This Question Paper contains 4 Printed Pages.

15E(B)

MATHEMATICS, Paper – I

(English version)

Parts A and B

Time : 2½ Hours] ***[Maximum Marks : 50***

Part - B

Time : 30 minutes ***Marks : 15***

Note :-

1. **All** questions are to be answered.
2. Each question carries ½ mark.
3. Answers are to be written in the question paper only.
4. Marks will **not** be given for over-written, re-written or erased answers.
5. Write the CAPITAL LETTER for correct answer.

I. *Write the CAPITAL LETTER of the correct answer in the brackets provided against each question.* $10 \times ½ = 5$

1. Symbol of Universal Quantifier is ..... [.....]

(A) $\Rightarrow$ (B) $\forall$

(C) $\exists$ (D) $\Leftrightarrow$

2. $A \cap A' =$ ..... [.....]

(A) μ (B) A

(C) ϕ (D) A'

3. Range of a constant function is ..... [.....]

(A) μ (B) ϕ

(C) R (D) Singleton set

4. If $n(A) = 3$, $n(B) = 4$, then $n(A \times B) =$ ..... [.....]

(A) 12

(B) 24

(C) 7

(D) 4

5. The sum of a number and its reciprocal is $\frac{17}{4}$, then the number is .... [.....]

(A) 1

(B) 2

(C) 3

(D) 4

6. If $f(x)$ is divisible by $(ax + b)$, then the remainder is ..... [.....]

(A) $f\left(\frac{b}{a}\right)$

(B) $f\left(\frac{a}{b}\right)$

(C) $f\left(\frac{-a}{b}\right)$

(D) $f\left(\frac{-b}{a}\right)$

7. The value of an objective function $F = \frac{1}{3}x + \frac{2}{3}y$ at (0, 9) is ..... [.....]

(A) 4

(B) 5

(C) 6

(D) 7

8. Intersection of $x \geq 0$ and $y \geq 0$ is ..... [.....]

(A) 1st quadrant (B) 2nd quadrant

(C) 3rd quadrant (D) 4th quadrant

9. $\underset{x\to\infty}{Lt}\ \frac{5x+1}{3x+2}$ = ... [.....]

(A) $\frac{5}{3}$ (B) $\frac{-5}{3}$

(C) $\frac{1}{2}$ (D) $\frac{3}{5}$

10. $x+\frac{1}{x}=4$, then $x-\frac{1}{x}$ = ... [.....]

(A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$

(C) $\frac{\sqrt{3}}{2}$ (D) $2\sqrt{3}$

II. *Fill in the blanks with suitable answers.* $10 \times \frac{1}{2} = 5$

11. The graph $y = x^2$ is called .....

12. The inverse of $\sim p \Rightarrow q$ is .....

13. $(A \cup B)'$ = ...

14. If $f(x) = x^2$, $g(x) = x^3$, then $(gof)(-1)$ = ...

15. $(2x + 1, 3) = (3, x + 2)$, then x = ...

16. Expand $\sum a^2 (b-c)$ = ...

17. Equation of X-axis is .....

18. $(64)^{-0.5}$ = ...

19. Harmonic Mean of 10 and 5 is .....

20. $\sum n = 55$, then n = ...

III. *For the following questions under* ***Group-A****, choose the correct answer from the master list* ***Group-B*** *and write the letter of the correct answer in the brackets provided against each item.* $10 \times \frac{1}{2} = 5$

(i) **Group - A**

21. $f = \{(1, 2), (2, 3), (3, 1)\}$, then $f^{-1}(2) =$ ..... [.....]

22. $n(\phi) =$ ..... [.....]

23. Mid term of $\left(\frac{x}{y} + \frac{y}{x}\right)^4$ is ..... [.....]

24. Counter example of "All the prime numbers are odd numbers". [.....]

25. ${}^nC_3 = {}^nC_4$, then $n =$ ..... [.....]

Group - B

(A) 0

(B) 1

(C) 2

(D) 3

(E) 4

(F) 5

(G) 6

(H) 7

(ii) **Group - A**

26. Value of $\left(\frac{1}{27}\right)^{-2/3}$ is ..... [.....]

27. If $x = -3$, then $|x^2 - 20| =$ ..... [.....]

28. nth term of A.P. is $(2n^2 + 2n + 3)$, then 2nd term is ..... [.....]

29. The value of $f = (2x + 3y)$ at $(1, 2)$ is ..... [.....]

30. $(x - 2)$ is a factor of $x^3 - x^2 + 3x - K$, then value of K is ..... [.....]

Group - B

(I) 8

(J) 9

(K) 10

(L) 11

(M) 12

(N) 13

(O) 14

(P) 15