

**BOARD OF SECONDARY EDUCATION (AP)**  
**SUMMATIVE ASSESSMENT – I**  
**TENTH CLASS MATHEMATICS MODEL PAPER**  
**PAPER – I (ENGLISH VERSION)**

Time: 2 hrs. 45 mins.

PART – A & B

Maximum Marks: 40

**INSTRUCTIONS:**

- i) In the time duration of 2 hrs. 45 mins., 15 minutes of time is allotted to read and understand the question paper.
- ii) Answer the questions under PART – A in a separate answer book.
- iii) Write the answers to the questions under PART – B on the question paper itself and attach it to the answer book of PART – A.

Time: 2 hrs.

PART – A

Marks: 30

**INSTRUCTIONS:**

- i) PART – A comprises of three Sections I, II, III.
- ii) All the questions are compulsory.
- iii) There is no overall choice. However, there is an internal choice to the questions under Section – III.

**SECTION – I**

**INSTRUCTIONS:**

- i) Answer ALL the questions.
  - ii) Each question carries ONE mark. 4 × 1 = 4
1. Find the value of  $\log_4 \frac{256}{5}$
  2. Represent  $A - (A - B)$  through venn diagram.
  3. Write a cubic polynomial and creat a question.
  4. If  $A = \{1, 2, 3, \dots\}$ ;  $B = \{x/x \text{ is a composite numbers}\}$  then find  $A - B$ .

**SECTION – II**

**INSTRUCTIONS:**

- i) Answer ALL the questions.
  - ii) Each question carries TWO marks. 5 × 2 = 10
5. Show that  $\sqrt{3} + \sqrt{7}$  is an irrational number.
  6. Use Euclid's division algorithm find the H.C.F. of 847, 2160.
  7. Convert the following sets from set builder form to roster form and roster form to set builder form.  
i)  $A = \{x : x \text{ is a prime number less than } 20\}$

ii)  $B = \{x : x \text{ is the zeroes of } x^2 - 4x + 4\}$

iii)  $C = \{1, 4, 9, 16, 25, 36\}$

iv)  $D = \{0, 1, 2, 3, \dots, 9\}$

8. If  $p(x) = x^2 - 2x + 5$  then find  $p(-1)$  and  $p\left(-\frac{1}{2}\right)$ .

9. If  $\alpha, \beta$  are the zeroes of the polynomial  $x^2 - 2x - 8$  then find the values of

i)  $\alpha^2 + \beta^2$       ii)  $\frac{1}{\alpha} + \frac{1}{\beta}$ .

### SECTION - III

#### INSTRUCTIONS:

i) Answer ALL the questions.

ii) Each question carries FOUR marks.

iii) Each question has Internal Choice.

$4 \times 4 = 16$

10. a) If  $x^2 + y^2 = 49xy$  then Show that  $2 \log(x + y) = \log 3 + \log 17 + \log x + \log y$

(OR)

b) Verify that 1, -1 and -3 are the zeroes of the cubic polynomial  $x^3 + 3x - x - 3$  and check the relationship between zeroes and the co - efficients.

11. a) If  $A = \{x : x \text{ is a natural number less than } 5\}$

$B = \{x : x \text{ is a factor of } 15\}$

$C = \{x : x \text{ is an odd prime number less than } 20\}$  then find

(i)  $A \cup B$       (ii)  $B \cap C$       (iii)  $A - B$       (iv)  $C - B$

(OR)

b) If  $A = \{2, 4, 6, 8, 10, 12\}$ ,  $B = \{1, 3, 5, 7, 9, 11, 13\}$ ,  $C = \{1, 2, 3, \dots, 10\}$  then find

(i)  $n(A \cup B)$       (ii)  $n(B \cup C)$       (iii)  $n(A - B)$       (iv)  $n(B - C)$

12. a) If the remainder on division of  $x^3 + 2x^2 + kx + 3$  by  $x - 3$  is 21. Find the quotient and the value of 'k'. Hence, find the zeroes of the polynomial  $x^3 + 2x^2 + kx - 18$ .

(OR)

b) If  $(2.3)^x = (0.23)^y = 1000$  then find the value of  $\frac{1}{x} - \frac{1}{y}$ .

13. a) Find the zeroes of the polynomial  $p(x) = x^2 - 2x - 8$  by using graph.

(OR)

b) Find the zeroes of the polynomial  $p(x) = x^2 - 9$  by using graph.

**INSTRUCTIONS:**

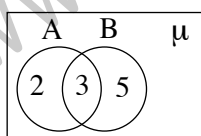
- i) Answer ALL the questions.
- ii) Each question carries  $\frac{1}{2}$  Mark.
- iii) Answers are to be written in question paper only.
- iv) Marks will not be awarded in any case of over writing and rewriting or erased answers.
- v) Write the CAPITAL LETTER (A, B, C, D) showing the correct answer for the following questions in the brackets provided against them.

$$20 \times \frac{1}{2} = 10$$

14. If L.C.M of two numbers is 1200 then which of the following is not the H.C.F. of the numbers ( )  
 A) 600                                      B) 500                                      C) 400                                      D) 200
15. After how many decimals  $\frac{14587}{1250}$  will terminate? ( )  
 A) 1    B) 2    C) 3    D) 4
16. L.C.M. of a, 18 is 36 and H.C.F. is 2 then a = ..... ( )  
 A) 4    B) 3    C) 2    D) 1
17. Which of the following is a non – terminating decimal? ( )  
 A)  $\frac{15}{1600}$                                       B)  $\frac{13}{3125}$                                       C)  $\frac{9}{15}$     D)  $\frac{77}{210}$
18. If  $\log_9 \frac{1}{729} = -a$  than a = ..... ( )  
 A) -3    B) 3    C) -9    D) 9
19. If  $5 = 3^x$  then  $3 \log_3^5 = \dots\dots\dots$  ( )  
 A) 3    B) 5    C) 125    D) 243
20. What is the units place in the expansion of  $6^{2017}$  is ( )  
 A) 7    B)  $2017 \times 6$                                       C) 2    D) 6
21. If  $A \cap B = A$  and  $A \cup B = B$  then ( )  
 A)  $A \supset B$                                       B)  $B \subset A$                                       C)  $A \subset B$                                       D)  $A = B$
22. Which of the following represents  $A - B$  ( )



23. In the figure  $A \cup B =$  ( )



- A)  $\{x : x \text{ is an even prime number}\}$                                       B)  $\{x : x \text{ is an odd prime}\}$   
 C)  $\{x : x \text{ is first odd prime number}\}$                                       D)  $\{x : x \text{ is a prime number less than 7}\}$

24. If  $A \subset B$ ,  $n(A) = 21$ ,  $n(B) = 41$  then  $n(A \cup B) = \dots\dots\dots$  ( )  
 A) 21                                      B) 41                                      C) 62                                      D) 20
25. If  $A \cap B = \phi$ , then  $n(A \cup B) = \dots\dots\dots$  ( )  
 A)  $n(A) + n(B)$                                       B)  $n(A) + n(B) - n(A \cap B)$   
 C)  $\mu$                                       D)  $\phi$
26. If  $A = \{t, e, n, h\}$ ;  $B = \{e, x, a, m\}$  then  $B - A = \dots\dots\dots$  ( )  
 A)  $\{e\}$                                       B)  $\{t, n, h\}$                                       C)  $\{e, x, a, m\}$                                       D)  $\{x, a, m\}$
27.  $x$  one root of  $x^{2016} + (-1)^{2017} = 0$  is  $\dots\dots\dots$  ( )  
 A) 1                                      B) -1                                      C) 0                                      D) 2016
28. If  $\alpha, \beta, \gamma$  are zeroes of the polynomial  $p(x) = x^3 - 6x^2 + 5x - 8$  then  $\alpha\beta + \beta\gamma + \gamma\alpha = \dots\dots\dots$  ( )  
 A) 5                                      B) 6                                      C) 8                                      D) -5
29. If sum of the zeroes of a polynomial is 3 and product is 2 then the polynomial  $p(x) = \dots\dots\dots$  ( )  
 A)  $x^2 + 3x + 2$                                       B)  $x^2 + 3x - 2$                                       C)  $x^2 - 3x + 2$                                       D)  $x^2 - 3x - 2$
30. Sum of the zeroes of  $p(x) = 6x^2 - 1$  is  $\dots\dots\dots$  ( )  
 A)  $\frac{1}{6}$                                       B) 0                                      C)  $-\frac{1}{6}$                                       D) 1
31. If  $p(x) = x^2 - \sqrt{2}x - 6$  then  $p(\sqrt{2}) = \dots\dots\dots$  ( )  
 A) -2                                      B) 2                                      C) 6                                      D) -6
32. The intersecting points of X - axis and  $p(x) = x^2 + 3x - 4$  is  $\dots\dots\dots$  ( )  
 A) (1, 0), (-4, 0)                                      B) (-1, 0), (4, 0)                                      C) (0, 1), (0, 4)                                      D) (0, -1), (0, 4)
33. If 3 is a zero of the polynomial  $2x^2 + 9x + k$ , then  $k = \dots\dots\dots$  ( )  
 A) 9                                      B) -45                                      C) 45                                      D) -9

**PART - B**

**ANSWERS**

14-B; 15-D; 16-A; 17-D; 18-B; 19-B; 20-D; 21-C; 22-D; 23-C; 24-B; 25-A; 26-D; 27-B; 28-A; 29-C; 30-B; 31-D; 32-A; 33-B.

Writer: T.S.V.S. Suryanarayana Murthy