



19103002

QP CODE: 19103002

Reg No : .....

Name : .....

**BBA DEGREE (CBCS) EXAMINATION, NOVEMBER 2019**

**First Semester**

Bachelor of Business Administration

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

**MATHEMATICS**

2017 Admission Onwards

1E97449D

Time: 3 Hours

Maximum Marks :80

**Part A**

*Answer any ten questions.*

*Each question carries 2 marks.*

1. If  $A = \{a, b, c, d\}$  and  $B = \{c, d, e, f\}$  then find  $A \cup B$  and  $A \cap B$
2. If  $A = \{2, 4, 6, 8\}$  and  $B = \{2, 6, 8, 10, 12\}$  then find  $A \cup B$  and  $A \cap B$
3. Divide 24 in the ratio 5:1
4. If  $\frac{p+2q}{2p+q} = \frac{2}{3}$ , show that  $p \propto q$  ?
5. How many different 6 digits numbers can be formed with the digits 3,5,6,7,8,9 ?
6. In how many ways can 4 letters be mailed if there are 3 mail boxes ?
7. Change in to logarithm form  $6^3 = 216$ .
8. If  $\begin{bmatrix} 2 & -1 \\ 2 & 0 \end{bmatrix} + 2A = \begin{bmatrix} -4 & 5 \\ 6 & 8 \end{bmatrix}$ , find A
9. Compute  $A^2$  if  $A = \begin{bmatrix} 0 & i \\ i & 0 \end{bmatrix}$ ,  $i^2 = -1$
10. Evaluate  $\begin{vmatrix} 2 & 3 & 5 \\ 6 & 6 & 10 \\ 10 & 9 & 15 \end{vmatrix}$
11. Define singular matrix.
12. If  $A = \begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$ ,  $B = \begin{bmatrix} 3 \\ 19 \end{bmatrix}$  and  $X = \begin{bmatrix} x \\ y \end{bmatrix}$ , then find X such that  $AX=B$

(10×2=20)





**Part B**

Answer any **six** questions.

Each question carries **5** marks.

- 13. Represent  $A \cap B$  and  $A'$  using Venn diagram
- 14. If  $A = \{1, 2, 3, \dots\}$ ,  $B = \{2, 3, 4, 5\}$ ,  $C = \{2, 4, 6, 8\}$  find
  - 1)  $(A \cap B) \cup C$
  - 2)  $(A - B) \cup C$
- 15. Compute the rational number corresponding to 1.375375.....?
- 16. If x varies directly as y and inversely as z, find the relation between x, y and z, if x=15, y=8 and z=2. Also find x when y=6 and z=3?
- 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. In a mercantile firm 4 posts fall vacant and 35 candidates apply for the posts. In how many ways a selection be made (i) if one particular candidate is always included. (ii) if one particular candidate is always excluded.
- 19. Show that the matrix  $B = \begin{bmatrix} 0 & 1 & -1 \\ -1 & 0 & 1 \\ 1 & -1 & 0 \end{bmatrix}$  is a skew symmetric matrix
- 20. Find the minor and cofactor of the elements a, e and i of the matrix  $\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$
- 21. Find the adjoint of the matrices and verify that  $A(\text{adj } A) = |A|I$   
 $A = \begin{bmatrix} 1 & 4 & 5 \\ 3 & 2 & 2 \\ 0 & 1 & -3 \end{bmatrix}$

(6×5=30)

**Part C**

Answer any **two** questions.

Each question carries **15** marks.

- 22. In a survey of 1000 households, each household has at least one of washing machines, vacuum cleaners and refrigerator, 650 has no refrigerator, 300 had no vacuum cleaner and 400 had no washing machine. 320 had both vacuum cleaner and washing machine, 250 had both refrigerator and vacuum cleaner. 150 had both refrigerator and washing machine. How many had all the three? How many had only vacuum cleaner?





23. (a)  $2x + 3y : x - 2y = 4 : 3$ , find  $x^2 + y^2 : x^2 - y^2$   
(b) A can do a piece of work in 10 days while B can do the same piece of work in 15 days. How much time will it take for both of them to do the work together?

24. (1) If  $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ ,  $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  show that  $A^2 - (a+d)A = (bc - ad)I$

(2) If  $P = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ , and  $Q = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$  show that

$$(aA + bB)(aA - bB) = (a^2 + b^2)A$$

25. Find the inverse of the matrix  $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}$

(2×15=30)

