(6 pages) Reg. No. : .....

Code No. : 10616 E **Sub. Code : CMEC 31**

B.A. (CBCS) DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Economics – Core

MATHEMATICS FOR ECONOMICS – I

(For those who joined in July 2021 – 2022)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. LCM of 6 and 10
   (a) 60 (b) 30
   (c) 10 (d) 6

2. The numbers is the form $\sqrt{-5}$, $\sqrt{-4}$ etc are called
   (a) irrational numbers
   (b) imaginary numbers
   (c) integers
   (d) real numbers

3. 10^{th} term in A.P. 3, 5, 7, 9, 11, ...
   (a) 21 (b) 19
   (c) 23 (d) 17

4. Which one of the following is the example of geometric progression?
   (a) 1, 2, 3, 4 (b) 1, 2, 4, 8
   (c) 3, 5, 7, 9 (d) 9, 20, 21, 28

5. Empty set is a
   (a) Sub set (b) Zero set
   (c) Singleton set (d) Improper subset

6. If $A=\{1,2,4,6\}$ and $B=\{2,5,6,7\}$, $A\cup B=?$
   (a) $\{1,2,4,5,6,7\}$
   (b) $\{2,6\}$
   (c) $\{1,2,2,4,5,6,6,7\}$
   (d) $\{1,4\}$

7. If $5x=20$, $x=$
   (a) 15 (b) 25
   (c) 4 (d) $\frac{1}{4}$

8. The graph of a linear equation is
   (a) straight line (b) parabola
   (c) curve (d) none

9. If $y=\frac{2}{5}x+5$, $m=?$
   (a) 5 (b) $\frac{2}{5}$
   (c) $\frac{2}{5}x$ (d) $\frac{5}{2}$

10. The slopes of parallel lines are ————.
    (a) 1 (b) –1
    (c) equal (d) not equal

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Find HCF and LCM of $\frac{1}{2}, \frac{2}{3}$ and $\frac{3}{7}$.

Or

(b) $(25)^{7.5}\times(5)^{2.5}\div(125)^{1.5}=5^x$ find the value of x.

12. (a) Find the sum of the geometric series $2+6+18+54+....$

Or

(b) Explain different types of Algebraic expression with example.

13. (a) If $A=\{1,2,3,4,5,6,7,8,9\}$ and $B=\{2,4,6,7,9\}$ then find the number of proper subset of $A\cap B$?

Or

(b) What is meant by complement of sets? Give an example.

14. (a) Solve the following quadratic equation : $2x^2-7x+3$.

Or

(b) Given the demand function as $Qd=10-P$ and supply function as $Qs=-5+2P$, calculate equilibrium price and quantity.

15. (a) If the distance between the points $(2,-2)$ and $(-1,x)$ is 5, then find the value of x.

Or

(b) Find the equation of the line passing through the origin and with a slope of 6.

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) If $4^{(x-y)}=64$ and $4^{(x+y)}=1024$, then find the value of x.

Or

(b) (i) The HCF of two numbers is 108 and their LCM is 2268. If one of the number is 756, find the other number.

(ii) Find the LCM of $\frac{3}{5}, \frac{2}{7}, \frac{6}{11}$.

17. (a) (i) Add the algebraic expressions : $x+y+3$ and $3x+2y+5$.

(ii) Subtract the algebraic expressions : $3x^2-6x-4$ from $5+x-2x^2$.

(iii) Find the product of $(x+3)(x+5)$.

Or

(b) Determine the ninth and the sixteenth term of the series 2, 7, 12, 17, ...

18. (a) Describe the types of set.

Or

(b) Verify the following by using Venn diagram.

(i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

(ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

19. (a) Solve : $\frac{x}{6}+\frac{x}{8}=\frac{x+1}{7}+\frac{x}{12}+3$.

Or

(b) Explain the different types of functions with example.

20. (a) Find the equation of the line passing through the points $(-4, 6)$ and $(3, -9)$.

Or

(b) Elucidate the application of analytical geometry in Economics.

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