SUMMATIVE ASSESSMENT - I (A.P) 10A

CCE MODEL

SYLLABUS

1. Real Numbers
2. Sets
3. Polynomials
4. Pair of Linear Equations in Two Variables

MATHEMATICS (PAPER - I)

Class - 10

Time : 2.45 Hrs. **Marks : 50**

Instructions :

1. Answer all the questions in a separate answer booklet.
2. The question paper consists of 4 sections and 33 questions.
3. There is an internal choice in section - IV.
4. Write answers neatly and legibly.

SECTION - I

Note : i) Answer all the questions.

ii) Each question carries ½ mark. $12 \times \frac{1}{2} = 6$

1. The prime factorization of 729 is .....
2. The expanded form of $log\frac{343}{125}$ is
3. Set theory was developed by .....
4. Degree of a quadratic polynomial is .....
5. **(i) Null set is a finite set (ii) Universal set is infinite set.**

   Then which of the following is correct ? ( )

   A) Both (i),(ii) are true B) Both (i) and (ii) are false

   C) (i) is true, (ii) is false D) (i) is false, (ii) is true
6. **A quadratic polynomial whose sum and product of zeroes are -3 and 2 respectively is .....** ( )

   A) $x^2 + 3x + 2$ B) $x^2 - 3x + 2$ C) $x^2 - 3x - 2$ D) $x^2 + 2x + 3$
7. **The solution of the pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ by cross multiplication method is given by .....** ( )

   A) $x = \frac{b_2c_1 - b_1c_2}{a_1b_2 - a_2b_1}$, $y = \frac{a_1c_2 - a_2c_1}{a_1b_2 - a_2b_1}$, B) $x = \frac{b_1c_2 - b_2c_1}{a_1b_2 - a_2b_1}$, $y = \frac{a_2c_1 - a_1c_2}{a_1b_2 - a_2b_1}$,

   C) $x = \frac{b_1c_2 - b_2c_1}{a_1b_2 - a_2b_1}$, $y = \frac{a_1c_2 - a_2c_1}{a_1b_2 - a_2b_1}$, D) $x = \frac{b_2c_1 - b_1c_2}{a_1b_2 - a_2b_1}$, $y = \frac{a_2c_1 - a_1c_2}{a_1b_2 - a_2b_1}$,

8. If n is any natural number then only one of n, n + 1, n + 2 is divisible by ..... ( )
A) 1 B) 2 C) 3 D) 4

9. What can be the degree of the remainder atmost when a biquadratic polynomial is divided by quadratic polynomial ?

10. What is the angle between the lines represented by ⟺ ?

11. Find the H.C.F of 280 and 674

12. Write the symbol of subset

SECTION - II

Note : *i) Answer all the questions.* **8 × 1 = 8 M**
ii) Each question carries 1 mark.

13. Write two positive integers q and r such that $a = bq + r$ where $a = 132, b = 10$.

14. Ravi said, "HCF (a, b, c) · LCM (a, b, c) = a × b × c". Do you agree ? Justify.

15. Find the value of $\log_{81} 3$.

16. Write two examples of empty set.

17. If A= {a, b, c, d} and B= {b, c} then find $A \cap B$ and what do you observe?

18. What is the cardinal number of the set $A = \{x : x > x\}$.

19. Write the general form of a linear equation in two variables.

20. Give an example each of dependent and independent pair of linear equations in two variables.

SECTION - III

Note : *i) Answer all the questions.* **8 × 2 = 16 M**
ii) Each question carries 2 marks.

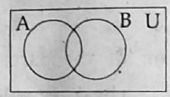
21. If HCF of 60 and x is 12, then find the value of x.

22. Check whether 6^n can end with the digit '0' for any natural number n.

23. Prove that $\log_a xy = \log_a x + \log_a y$.

24. Write 4 sets of your choice, involving geometrical ideas.

25. Write any two sets for the Venn-diagram.



26. Ram said, "$\{x : x + 5 = 5\}$" is an empty set. Shyam said, "$\{x : x + 5 = 5\}$ is not an empty set. But both are true. How ?

27. Check whether $x^3 - 3x + 1$ is a factor of $x^5 - 4x^3 + x^2 + 3x + 1$ or not ?

28. For what values of k, the system of linear equations $x - 2y = 3$ and $3x + ky = 1$ has a unique solution.

SECTION - IV

Note: i) *Answer all the questions.*

ii) *Each question carries 4 marks.*

iii) *There is and internal choice for each question.* $5 \times 4 = 20$ M

29. A) Show that one and only one out of n, n + 2 or n + 4 is divisible by 3, where n is a positive integer.

(OR)

B) If $x^2+y^2 = 25xy$, show that $2\log(x + y) = 3\log 3 + \log x + \log y$.

30. A) Find the HCF of 65 and 117 and express it in the form of $65x + 117y$.

(OR)

B) State the reasons for the following.

i) $\{1, 2, 3, 4, 5, 6\} \neq \{x : x \in W, 1 < x < 6\}$

ii) $\{1, 3, 5, 7, 9, 11 .....\} \neq \{x : x = 2n + 1, n \in N\}$

iii) {multiples of 5} is a finite set

iv) $\phi \neq \{0\}$.

31. A) Write all subsets of $A_1 = \{a\}$, $A_2 = \{a, b\}$ $A_3 = \{a, b, c\}$, $A_n = \{a, b, c, d\}$ Can you observe any relation between the number of elements of a set and the number of all subsets of it? If what is it ?

(OR)

B) If A = {Triangles}, B = {Equilateral triangles}, C = {Isosceles triangles} D = {Right triangles }, E = { Right isosceles triangles }, then find $A \cup B$, $B \cap C$, $B \cup C$, $C \cap D$, write your observations and explain.

32. A) If the zeroes of the cubic polynomial $p(x) = x^3 - 3x^2 + x + 1$ are $a - d$, a, $a + d$ find the zeroes.

(OR)

B) Using division algorithm find the quotient and remainder on dividing $p(x) = x^4 - 5x + 6$ by $g(x) = 2 - x^2$.

33. A) Draw the graph of the polynomial $p(x) = x^2 - 7x + 12$, then find its zeroes from the graph.

(OR)

B) Solve the equations graphically $3x + 4y = 10$ and $4x - 3y = 5$.

SUMMATIVE ASSESSMENT - I (A.P) 10A

● CCE MODEL ●

SYLLABUS 7. Coordinate Geometry
8. Similar Triangles

MATHEMATICS (PAPER - II)
Class - 10

Time : 2.45 Hrs. **Marks : 50**

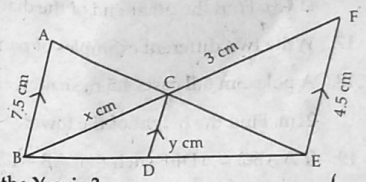
Instructions :

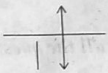
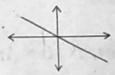
1. Answer all the questions.
2. The question paper consists of 4 sections and 33 questions.
3. There is an internal choice in section - IV.
4. Write answers neatly and legibly.

SECTION - I

Note : *i) Answer all the questions.*
ii) Each question carries ½ mark. **12 × ½ = 6 M**

1. If the points (x, y) and (2, 3) lie on the line parallel to Y - axis then .....
2. If A (5,–1), B (–3,–2) and C(–1,8) are the vertices of a ΔABC, then the length of the median through A is .....
3. In ΔABC , DE || BC and $\frac{AD}{DB}=\frac{2}{5}$ then $\frac{AE}{EC}$= .....
4. In the given figure, if AB ||CD || EF AB = 7.5 cm, DC = y cm, EF = 4.5 cm, BC = x cm, then the value of x is .....



5. **Which of the following point lies on the Y-axis ?** ( )
   A) (x, y) B) (x, x) C) (y, 0) D) (0, x)
6. **y = 2 can be represented as .....** ( )
   A)  B)  C)  D) 
7. **In a right triangle, the mid point of the hypotenuse is .....** ( )
   A) circumcentre B) incentre
   C) centre of gravity D) orthocentre

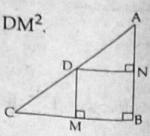
8. In ΔABC, if $AB^2 + BC^2 = AC^2$ then the right angle is at .....

A) A B) B C) C D) A or C

9. What is area of the triangle formed by the points $(0, 0)$, $(3, 0)$ and $(0, 4)$?

10. If two vertices of a triangle are $(4, 2)$ and $(6, 5)$ and its centroid is $\left(\frac{7}{2}, \frac{9}{2}\right)$, then find the third vertex of the triangle.

11. From the given figure, find DM^2.



12. What is the area of a regular hexagon of side 'a' units?

SECTION - II

Note : *i) Answer all the questions.*

ii) Each question carries 1 mark. $8 \times 1 = 8$ M

13. Where do the points (–4,0), (2,0) and (4.5,0) lie ?

14. Find the slope of the line passing through (–2,8) and (–2,–2).

15. Sridhar calculated the distance between T(5,2)and R (–4,–1) is equal to the distance between P(4,1) and Q (–5,–2). What do you observe?

16. The coordinates of one end point of a diameter of a circle is (4,–1) and the centre is (1,–3). Find the other end of the diameter.

17. Write two different examples of pair of similar figures.

18. A pole 3m tall casts 4.5 m shadow. At the same instance, a tower casts a shadow of 21m. Find the height of the tower.

19. If $\Delta ABC \sim \Delta DEF$ such that AB = 1.5 cm, DE = 4.5 cm then find the ratio of areas of ΔABC and ΔDEF.

20. In ΔABC, DE $||$ BC and AE = 1.8 cm, EC = 5.4 cm, BD = 7.2 cm. Find AD.

SECTION - III

Note : *i) Answer all the questions.*

ii) Each question carries 2 marks. $8 \times 2 = 16$ M

21. Show that A(6,4), B(5,–2)and C(7,–2) are the vertices of an isosceles triangle.

22. In what ratio does the Y-axis divide the line segment joining the point P(–4,5) and Q (3,–7) ?

23. Prove that the points (a, b+c), (b, c+a)and (c, a + b) are collinear.

24. If (–1, 2) is the centroid of a triangle whose two vertices are (3,4) and (2,–3) then find the third vertex of the triangle.

25. In ΔABC, $DE \parallel BC$ and $AD = 8x + 9$, $CD = x + 3$, $BE = 3x + 4$, $CE = x$. Then find x.

26. State and prove AAA similarity of triangles.

27. If the areas of two similar triangles are equal, then prove that "The triangles are congruent."

28. ABD is a triangle, right angled at A and $AC \perp BD$. Then show that $AC^2 = BC.CD$.

SECTION - IV

Note : *i) Answer all the questions.*

ii) Each question carries 4 marks.

iii) There is an internal choice for each question. **5 × 4 = 20 M**

29. A) Show that the points (a,a) (–a,–a) and $(-\sqrt{3}a, \sqrt{3}a)$ are the vertices of an equilateral triangle. Also find its area.

(OR)

B) Find the coordinates of the points of trisection of the line segment joining **(4,–1)** and (–2,–3).

30. A) Find the area of the triangle formed by joining the mid - points of the sides of triangle whose vertices are (0,–1), (2, 1) and (0, 3). Find the ratio of this area to the given triangle

(OR)

B) Prove that the points (3,0),(4,5),(−1,4) and (−2,−1) taken in order, form a rhombus. Also find its area.

31. A) Let A (4, 2), B (6, 5) and C (1, 4) be the vertices of $\triangle ABC$

i) The median from A meets BC at D. Find the coordinates of the point D.

ii) Find the coordinates of the point P on AD such that AP : PD = 2 : 1

iii) Find the coordinates of the points Q and R on medians BE and CF respectively such that BQ : QE = 2 : 1 and CR = RF = 2 : 1

iv) What do you observe ?

(OR)

B) Write the algorithm to construct a triangle ABC with its sides equal to $\frac{5}{3}$ of the corresponding sides of the triangle ABC. Justify your algorithm.

32. A) Prove that "The areas of two similar triangles are in the ratio of the squares of the corresponding altitudes."

(OR)

B) In what ratio, does the point (−4, 6) divide the line segment joining the points A (−6, 10) and B (3, −8) ?

33. A) Construct a triangle PQR, where QR = 5.5 cm, $\angle Q = 65^\circ$ and PQ = 6 cm. Then draw another triangle, whose sides are $\frac{2}{3}$ times of the corresponding sides of ΔPQR.

(OR)

B) Construct a triangle PQR, in which PQ = 4 cm, QR = 6 cm, and $\angle PQR = 70^\circ$. Construct a triangle such that each side of the new triangle is $\frac{3}{4}$ of the triangle PQR.