



QP CODE: 23104604

23104604

Reg No : .....

Name : .....

**BBA DEGREE (CBCS) REGULAR/IMPROVEMENT/REAPPEARANCE  
EXAMINATIONS, FEBRUARY 2023**

**First Semester**

Bachelor of Business Administration

**Complementary Course - BA1CMT03 - FUNDAMENTALS OF BUSINESS**

**MATHEMATICS**

2017 Admission Onwards

6E7AD17D

Time: 3 Hours

Max. Marks : 80

**Part A**

*Answer any ten questions.*

*Each question carries 2 marks.*

1. Define null set with example.
2. Explain with example complement of a set
3. Compute a:b:c, if a:b = 2:3 and b:c = 4:5
4. A varies inversely as  $B^2$ . If B=5 then A=4. Find the value of A when B=10?
5. Find how many ways n objects can be arranged around a table ?
6. Find in how many ways a cricket team containing 11 players can be formed from 15 high class players available ?
7. Solve  $\log_3 x = 4$ .
8. Define scalar matrix with an example.
9. If  $\begin{bmatrix} 4 & 5 \end{bmatrix} + \begin{bmatrix} x & y \end{bmatrix} = \begin{bmatrix} 7 & 3 \end{bmatrix}$ , find x and y

10. Evaluate  $\begin{bmatrix} 6 & -1 & 7 & 5 \end{bmatrix} \begin{bmatrix} 4 \\ -9 \\ -3 \\ 2 \end{bmatrix}$





11. If  $A = \begin{bmatrix} 1 & 2 & 3 \\ 6 & 4 & 5 \\ -3 & 7 & 0 \end{bmatrix}$ , determine the cofactor of  $(2,3)^{th}$  element?

12. Define inverse of a matrix.

(10×2=20)

**Part B**

Answer any **six** questions.

Each question carries **5** marks.

13. If  $A = \{a, b, c\}$ ,  $B = \{b, c, d\}$ ,  $C = \{c, d, e\}$ , verify that

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

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

14. If  $A = \{0, 1, 3, 5\}$ ,  $B = \{1, 2, 4, 7\}$ ,  $C = \{1, 2, 3, 5\}$  Prove that

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

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

15. If  $\frac{a}{3} = \frac{b}{4} = \frac{c}{7}$ , prove that  $\frac{a+b+c}{c} = 2$ .

16. Given the square of x varies as cube of y and x=3 when y=4. Find the value of y when  $x = \frac{1}{\sqrt{3}}$ ?

17. In how many ways can 5 Telugu, 3 English and 3 Tamil books be arranged if the books of each different language are kept together.

18. How many arrangements can be made with the letters of the word MATHEMATICS and in how many of them vowels occur together ?

19. Show that the value of the determinant  $\begin{vmatrix} 1 & a & b+c \\ 1 & b & c+a \\ 1 & c & a+b \end{vmatrix} = 0$

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. If  $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$  verify that  $A(\text{adj}A) = |A|I$

(6×5=30)





**Part C**

Answer any **two** questions.

Each question carries **15** marks.

22. Out of the total 200 students who appeared for B Com examination from a centre, 95 failed in Accounts, 100 failed in Statistics and 120 in Costing. Those who failed both in Accounts and Statistics were 80, those who failed in Statistics and Costing were 82 and those who failed in both Accounts and Costing were 85. The students who failed in all subjects were 75. Find out the number who failed atleast in any one of the subjects?

23. (a) Explain with example
1. Prime and composite numbers.
  2. Rational and irrational numbers.
  3. Complex numbers.

(b) Show that  $\sqrt{2}$  is an irrational number ?

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. Prove that  $AB=4I$  and hence solve the system of equations  $x+y+2z=1$ ,  $3x+2y+z=7$ ,  $2x+y+3z=2$  ?

(2×15=30)

