



21102402

QP CODE: 21102402

Reg No : .....

Name : .....

**BBA DEGREE (CBCS) EXAMINATIONS, OCTOBER 2021**

**First Semester**

Bachelor of Business Administration

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

**MATHEMATICS**

2017 Admission Onwards

6266C705

Time: 3 Hours

Max. Marks : 80

**Part A**

*Answer any ten questions.*

*Each question carries 2 marks.*

1. What are the basic set operations?
2. If  $U = \{1, 2, 3, 4, 5, 6\}$ ,  $A = \{1, 3, 5\}$   $B = \{2, 4, 6\}$  then find  
a)  $A'$   
b)  $B'$
3. List all the prime numbers less than 30.
4. Arrange the following ratios in ascending order of magnitudes 8:9, 11:12, 2:3
5. There are 8 vacant chairs in a room. In how many ways can 5 persons take their seats.
6. Find how many ways 5 people be seated around a table ?
7. Find the logarithm of 625 to th base 5 ?
8. For the matrix  $A = \begin{bmatrix} 2 & 1 & -1 \\ 1 & 0 & 3 \end{bmatrix}$  Show that  $(A^T)^T = A$
9. If  $A = \begin{bmatrix} 5 & 9 & 12 \\ 7 & 3 & 6 \end{bmatrix}$  Find  $3A$
10. If  $A = \begin{bmatrix} 5 & 6 \\ -2 & 8 \\ 3 & -2 \end{bmatrix}$ ,  $B = \begin{bmatrix} -1 & 4 \\ 0 & -2 \\ 6 & -4 \end{bmatrix}$  Find the matrix X such that  $A + B - X = 0$
11. If  $A = \begin{bmatrix} 3 & 4 & 7 \\ -2 & 5 & 6 \\ 7 & 3 & -9 \end{bmatrix}$  compute the cofactor of 6 and -9?





12. Show that the following matrix is non-singular

$$\begin{bmatrix} 3 & 4 & 2 \\ 0 & 1 & -3 \\ 2 & -2 & 8 \end{bmatrix}$$

(10×2=20)

**Part B**

Answer any **six** questions.

Each question carries **5** marks.

13. If  $A = \{a, b, p, d\}$   $B = \{p, d, e\}$   $C = \{p, e, f, g\}$  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. Through example , prove that

1)  $A \times B \neq B \times A$

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

15. Divide ₹ 612 among A,B and C so that A's share to B's share = 5:3 and B's share to C's share = 7:4?

16. The volume of a gas varies directly as the pressure and inversely as the temperature. When the pressure is 15 units and temperature is 260 units ,the volume is 200 units.What will be the volume ,when the pressure is 15 units and the temperature is 195 units?

17. How many different words can be made out of the letters of the word ALLAHABAD ? In how many of these will the vowels occupy the even places ?

18. From 6 boys and 4 girls , 5 are to be selected for admission for a particular course . In how many ways can this be done if there must be exactly 2girls .

19. Given that  $\begin{bmatrix} 2 & 4 \\ 3 & 1 \end{bmatrix} + k \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ -3 & -7 \end{bmatrix}$  Find the value of k

20. If  $A = \begin{bmatrix} 1 & -2 & -2 \\ 2 & 1 & -2 \\ 3 & -2 & 1 \end{bmatrix}$  show that  $\text{adj } A = 3A^T$

21. Given  $X = \begin{bmatrix} 1 & 4 & 2 \\ -1 & 2 & 1 \\ 1 & 3 & 2 \end{bmatrix}$  .Show that  $XX^{-1} = I_3$  where  $I_3$  is a unit matrix of order 3

(6×5=30)

**Part C**





Answer any **two** questions.  
Each question carries **15** marks.

22. A town has total population of 50,000, out of it 28,000 read Patriot and 23,000 read Times of India while 4000 read both the papers. Indicate how many read neither Patriot nor Times of India?
23. (a) The distance through which a heavy body falls from rest varies as the square of the time it falls. A body falls through 153 feet in 3 seconds. How far does it falls in 8 seconds ?
- (b) If  $\frac{x+2y}{2x-y} = \frac{2}{3}$ . Show that (i)  $x \propto y$  (ii)  $x^2 + xy + y^2 \propto x^2 - y^2$ .
24. (1) Find rank  $\begin{bmatrix} 3 & 1 & 2 & 5 \\ -1 & 4 & 1 & -1 \\ 1 & 9 & 4 & 3 \end{bmatrix}$
- (2) If  $A = \begin{bmatrix} 1 & -2 \\ 2 & 3 \end{bmatrix}$   $B = \begin{bmatrix} 3 & 8 \\ -4 & 2 \end{bmatrix}$ , find  $AB^T$  and  $A^TB$
25. Solve the system of equations using matrix method  
 $2x+4y-z=9$  ,  $3x+y+2z=7$  ,  $x+3y-3z=4$

(2×15=30)

