



QP CODE: 23145721

Reg No :

Name :

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

First Semester

Bachelor of Business Administration

Complementary Course - BA1CMT03 - FUNDAMENTALS OF BUSINESS

MATHEMATICS

2017 Admission Onwards

D496D5D1

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Define intersection of two sets with example.
2. If $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$ then find $A - B$ and $B - A$
3. Define natural numbers with examples.
4. Divide 10 marbles between A and B in the ratio 3 : 2
5. How many words can be made out of the letters of the word MISSISSIPPI?
6. How many numbers of four digits can be formed from the digits 4, 5, 6, 7, 8, 9 when the digits may be repeated?
7. In how many ways 6 questions can be selecteted from 9 questions .
8. Find x and y if $\begin{bmatrix} 1 & x+y \\ x-y & 0 \end{bmatrix} = \begin{bmatrix} 1 & 3 \\ 1 & 0 \end{bmatrix}$
9. Evaluate $4A - 2B$,where $A = \begin{bmatrix} 1 & 2 \\ 5 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 2 & -3 \end{bmatrix}$
10. Find x and y if $\begin{bmatrix} 2 & 1 \\ 7 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ -2 \end{bmatrix}$
11. Define cofactor of an element in a matrix.





12. Define singular matrix.

(10×2=20)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Write down all the subsets of $\{e, f, g, h\}$

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

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

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

15. Two numbers are in the ratio of 3:4 and if 7 is added to each term of the ratio, the new ratio is 4:5. Find the numbers.

16. The volume V of a gas varies inversely as its pressure p , the temperature being constant. If the volume of a gas is 84cc under pressure of 12 units, what is the volume when the pressure is 14 units?

17. How many words can be formed out of the letters of the word ARTICLE begin with A ?

18. Show that $\log 2 + 16 \log \frac{16}{15} + 12 \log \frac{25}{24} + 7 \log \frac{81}{80} = 1$

19. If $A = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 \\ 1 \\ 0 \end{bmatrix}$ show that $(2A + 3B)^T = 2A^T + 3B^T$

20. Find the adjoint of the matrix and verify that $A(\text{adj}A) = (\text{adj}A)A = |A|I$, where $A =$

$$\begin{bmatrix} 2 & 3 & -4 \\ 0 & -4 & 2 \\ 1 & -1 & 5 \end{bmatrix}$$

21. Find the inverse of $\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix}$ and hence solve the equation $2x_1 - x_2 = 3$, $-x_1 + 2x_2 = -3$

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.





22. Each student in a class of 40, studied atleast one of the languages Malayalam, Hindi and French, 16 studied Malayalam, 22 French, 26 Hindi, 5 studied Malayalam and French, 14 Hindi and French, 2 Malayalam, Hindi and French. Find the number of students who studied Malayalam and Hindi but not French?
23. (a) The time of the oscillation of a pendulam varies as the square root of its length. If a pendulam of length 40 inch oscillates once in a second, what is the length of the pendulam oscillating once in 2.5 seconds?
- (b) The area of a circle varies directly with the square of its radius. Area is 38.5 sq.cm. when radius of the circle is 3.5 cm. Find the area of a circle whose radius is 5.25 cm.
24. (1) Find the rank of the matrix $P = \begin{bmatrix} 1 & 3 & 5 \\ 2 & 7 & 9 \\ 6 & 8 & 10 \end{bmatrix}$
- (2) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 3 & 5 \\ 2 & 4 & 6 \end{bmatrix}$, find AB and BA . Are they equal
25. Find the inverse of the matrix $\begin{bmatrix} 2 & 4 & -1 \\ 3 & 1 & 2 \\ 1 & 3 & -3 \end{bmatrix}$

(2×15=30)

