SUMMATIVE ASSESSMENT - I - 2021 - 22

MATHEMATICS

(English Medium)

Class : X **(Max. Marks : 100)** **Time : 3.15 Mnts.**

	AS - I				AS - II				AS - III			AS - IV			AS - V			
Q.No	1-4	13-16	21-23	29-30	5-6	17	24-25	31	7-8	18-19	26	9-11	27	32	12	20	28	33
Marks																		
Total																		

Name of the student : ..... Roll Number : .....

Instructions :

1. There are four sections and 33 questions in this paper.
2. Answers should be written in a given answer booklet.
3. There is an internal choice in Section IV.
4. Write all the answers visible and legible.
5. 15 Minutes are given for reading the question paper and 3 hours are given for answering questions.

SECTION - I

Note : 1. Answer all questions.
2. Each question carries 1 Mark. **12 x 1 = 12**

1. How many subsets does a set A = {a, b, c, d} have?
2. What is the median of the first 10 natural numbers?
3. $\tan\theta =$ ( )

   A) $\frac{\sqrt{1-\sin^2\theta}}{\sin\theta}$ B) $\frac{1}{\sec\theta}$ C) $\frac{\sin\theta}{\sqrt{1-\sin^2\theta}}$ D) $\frac{1}{\sqrt{1+\text{Cot}^2\theta}}$

4. Is $\frac{9}{15}$ a terminating decimal or not? (Yes / No)
5. Which of the following is a polynomial ( )

   A) $\frac{1}{x+1}$ B) $6\sqrt{x}+8$ C) $x^{-3}+2x$ D) $\sqrt{5}m+6$

6. Statement A : log 2 is an irrational number.

   Statement B: The product of 2 irrational numbers is always irrational number.

   Identify correct answer ( )

   A) statement A is true, statement B is true

   B) statement A is false, statement B is true

   C) statement A is true, statement B is false

   D) statement A is false, statement B is false

7. If x_i and f_i are numarically small, then which method is appropriate choice to find mean.

8. Write an example for sure event.

9. If α, β, γ are zeroes of polynomial $4x^3 - 2x^2 + 7$, match the following.

a) $\gamma+\beta+\alpha$	i) $-\frac{7}{4}$
b) $\alpha\beta+\beta\gamma+\gamma\alpha$	ii) $\frac{1}{2}$
c) $\alpha\beta\gamma$	iii) 0

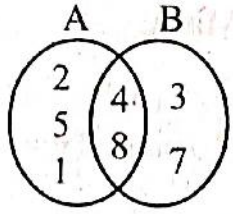
   A) a - i, b - ii, c - iii B) a - iii, b - i, c - ii

   C) a - ii, b - iii, c - i D) a - ii, b - i, c - iii

10. What is the probability that 2022 have 53 sundays?

11. If $\sin\theta = \cos\theta$, then the value of $\sin 2\theta =$ _____

12. From the given venn diagram, B – A = _____



SECTION - II

Note : 1. Answer all the questions.

2. Each question carries 2 Marks. **8 x 2 = 16**

13. If the median of $\frac{x}{2}, \frac{x}{4}, x, \frac{x}{5}, \frac{x}{3}$ $(x \neq 0)$ is 4.5 . Then find 'x'.

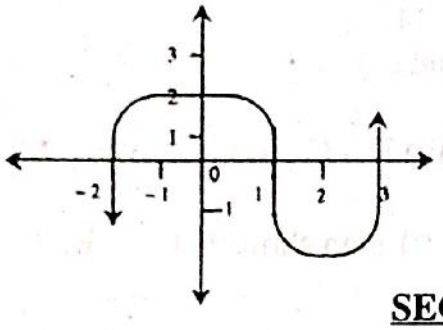
14. Find the zeroes of polynomial $4m^2 + 8m8m$.

15. If P(E) = 0.25, What is the probability of 'not E'?

16. Find the value of $_2{}^{2} + log_2^3$.

[Contd... 3rd

17. If $\sin A = \cos B$, then prove that $A + B = 90^{o}$
18. Write the following sets on set builder form.
    i) $A = \{1, 4, 9, 16, 25\}$ ii) $B = \{3, 6, 9, 12\}$
19. Write the formula to find mode of grouped data.
20. Observe the following graph and answer the following questions.



i) Which type of poynomial represented by the curve?

ii) What are the zeros of given polynomial?

SECTION – III

Note : 1. Answer all questions.
2. Each question carries 4 Marks. **8 x 4 = 32**

21. The distribution below gives the weights of 30 students of a class. Find the median weight of the students

Weight (in kg)	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No.of. Students	2	3	8	6	6	3	2

22. Find the quadratic polynomial whose zeroes are $\frac{1}{4}, -1$
23. One card is drawn from deck of 52 cards. Calculate the probability that card will (i) be an ace (ii) not be an ace.
24. Check whether $x^2 + 3x + 1$ is factor of $3x^4 + 5x^3 - 7x^2 + 2x + 2$.
25. How will you show that $(17 \times 11 \times 12) + (17 \times 11 \times 5)$ is a composite number?
26. If $x = \log_2^3$ and $y = \log_2^5$ then express the following in terms of x and y.
    i) $\log_2^{7.5}$ ii) $\log_2^{6750}$
27. If A, B and C are interior angles of ΔABC then show that $\tan\left(\frac{B+C}{2}\right) = \cot\frac{A}{2}$.
28. Draw the following venn diagrams.
    i) $A \cup B$ ii) $A \cap B$ iii) $A - B$ iv) $B - A$

SECTION – IV

Note : 1. **Answer all questions.**
2. **Each question carries 8 Marks.**
3. **There is an internal choice for each question** **5 x 8 = 40**

29. a) If A = {x:x is a natural number}
B = {x:x is an even natural number}.
C = {x:x is an odd natural number}
D = {x:x is a prime number}
then find (i) $A \cup B$ (ii) $A - C$ (iii) $D - C$ (iv) $B \cap C$

(Or)

b) If A = {5, 6, 7, 11}, B = {6, 7, 8, 9} then show that $A - B$, $A \cap B$, $B - A$ are disjoint sets.

30. a) If $\operatorname{cosec}\theta + \cot\theta = k$ then find the value of $\cos\theta$ in terms of k.

(Or)

b) The sides of a right angle triangle PQR are PQ = 7 cm, QR = 25 cm. and $\angle P = 90^{\circ}$ respectively. then find
i) $\sin Q + \sin R$ ii) $\tan Q - \tan R$

31. a) Show that $\sqrt{2} + \sqrt{5}$ is irrational.

(Or)

b) If $\log\left(\frac{x+y}{3}\right) = \frac{1}{2}(\log x + \log y)$ then prove that $\frac{x}{y} + \frac{y}{x} = 7$.

32. a) A box contains 1 to 100 number cards. If one card is drawn at random. Find the probability of that card will be
i) a perfect square ii) a prime number
iii) a two digit number iv) a multiple of 9.

(Or)

b) A dice is thrown twice. What is the probability that
i) 3 will not comeup either time?
ii) 3 will come up at least once?

33. a) Draw the graph of $p(x) = x^2 + 3x - 4$ and find the zeroes.

(Or)

b) The following table give production yield per hectare of wheat of 100 forms of a village.

Production yield (Qui / Hec)	50-55	55-60	60-65	65-70	70-75	75-80
No.of formers	2	8	12	24	38	16

Change the distribution to more than type distribution and draw it's ogive.