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BBA-102 (N)

Bachelor of Business Administration

First Semester

EXAMINATION, MARCH -2021

Paper Second

BUSINESS MATHEMATICS

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt questions from all Sections as directed.

Inst : The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section -A

(Short Answer Type Questions)

Note : All questions are compulsory. Each question carries 3 marks.

Q1 (a) If $A = \begin{bmatrix} 8 & 9 & -5 \\ 4 & -2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 9 & -8 \\ 4 & -6 & 5 \end{bmatrix}$

find $2A + 4B$

(b) Write an example of column Matrix, Diagonal Matrix and Identity matrix.

P.T.O.

(c) Find the Rank of the matrix A.

$$A = \begin{bmatrix} 1 & 3 & 4 & 1 \\ 3 & 9 & 12 & 3 \\ 1 & 3 & 4 & 1 \end{bmatrix}$$

(d) The ratio of present age of A and B is 3 : 4. The ratio of age 5 years back was 5:7. Find their present ages.

(e) Distinguish between the following :

(i) Scalar matrix and unit matrix.

(ii) Square matrix and non-singular matrix.

(f) Insert five geometric means between 2 and 1458.

(g) The price of petrol is increased by 12%. Find, how much percent a man must reduce his consumption so as not to increase his expenditure.

(h) If: $A = \{a, b, c, d, e, f, g, h\}$

$$B = \{b, d, f, h\}$$

$$C = \{d, e, g\}$$

find (i) $A-B$
(ii) $B \cap C$
(iii) $A-C$

(i) Differentiate the function w.r.t.x.

(a) $(3x+4)^2 \cdot (2x-3)^3$

(b) $(x)(x-3) \cdot (x^2+x)$

(j) Find the maximum and minimum values of the function.

$$f(x) = 2x^3 - 9x^2 + 12x - 1$$

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Section-B

(Long Answer type Questions)

Note : Attempt any 2 questions. Each question carries 10 Marks.

✓ Q2. If Matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$

find inverse matrix of A.

Q3. Using Gaussian elimination method solve the following system of equation :

$$3x_1 + 2x_2 + x_3 = 41 \text{ continues -}$$

$$2x_1 + x_2 + 2x_3 = 29$$

$$2x_1 + 2x_2 + 2x_3 = 44$$

Q4. (a) Find 3 numbers in H.P. such that their sum is 38 and their product in 1728.

(b) Which term of the series 96, 48, 24, ... will be $\frac{3}{16}$?

✓ Q5. IF the population of a city is 3,50,000 in beginning of the year 2015, find what will be the population at the end of 2017, if the growth rate is 6% p.a.

Section-C

(Long Answer Type Question)

Note : Attempt any 2 questions. Each question carries 10 Marks.

Q6. (a) In how many ways a committee of 6 persons can be formed from 7 men and 4 women, so that at least 2 women are there in the committee.

(b) How many different permutations can be formed from the letter of word EXAMINATION taken 4 at a time?

Q7. Find the maximum and minimum values of the function-
 $f(x) = 2x^3 - 9x^2 + 12x - 1$

Q8. Find the following Integrals :-

(a) $\int x^4 \cdot (5x^5 + 3x^2 - 9) dx$

(b) $\int \frac{(2x+5)^2}{\sqrt{x}} \cdot dx$

Q9. If: $U = \{2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$

$$A = \{2, 4, 7\}$$

$$B = \{3, 5, 7, 9, 11\}$$

$$C = \{7, 8, 9, 11\}$$

Find the value of the following -

(i) $B \cup C$

(ii) $(A \cap U) \cap (B \cup C)$

(iii) $C - B$

(iv) $B \cap C$

(v) $(B - C)$

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