E 6609

00006609

B.B.A. DEGREE (C.B.C.S.S) EXAMINATION, SEPTEMBER 2024

First Semester

Complementary Course—FUNDAMENTALS OF BUSINESS MATHEMATICS

(2013—2016 Admissions)

Time : Three Hours

Maximum Marks : 80

Part A

*Answer **all** questions.*
Each question carries 1 mark.

1. What is unit matrix ?

2. What is depreciation ?

3. Find the value of $\log_2 16$.

4. What do you mean by quadratic equation ?

5. Is 101 a term of the Series 5, 7, 9.... ?

6. What are prime numbers ?

7. Define combination ?

8. How much interest will be earned on Rs. 2,000 @ 6 % simple interest for 2 years ?

9. Which term of the Ap is $\dfrac{3}{\sqrt{7}}, \dfrac{4}{\sqrt{7}}, \dfrac{5}{\sqrt{7}} + \cdots$ is $\dfrac{17}{\sqrt{7}}$?

10. Find the Fourth Proportional to 4, 6, 8 ..... ?

$(10 \times 1 = 10)$

Turn over

Part B

*Answer any **eight** questions.*

Each question carries 2 marks.

11. If 12, 16, x, 20 are in proportion. Find the value of x.

12. Find the value of n. If $^np_4 = 12\ ^np_2$.

13. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 & 2 \\ 3 & 2 & 6 \end{bmatrix}$.

    Find :

    (a) $A + B$.

    (b) $A - B$.

14. Find the sum of natural numbers from 1 to 25.

15. Find the value of $\log_2 \log_2 \log_2 16$.

16. State the difference between equal set and equivalent set.

17. What do you mean by Time Value of money ?

18. The sum of 2 numbers is 52 and their difference is 2. Find the numbers.

19. The 3rd term of the G. P. is 12 and the 6th term is 96. Find the 9th term ?

20. Find the 10th term of A.P. 2, 0, -2, -4 ..... ?

21. What do you mean by inverse of a matrix ?

22. Define carlesion product of sets ?

$(8 \times 2 = 16)$

Part C

Answer any **six** *questions.*

Each question carries 4 marks.

23. Find the present value of annuity of Rs. 3,000 for 10 years @ 6 % p.a. compound interest.

24. If $A = \{1, 2, 3\}$ $B = \{3, 4\}$ $C = \{4, 5\}$.

    Find : (i) $(A \times B) \cup (A \times C)$ and (ii) $(A \times B) \cap (A \times C)$.

25. If $A = \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$ and $A + 2B = A^2$. Find the matrix B.

26. Two numbers are in the ratio of 4 : 5 and if 24 is substracted from each of them the remainders are in the ratio of 2 : 3 find the numbers.

27. Solve for $x \cdot y$ and z :

    $$\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 5, \quad \frac{2}{x} - \frac{3}{y} - \frac{4}{z} = -11 \text{ and } \frac{3}{x} + \frac{2}{y} - \frac{1}{2} = -6.$$

28. Solve for A and B if :

    $$A - 2B = \begin{bmatrix} 4 & 6 & -10 \\ 6 & -4 & 2 \end{bmatrix} \text{ and } 2A - B = \begin{bmatrix} 4 & -8 & 2 \\ 4 & 6 & 2 \end{bmatrix}.$$

29. Find the sum of series 243, 81, 27 ... to 8 terms ?

30. Prove that $A \cup (B - A) = A \cup B$.

31. Explain ratio and proportion with an example.

(6 × 4 = 24)

Turn over

Part D

Answer any **two** *questions.*

Each question carries 15 *marks.*

32. State with an example system of solving linear equations using matrices.

33. (a) If $A = \begin{bmatrix} 9 & 1 \\ 4 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$.

   Find matrix X such that $2A + 5B + 2X = 0$.

   (b) Find the inverse of $A = \begin{bmatrix} 2 & 4 \\ 6 & 13 \end{bmatrix}$.

34. (a) Sum of 3 numbers is an A.P. is 27 and their product is 504. Find the numbers.

   (b) Find the value of x and y if x, 8, y are in G.P. and x, y, – 8 are in A.P.

35. Appu retires at 60 years receiving a pension of Rs. 14,400 a year paid in half-yearly installments for rest of his life after reckoning his life expectation to be 13 years and the interest is @ 4 % p.a. is payable half yearly. What single sum is equivalent to his pension ?

$(2 \times 15 = 30)$