SSLC Summative Assessment – 1 for the Year 2024 – 25

MATHEMATICS

(English Version)

Time : 10.00 a.m. to 1.15 p.m.]   [Max. Marks : 80

Instructions *: 1) This question paper consists of **38** questions.*
2) Follow the instructions given against the questions.
3) Figures in the right hand margin indicate maximum marks for the questions.
*4) The maximum time to answer the paper is given at the top of the question paper. It includes **15** minutes for reading the question paper.*

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) The HCF of 4 and 7 is

    A) 1   B) 4   C) 7   D) 28

2) The linear polynomial among the following is

    A) $p(x) = x^2$ B) $p(x) = x^4 + 2$

    C) $p(x) = x$ D) $p(x) = x^3 + 1$

3) The graphical representation of pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ are intersecting lines. Then

    A) $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} = \dfrac{c_1}{c_2}$ B) $\dfrac{a_1}{a_2} \neq \dfrac{b_1}{b_2}$

    C) $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} \neq \dfrac{c_1}{c_2}$ D) $\dfrac{a_1}{a_2} = \dfrac{b_2}{b_1}$

4) The standard form of quadratic equation $2x^2 = 3x - 5$ is

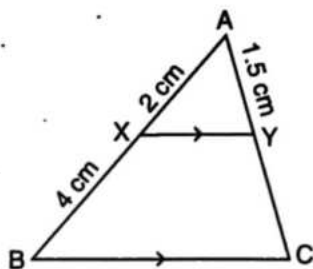   A) $x^2 - x + 5 = 0$ B) $2x^2 + 3x - 5 = 0$

    C) $2x^2 - 3x - 5 = 0$ D) $2x^2 - 3x + 5 = 0$

5) The common difference of the arithmetic progression 10, 8, 6, 4 .... is

    A) 2   B) – 2   C) 4   D) 10

P.T.O.

6) In the figure, in △ ABC, XY ∥ BC. If AX = 2 cm, BX = 4 cm and AY = 1.5 cm, then CY =
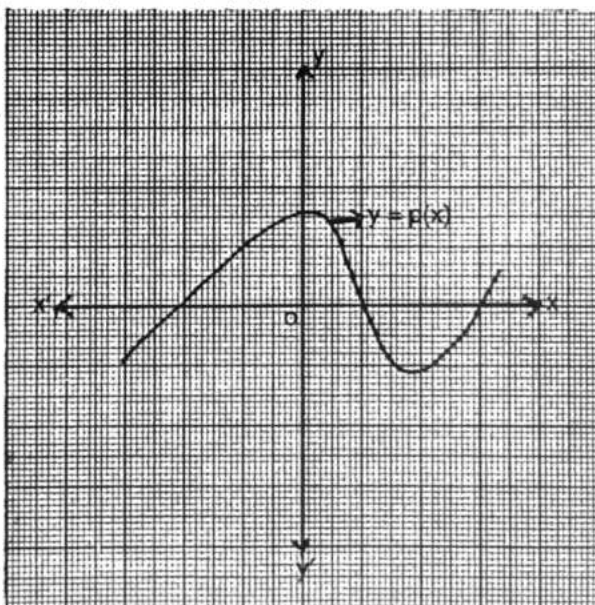

A) 1.5 cm   B) 2 cm   C) 3 cm   D) 4 cm

7) The point which lies on X-axis among the following is

A) (4, 3)   B) (−2, −2)   C) (0, 3)   D) (3, 0)

8) The distance of a point P(x, y) from the origin is

A) $\sqrt{x^2 + y^2}$ B) $\sqrt{x - y}$ C) $\sqrt{x^2 - y^2}$ D) $\sqrt{x + y}$

II. Answer the following questions.   (8×1=8)

9) Write the degree of a cubic polynomial.

10) The graph of a polynomial y = p(x) is given below. Find the number of zeroes of p(x).

11) How many solutions do the consistent pair of linear equations in two variables has ?

12) Write the formula to find the sum of first 'n' positive integers.

13) In the given figure, $\triangle MNL \sim \triangle QPR$. Name the similarity criterion used here.
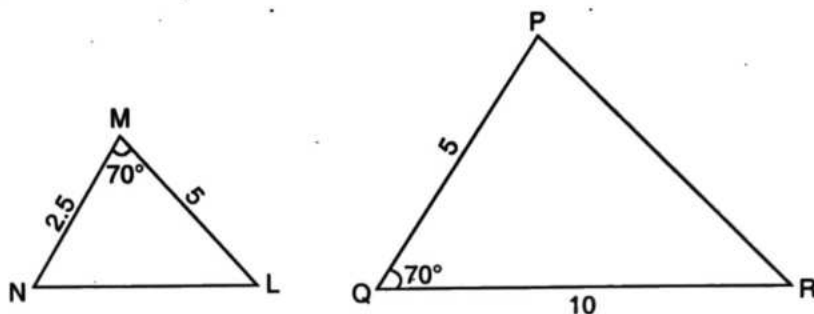
14) Write the roots of the quadratic equation $x(x - 6) = 0$.

15) Express 75 as a product of its prime factors.

16) If 5, x, 11 are in arithmetic progression, then find the value of 'x'.

III. Answer the following questions.   (8×2=16)

17) Prove that $5 + \sqrt{2}$ is an irrational number.

18) Find the largest number which divides 438 and 606 without leaving any remainder.

19) Find a quadratic polynomial whose zeroes are 5 and 3.

20) Solve the given pair of linear equations by elimination method.
    $2x + y = 10$
    $x - y = 2$

21) Find the roots of the quadratic equation $x^2 + 7x + 10 = 0$ by factorisation method.

22) Find the sum of first 10 terms of an arithmetic progression whose first term is 5 and last term is 32.
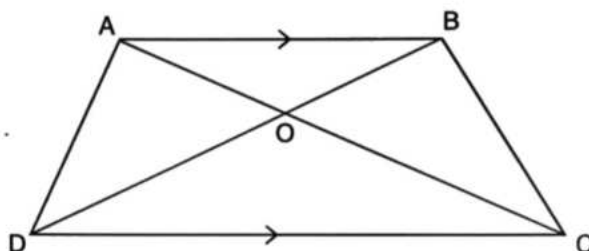
                          OR

    Find the sum of first 20 terms of an arithmetic progression 6, 10, 14 ...... using formula.

3

23) In the given figure, DE||AC and DF||AE. Prove that $\dfrac{BF}{FE} = \dfrac{BE}{EC}$.
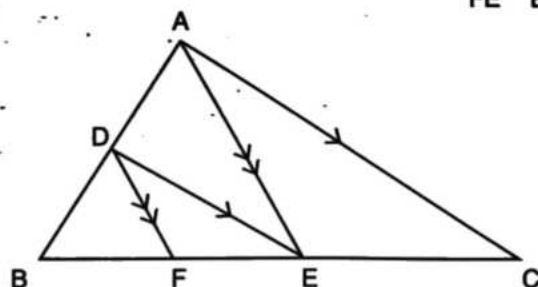
OR

In the given figure, ABCD is a trapezium with AB || DC. Diagonals AC and BD intersect each other at 'O'. Prove that $\triangle$ AOB ~ $\triangle$ COD.

24) Find the co-ordinates of the midpoint of the line segment joining the points M(4, 6) and N(6, 8).

IV. Answer the following questions.   (9×3=27)

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

OR

Find the HCF and LCM of 26 and 91. Also verify that LCM × HCF = Product of those two numbers.

26) Find the zeroes of the polynomial $p(x) = x^2 - 5x + 6$. Verify the relationship between its zeroes and co-efficients.

4

27) Determine the nature of the roots of the quadratic equation $3x(3x - 2) = -1$.

OR

Find the value of 'k' for which the quadratic equation $kx(x - 2) + 6 = 0$ has two real and equal roots.

28) The 3rd and 9th terms of an arithmetic progression are respectively 4 and -8. Find which term of this progression is zero.

OR

In an arithmetic progression, the third term is 16 and the 7th term exceeds the 5th term by 12. Find the 20th term of the progression.

29) The sum of first 20 terms of an arithmetic progression is 670. If the common difference is 3, then find the arithmetic progression.

30) In the given figure, ABCD is a parallelogram. Prove that $\dfrac{AB}{BE} = \dfrac{CF}{FB}$.
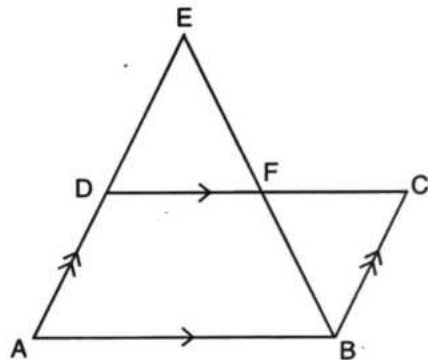
31) $\triangle$ ABC and $\triangle$ DBC are two right angled triangles on the same hypotenuse BC. BD intersects AC at the point P. Prove that $AP \cdot PC = BP \cdot PD$.

32) Find the co-ordinates of the point which divides the line segment joining the points $(-1, 7)$ and $(4, -3)$ in the ratio 2 : 3 internally.

OR

Find the relation between x and y such that the point (x, y) is equidistant from the points $(3, 6)$ and $(-3, 4)$.

5

33) The two adjacent vertices of a parallelogram ABCD are A(−4, −2) and B(1, −2). If the diagonals of the parallelogram intersect at the point M$\left(-\frac{1}{2}, 0\right)$, then find the other two vertices of the parallelogram.

A(−4, −2)   B(1, −2)
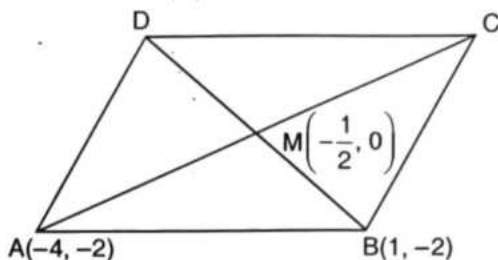
V. Answer the following questions. (4×4=16)

34) A fraction becomes $\frac{4}{5}$ if 1 is added to the numerator. If 1 is subtracted from the denominator of the original fraction, then the fraction becomes $\frac{3}{4}$. Find the fraction.

35) The area of a rectangular plot is 528 m². The length of the plot is one more than twice its breadth. Find the length and breadth of the plot.

OR

The sum of the squares of two consecutive positive integers is 365. Find those integers.

36) An arithmetic progression consists of 30 terms. The sum of its first 10 terms is 185. 21st term is 15 more than the 16th term. Find the sum of the terms of the arithmetic progression.

37) Prove that if in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar.

VI. Answer the following question. (1×5=5)

38) Find the solution of the given pair of linear equations by graphical method.
2x + y = 6
x + y = 4.