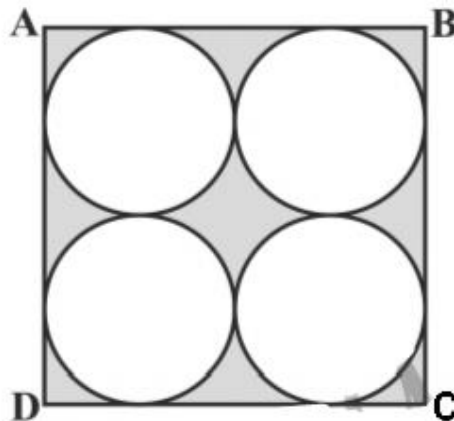
　　　B(4, -3) which divides AB internally in the ratio 2:3

### OR

　　　Find the area of the triangle PQR with vertices P (7, -2), Q(5, 1) and R(1, 4)

**26.** Construct two tangents to a circle of radius 4cm whose angle between the tangents are $60^0$

**27.** Prove that $\sqrt{2}$ is an irrational number.

**28.** ABCD is a square of side 14 cm as shown in the figure Then Find the area of

　　　shaded region



**29.** Prove that the length of the tangents drawn from an external point to the circle

　　　are equal.

**30.** Construct two tangents to a circle of radius 6 cm from a point 10 cm away from its centre.

　　　then measure the tangents.

**31**. Prove that the sum of the squares of all the sides of a rhombus to the sum of the squares of its
　　　　　　　　　　　　　　　diagonals

**32.** A fraction becomes $\frac{8}{11}$, if 3 is added to both the numerator and the denominater. If 3 is

subtracted from the fraction it becomes $\frac{2}{5}$ then find the fraction.

**33.** Find the sum of the first 40 positive integers divisible by 6

## V ) Answer the following questions :                    4×4=16

**34.** Construct a triangle with sides 5cm, 6cm and 8 cm. Then construct another triangle whose sides are $\frac{3}{4}$ of the corresponding sides of the first triangle
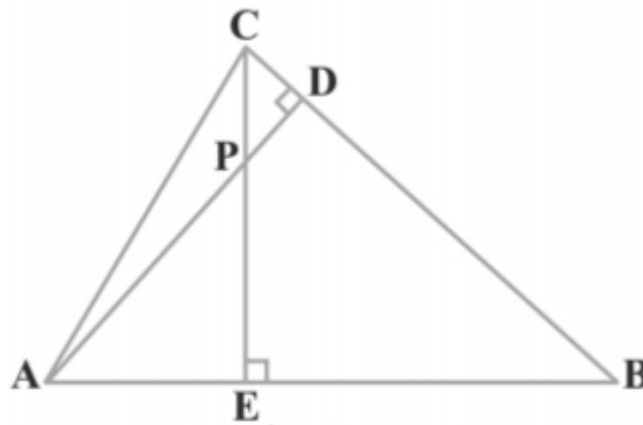
**35.** Find the solution of the given fair of linear equations by graphical method.

$$x + y = 5$$

$$2x + y = 6$$

**36.** In the figure, the altitudes AD and CE of Δ ABC intersect at point 'P'. then prove that

Δ AEP~ Δ CDP ii) Δ ABD ~ ΔCBE iii) Δ AEP ~ Δ ADB iv) Δ PDC ~ Δ BEC



**37.** The sum of the 2nd and 4th terms of a arithmetic progression is 54.the sum of first 11 terms of that Arithmetic progression is 693, then find the arithmetic progression. Which term of an A.P is 132 more than its 54th term?

## VI ) Answer the following questions :                    1×5=5

**38.** State and prove basic proportionality theorem (Thales' theorem).