UG Even Semester Examination, May 2025

BUSINESS ADMINISTRATION

(4th Semester)

Course No.: BBA-DSM-252

(Quantitative Analysis Tools-II)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the right margin indicate full marks for the question.

SECTION-I

Answer any two questions from each unit. 2x2x5=20

UNIT-I

1. Define Venn Diagram.
2. Write two differences between equal sets and equivalent sets.
3. Define null sets with suitable example.

UNIT-II

4. What is geometric progression?
5. What is arithmetic progression?
6. Write two uses of arithmatic progression in business.

UNIT-III

7. Define permutation.

8. Write any one fundamental rule of counting.

9. Write the mathematical expression for the number of permutations of n distinct object taken r at a time.

UNIT-IV

10. Name the different type of matrix.

11. What do you understand by the term 'matrix'?

12. Write any two properties of determinants.

UNIT-V

13. Define integration.

14. Define differentiation.

15. Write two differences between integration and differentiation.

SECTION-II

Answer any one question from each unit.

5x10=50

UNIT-I

1. In a class, there are 200 students who have taken atleast one of the subject Hindi or Bengali. If 150 students have taken Hindi and 120 have taken Bengali, find the number of students who have taken-

   (i) Both the subjects 4

   (ii) Only Hindi 3

   (iii) Only Bengali 3

UNIT-V

9. Evaluate the following integral

   (a) $\int x + \frac{1}{x}\, dx$ 5

   (b) $\int \frac{\log x}{x}\, dx$ 5

10. Differentiate the following with respect to x.

   (a) $y = (5-2x)^4$ 5

   (b) $y = \frac{4x^2-3}{6x^2-8}$

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2. If U= {1,2,3,4,5,6,7,8,9,10}
A= {1,2,4,5,7,9}
B= {2,3,6,8,10}
C= {2,5,10}

Find—

(i) AUB 1.5

(ii) A B C 1.5

(iii) A–B 1.5

(iv) B–C 1.5

(v) C–A, and 1.5

represent all with the help of Venn Diagram. 2.5

UNIT-II

3. (a) In a geometric progression serie, if the 3rd term and 5th term are 8 and 32 respectively find the sum of its first 7 terms. 5

(b) In a geometric progresion, if the sum of first three terms are 27 and the common ration is 3, find the geometric progression. 5

4. (a) In the 9th term of an arithmatic progresion is 0, prove that its 29th term is double of its 9th term. 5

(b) In an arithmatic progression, the 3rd term is 21 and 7th term is 49. Find the sum upto 10th term and the A.P. series. 5

U

UNIT-III

5. Prove that the number of permutations of n distinct objects taken r(<n) at a time is 10

$$^{n}p_{r} = \frac{n!}{(n-1)!}$$

6. Prove that the number of permutations of n objects taken all together, the objects are not all different is 10

$$\frac{n!}{p!q!r!}$$

where p objects are alike of first kind, q objects are alike of second kind and, r objects are alike of third kind.

UNIT-IV

7. (a) Fnd the inverse of the following matrix: 5

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

(b) If $\begin{bmatrix} x+y & y-z \\ z-2x & y-x \end{bmatrix} = \begin{bmatrix} 3 & -1 \\ 1 & 1 \end{bmatrix}$

find the values of x, y and z. 5

8. Solve using Cramer's Rule 10

$x+y-z= 4$

$2x+y+5z=12$

$3x+7y-2z=17$