



22102132

QP CODE: 22102132

Reg No :

Name :

BBA DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE EXAMINATIONS, JULY

2022

First Semester

Bachelor of Business Administration

Complementary Course - BA1CMT03 - FUNDAMENTALS OF BUSINESS MATHEMATICS

2017 Admission Onwards

0B700547

Time: 3 Hours

Max. Marks : 80

Part A

Answer any **ten** questions.

Each question carries 2 marks.

1. If $A = \{1, 3, 5, 7\}$, $B = \{5, 9, 13, 17\}$ and $C = \{1, 3, 9, 13\}$ find $(A \cup B) \cup C$
2. If $A = \{p, q, r, s\}$ and $B = \{r, s, t, u\}$ find $A - B$ and $B - A$
3. What is $x : y$, if $x + y : x - y = 5 : 2$
4. A varies directly as B^2 . If $B=2$ then $A=10$, find the relation between A and B?
5. Find the value of $9p_3$
6. Find the number of arrangement that can be made out of the letters of the word ASSASSINATION ?
7. Solve $\log_x 16 = 4$
8. If $A = \begin{bmatrix} 1 & 2 & 3 \\ 5 & 6 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 & 5 \\ 1 & 0 & 3 \end{bmatrix}$ find $2A + B$
9. If $A = \begin{bmatrix} 2 & 0 & -4 \\ -6 & 2 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 8 & -4 & -2 \\ 0 & -2 & 6 \end{bmatrix}$ find $3(A - B)$
10. Show that $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ is idempotent
11. Define orthogonal matrix.
12. Define adjoint of a matrix.

(10×2=20)

Part B

Answer any **six** questions.

Each question carries 5 marks.





13. Represent $A - B$ and $B - A$ using Venn diagram
14. If $A = \{a, b\}$, $B = \{2, 3\}$, $C = \{3, 5\}$. Find $A \times (B \cup C)$ and $A \times (B \cap C)$
15. Define with example a) Real numbers b) Complex numbers.
16. The monthly salary of two persons are in the ratio 3:5. If each receives an increase of ₹20 in the monthly salary, the ratio is altered to 13:21. Find their salaries?
17. In how many ways 3 men and 3 ladies be seated at a round table such that no two men are seated together.
18. Find the number of ways in which a cricket team consisting of 11 players can be selected from 14 players. Also find out how many of these (i) will include captain. (ii) will not include captain.
19. Show that the matrix $A = \begin{bmatrix} 1 & -1 & 5 \\ -1 & 2 & 1 \\ 5 & 1 & 3 \end{bmatrix}$ is a Symmetric matrix
20. State which of the following matrices is singular and which is non-singular
 (i) $\begin{bmatrix} 0 & 1 & 1 \\ 1 & 2 & 0 \\ 3 & -1 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 4 & 3 & -3 \\ -1 & 0 & -1 \\ -4 & -4 & -3 \end{bmatrix}$
21. Given $A = \begin{bmatrix} 2 & -3 \\ -4 & 7 \end{bmatrix}$. Compute A^{-1} and show that $2A^{-1} = 9I - A$

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{2, 4, 6, 8, 10\}$, $B = \{1, 3, 5, 7, 9\}$, $C = \{2, 6, 7, 9\}$. Find
- 1) $A' \cap B'$
 - 2) $A' \cup C'$
 - 3) $A \cup (B \cap C)$
 - 4) $(A' \cup B') - C$
 - 5) $(A')'$
23. (a) The pressure in a liquid varies as the depth when the density is constant and varies as density when the depth is constant. The pressure is 1 when the depth is 32 and density is 1. Find the depth at which the pressure is 288 and the density is 2 ?
- (b) x varies directly as y and inversely as z and $x=8$ when $y=6$ and $z=9$. Find the relation between x , y and z . Also find y when $x=15$ and $z=8$?





24.

(1) Find the rank of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 2 \\ 2 & 6 & 5 \end{bmatrix}$

(2) If $A = \begin{bmatrix} 2 & -1 & 0 \\ 3 & 2 & 4 \\ -4 & 1 & 5 \end{bmatrix}$, find the matrix X such that $A + X$ is a unit matrix

25. Solve the following equations using matrices

$$2x-3y=3, 4x-y=11$$

(2×15=30)

