

(4)

6. If $y = \sin^{-1} x$, show that :

$$(1-x^2) \frac{d^2y}{dx^2} - x \frac{dy}{dx} = 0$$

7. Expand $(x - 1)^7$.

8. If $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix}$ and $B = \begin{pmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \end{pmatrix}$

verify $A + B = B + A$.

Total No. of Pages : 04

Roll No.

BBA-102

Business Mathematics

(व्यवसायिक गणित)

Bachelor of Business Administration

(BBA-10/12/16/17)

1st Semester

Examination-2019

Time : 3 Hours

[Maximum Marks : 80

Note : This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section-A

Long Answer Types Questions

Note : Section 'A' contains Five (05) long-answer-type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only. **(3×15=45)**

(2)

1. Solve the following equations :

(i) $x + 2y + 3z = 16$

$3x + y + 2z = 13$

$2x + 3y + z = 13$

(ii) $5x + 3y + 7z = 4$

$3x + 26y + 2z = 9$

$7x + 2y + 10z = 5$

2. If the coefficient of 5th, 6th and 7th terms in the expansion of :

$1 + x^n$ are in A. P., then find the value of n.

3. If $A = \begin{bmatrix} 3 & \sqrt{3} & 2 \\ 4 & 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 & 2 \\ 1 & 2 & 4 \end{bmatrix}$

then prove the following :

(i) $(A')' = A$ (ii) $(A+B)' = A' + B'$

(iii) $(kB)' = kB'$, k = constant.

4. Find the sum of the series :

$1^2 + 3^2 + 5^2 + 7^2 + \dots$ upto n terms.

5. Find the inverse of the matrix :

$$\begin{bmatrix} 1 & 2 & -1 \\ -4 & -7 & 4 \\ -4 & -9 & 5 \end{bmatrix}$$

(3)

Section-B

Short Answer Types Questions

Note : Section 'B' contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. If $A = \begin{pmatrix} 2 & -1 \\ 0 & 3 \end{pmatrix}$ and $B = \begin{pmatrix} 7 & 0 \\ -2 & -3 \end{pmatrix}$

then find the value of AB.

2. Show that:

$$(\sqrt{3} + \sqrt{2})^3 + (\sqrt{3} - \sqrt{2})^3 = 18\sqrt{3}$$

3. If $A = \{1,4\}$, $B = \{4,5\}$, $C = \{5,7\}$; find

(i) $(A \times B) \cup (A \times C)$

(ii) $(A \times B) \cap (A \times C)$

4. If $y = x^2 \operatorname{cosec} x$, find the value of $\frac{dy}{dx}$.

5. If $a = b^c$, $b = c^a$, $c = a^b$, show that :

$abc = 1$.