

ಉಪನಿರ್ದೇಶಕರ ಕಛೇರಿ, ಶಾಲಾ ಶಿಕ್ಷಣ ಇಲಾಖೆ, ತುಮಕೂರು (ದ) ಶೈಕ್ಷಣಿಕ ಜಿಲ್ಲೆ

S S L C DISTRICT LEVEL PRACTICE PAPER

JANUARY-2024

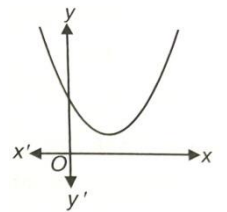
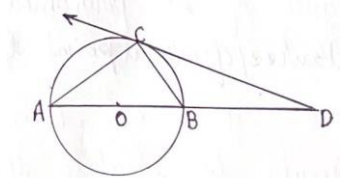
TIME: 3h-15min.

Subject: MATHEMATICS

Max. Marks: 80

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

- 1) If $p-1, p+3, 3p-1$ are in Arithmetic progression, then the value of 'p' is
a) 4 b) -4 c) 2 d) -2
- 2) In ΔABC and ΔDEF , $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar if
a) $\angle B = \angle E$ b) $\angle A = \angle D$ c) $\angle B = \angle D$ d) $\angle A = \angle F$
- 3) In the figure, AB is a diameter and AC is chord of a circle such that $\angle BAC = 30^\circ$. If DC is tangent, then ΔBCD is
a) Isosceles triangle b) Equilateral triangle
c) Right angle triangle d) Acute angled triangle
- 4) The graphical representation of pair of linear equations $x + 2y - 4 = 0$ and $2x + 4y - 12 = 0$ represents
a) Intersecting lines b) Parallel lines
c) Coincident lines d) Perpendicular lines
- 5) Euclid's division lemma states that if a and b are any two positive integers, then there exists unique integers q and r such that
a) $a = bq + r, 0 < r < b$ b) $a = bq + r, 0 \leq r \leq b$
c) $a = bq + r, 0 \leq r < b$ d) $a = bq + r, 0 < b < r$
- 6) The number of zeros of the polynomial $y = p(x)$ in the given graph is
a) 3 b) 2
c) 0 d) 4
- 7) The quadratic equation whose roots are real and equal is
a) $2x^2 - 4x + 3 = 0$ b) $x^2 - 4x + 4 = 0$
c) $3x^2 - 4x + 4 = 0$ d) $x^2 - 2\sqrt{2}x - 6 = 0$
- 8) During conversion of a solid from one shape to another the volume of the new shape will
a) Increase b) Decrease
c) Remain unaltered d) Be doubled



II Answer the following questions :

8×1=8

- 9) State basic proportionality theorem.
- 10) Write the formula to find the distance of a point (x, y) from the origin.
- 11) Find the coordinates of the mid point of the line segment joining the points $(7, 2)$ and $(3, 4)$.
- 12) Write the degree of the polynomial $p(x) = x^4 - 5x^2 + 2x + 5$.
- 13) Find the quadratic polynomial whose sum and product of zeroes are 3 and -2 respectively.
- 14) If $x = 2^3 \times 3 \times 5^2$, $y = 2^2 \times 3^3$, then find HCF (x, y) .
- 15) Write the formula to calculate the volume of frustum of Cone.
- 16) For an event 'E', $P(E) = 0.05$. Find $P(\bar{E})$.

III Answer the following questions :

8×2=16

- 17) Find the 20th term of an Arithmetic Progression 3, 8, 13,
- 18) Solve the given pair of linear equations using suitable method :
 $2x + 3y = 7$
 $2x + y = 5$
- 19) $\Delta ABC \sim \Delta DEF$ and their areas are 36cm^2 and 144cm^2 respectively. If $EF = 10\text{cm}$, then find the measure of BC.
- 20) Prove that $2 + \sqrt{3}$ is an irrational number. **OR**
Find HCF of 24 and 40 by using Euclid's division algorithm.
- 21) If $\operatorname{cosec}\theta = \frac{13}{12}$, then find the value of $\cos\theta$.
- 22) Draw a pair of tangents to a circle of radius 3.5cm which are inclined to each other at an angle of 60° .
- 23) Solve $x^2 - 12x + 27 = 0$ using formula. **OR**
Find the discriminant of equation $x^2 + 3x + 2 = 0$ and hence write the nature of its roots.
- 24) A bag contains 5 red, 8 green and 7 white balls. one ball is drawn at random from the bag. Find the probability of getting neither a green nor a red ball.

IV Answer the following questions :

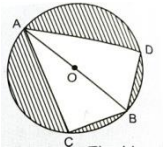
9×3=27

- 25) Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$ if two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

OR

Find the zeroes of the quadratic polynomial $p(x) = 2x^2 - 8x + 6$ and verify the relationship between zeroes and the coefficients.

- 26) Find the area of the shaded region in the given figure. If $BC = BD = 8\text{cm}$,
 $AC = AD = 15\text{cm}$ and 'O' is the centre of the circle ($\pi = 3.14$)



- 27) Prove that the “lengths of the tangents drawn from an external point to a circle are equal”.

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

OR

Prove that $\left(\frac{1+\sin\theta-\cos\theta}{1+\sin\theta+\cos\theta}\right)^2 = \frac{1-\cos\theta}{1+\cos\theta}$.

- 29) Find the mean for the following data :

Class-Interval	Frequency
0 – 8	5
8 – 16	9
16 – 24	10
24 – 32	8
32 – 40	8

OR

- Find the mode for the following data :

Class-Interval	Frequency
10 – 25	4
25 – 40	5
40 – 55	3
55 – 70	7
70 – 85	6
85 – 100	5

- 30) The sum of the areas of two squares is 468m^2 . If the difference of their perimeters is 24m . Find the sides of the two squares.
- 31) Construct a triangle with sides 5cm , 6cm and 7cm and construct another triangle whose sides are $\frac{7}{5}$ of corresponding sides of the first triangle.
- 32) Find the coordinates of the point which divides internally the line joining the points $(6, -9)$ and $(4, 6)$ in the ratio $3 : 4$.

OR

- Find the value of the K, if the points $(-1, 3)$, $(2, K)$ and $(5, -1)$ are collinear.

33) The annual profits earned by 30 shops of a shopping complex in a locality give rise to the following distribution.

Profit (Rs. in lakhs)	Number of shops (frequency)
More than or equal to 5	30
More than or equal to 10	28
More than or equal to 15	16
More than or equal to 20	14
More than or equal to 25	10
More than or equal to 30	7
More than or equal to 35	3

Draw 'more than type Ogive' for the given data.

V Answer the following questions :

4×4=16

33) The fifth term of an Arithmetic progression is thrice the second term and twelfth term exceeds twice the sixth term by 1. Find the 16th term.

OR

The ratio between the sum of n terms of two Arithmetic progressions is $(7n + 1) : (4n + 27)$. Find the ratio of their 11th terms.

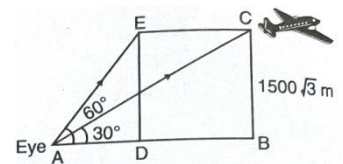
34) Find the solution of the given pair of linear equations by graphical method.

$$2x - y = 7$$

$$x + y = 2$$

35) Prove that "In a right angled triangle, the square of the hypotenuse is equal to sum of squares of other two sides".

36) The angle of elevation of a jet plane from a point A on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° . If the jet plane is flying at a constant height of $1500\sqrt{3}$ m. Find the speed of the jet plane. ($\sqrt{3} = 1.732$)



VI Answer the following question :

1×5=5

37) A Cylindrical tub of radius 5cm and length 9.8cm is full of water. A solid in the form of a right circular cone mounted on a hemisphere is immersed into the tub. If the radius of hemisphere is 3.5cm and height of cone outside the hemisphere is 5cm, find the volume of water left in the tub. (Take $\pi = \frac{22}{7}$)

