

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**BBA (Sem. 2)**  
**BUSINESS MATHEMATICS**  
Subject Code : BBA-203  
M.Code : 10546  
Date of Examination : 17-12-22

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTIONS-B consists of FOUR Sub-sections : Units-I, II, III & IV.
3. Each Sub-section contains TWO questions each, carrying TEN marks each.
4. Student has to attempt any ONE question from each Sub-section.

**SECTION-A**

1. a) Write the tabular form of the set  $D = \{x : |x - 3| < 5\}$ .
- b) With the help of Venn diagram, shade the sets :  $A' \cap (B \cup C)$ .
- c) Given  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ , calculate the value of  $\log_8(27)$  upto two decimal places.
- d) Prove that the diagonal elements of a skew symmetric matrix are always zero.
- e) Find the adjoint matrix of  $A = \begin{pmatrix} 1 & -2 \\ 2 & -1 \end{pmatrix}$ .
- f) Find  $\frac{dy}{dx}$ , where  $x = e^{t-2}$ ,  $y = t^3$  at  $t = 1$ .
- g) Find  $\frac{dy}{dx}$ , where  $y = x \cos x \sin^2 x$ .
- h) Compute  $(99)^5$ .
- i) Evaluate  $(\sqrt{2}+1)^5 - (\sqrt{2}-1)^5$ .

j) Find  $\frac{d}{dx}(x^x)$ .

## SECTION-B

### UNIT-I

- In a survey of 400 students in a school, 100 were listed as drinking apple juice, 15 as drinking orange juice and 75 were listed as both drinking apple as well as orange juice. Find how many students were drinking neither apple juice nor orange juice.
- Find the value of  $\frac{(0.0437)^{2/5} \times (1.407)^2}{(0.0015)^{1/3} \times (1.235)^{1/7}}$ .

### UNIT-II

- Solve the system of equations :  $x - y + 3z = 3$ ;  $2x + 3y + z = 2$ ;  $3x + 2y + 4z = 5$ .

- Find the inverse of the matrix  $\begin{pmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{pmatrix}$ .

### UNIT-III

- The daily profit,  $P$ , of an oil refinery is given by  $P = 8x - 0.02x^2$ , where  $x$  is the number of barrels of oil refined. How many barrels will give maximum profit and what is the maximum profit?
- Find the derivative of  $x^x$  with respect to  $x \log x$ .

### UNIT-IV

- Find the first negative term in the expansion of  $\left(1 + \frac{3}{4}x\right)^{13/3}$ , where  $0 < x < \frac{4}{3}$ .
- The population of Punjab in 1991 is  $17.8 \times 10^7$ . If the annual rate of growth is 2.5% what will be its population after 10 years?

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**