



QP CODE: 24046196



Reg No :

Name :

**BBA DEGREE (CBCS) IMPROVEMENT/REAPPEARANCE/MERCY CHANCE EXAMINATIONS,
DECEMBER 2024**

First Semester

Bachelor of Business Administration

Complementary Course - BA1CMT03 - FUNDAMENTALS OF BUSINESS MATHEMATICS

2017 Admission Onwards

B3708588

Time: 3 Hours

Max. Marks : 80

Part A

Answer any ten questions.

Each question carries 2 marks.

1. Define singleton set with example.
2. If $A = \{a, b, c, d\}$, $B = \{c, d, e, f\}$ and $C = \{e, f, g, h\}$ find $(A \cup B) \cup C$ and $A \cup (B \cap C)$
3. Find the triplicate ratio of 2:3
4. x varies directly as y^2 and inversly as z and $x=5$ when $y=3$ and $z=12$. Find the relation between x, y and z . Also find x when $y=12$ and $z =6$?
5. Define ${}^n P_r$
6. Define ${}^n C_r$.
7. Solve $\log_x 16 = 4$
8. Define scalar matrix with an example.
9. Given $A = \begin{bmatrix} 2 & 3 & 5 \\ 5 & 4 & 2 \\ 2 & 5 & 9 \end{bmatrix}$, $B = \begin{bmatrix} 5 & -9 & 6 \\ 2 & 3 & -5 \\ 4 & 9 & 7 \end{bmatrix}$ Evaluate $A - B$
10. Define rank of a matrix.
11. Define non-singular matrix?
12. Determine the inverse of $\begin{bmatrix} 4 & 3 \\ 3 & 6 \end{bmatrix}$

(10×2=20)

Part B

Answer any six questions.

Each question carries 5 marks.

13. If $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $B = \{3, 5, 7\}$, $C = \{2, 4, 6\}$, then prove that $A - (B \cup C) = (A - B) \cap (A - C)$





14. If $A = \{a, b\}$, $B = \{x, y\}$, Prove that $A \times B \neq B \times A$
15. Distinguish between prime and composite numbers?
16. If $\frac{x}{4} = \frac{y}{7} = \frac{z}{9}$, prove that $\frac{4x+3y-4z}{7x-5y+3z} = \frac{1}{20}$.
17. How many different words can be formed with the letters of the word HARYANA ? in how many of these H and N together ?
18. How many ways 10 boys and 5 girls can sit around a circular table, so that no two girls sit together ?
19. If $A = \begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix}$ $B = \begin{bmatrix} a & 1 \\ b & -1 \end{bmatrix}$ and $(A + B)^2 = A^2 + B^2$, find a and b
20. Verify that $A = \frac{1}{2} \begin{bmatrix} 1 & -1 \\ 1 & 1 \end{bmatrix}$ is orthogonal?
21. Find x and y if $\begin{bmatrix} 2 & 4 \\ 3 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ -2 \end{bmatrix}$ using matrix method.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. If $A = \{5, 7, 11, 13\}$, $B = \{5, 9, 23, 27\}$, $C = \{9, 11, 13, 23\}$. Find
- 1) $(A - B) - C$
 - 2) $A \cup (B \cap C)$
 - 3) $A - (B \cup C)$
 - 4) $(A \times B) \cup (A \times C)$
 - 5) $A \times (B \cup C)$
23. (a). The weight of a sphere is proportional to the cube of the radius. A certain sphere of radius 4cm. weights 24kg. Find the weight of the sphere of radius 6cm. of the same material?
- (b). Show that area bounded by a circle varies as the square of its perimeter?
24. (1) If $A = \begin{bmatrix} 3 & 6 & 0 & 8 \\ 4 & 2 & -1 & 5 \\ 9 & -2 & 5 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 6 & 3 & 0 & 9 \\ 3 & -3 & 6 & 9 \\ 2 & -3 & 4 & 6 \end{bmatrix}$, find $A^T + B^T$
- (2) If $P = \begin{bmatrix} 2 & 3 & -1 \\ 4 & 2 & 8 \\ 7 & -3 & 6 \end{bmatrix}$, $Q = \begin{bmatrix} 11 & 8 & 0 \\ -4 & 8 & -1 \\ 1 & 3 & 5 \end{bmatrix}$ find $3P + 5Q$ and $8P - 3Q$
- (3) Given that $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 1 & 2 & 3 \end{bmatrix}$, Verify $(5A)^T = 5(A)^T$
25. Given $A = \begin{bmatrix} 3 & -3 & 0 \\ 6 & 3 & 9 \\ 12 & 3 & 24 \end{bmatrix}$ Verify the relation $(A^T)^{-1} = (A^{-1})^T$

(2×15=30)

