



DAB-19BBA203

Seat No. _____

B. B. A. (Sem. II) (CBCS) (W.E.F. 2019) Examination

April - 2022

Mathematics

(Advance Techniques of Business Mathematics) (New Course)

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) All questions carry **equal** marks.
- (2) Attempt any **four** questions.

- 1 (a) Explain : Rules of Determinants. **10**
(b) Solve the following equation using determinants by Cramer's method : **7.5**

$$\frac{2}{x} + \frac{3}{y} = 2, \frac{4}{x} + \frac{9}{y} = 5$$

- 2 Solve the following equations by Cramer's rule : **17.5**
 $x + y + z = 6, 2x + y + z = 7, 3x + 2y + z = 10.$

- 3 (a) Define : Zero matrix, Unit matrix, Transpose of a matrix, Row matrix. **10**
(b) Find inverse of the following matrix : **7.5**

$$A = \begin{bmatrix} 5 & 3 & 1 \\ 2 & -1 & 2 \\ 4 & 1 & 3 \end{bmatrix}$$

- 4 Solve the following equation using inverse matrix method : **17.5**
 $x + y + z = 7, x + 2y + 3z = 16, x + 3y + 4z = 22.$

- 5 Evaluate the following limits : **17.5**

(1) $\lim_{x \rightarrow 4} \frac{\sqrt{5-x}-1}{x-4}$

$$(2) \lim_{x \rightarrow \infty} \frac{2^{4x} - 2^{3x}}{x}$$

$$(3) \lim_{x \rightarrow 1} \frac{x^3 + x^2 + x - 3}{x - 1}$$

$$(4) \lim_{n \rightarrow \infty} \frac{\sum n}{(n+1)(n+2)}$$

$$(5) \lim_{n \rightarrow \infty} \left(\frac{n-2}{n+3} \right)^n$$

6 Evaluate the following limits :

17.5

$$(1) \lim_{x \rightarrow 2} \frac{x^5 - 32}{x - 2}$$

$$(2) \lim_{x \rightarrow \infty} \frac{4x^2 + 2x + 10}{2x^2 + x + 1}$$

$$(3) \lim_{x \rightarrow 1} \frac{\sqrt{x+2} - \sqrt{3}}{x - 1}$$

$$(4) \lim_{x \rightarrow 0} \frac{3^{2x} + 2^{3x} - 2}{x}$$

$$(5) \lim_{x \rightarrow 2} \frac{\sqrt{x+7} - 3}{\sqrt{x+2} - 2}$$

7 (a) Explain Annuity. **10**

(b) If Rs. 1,200 amounts to Rs. 1,488 after 3 years, find the simple rate of interest. **7.5**

8 (a) Explain : Sinking fund. **10**

(b) Rs. 4,000 is deposited at 8% compounded quarterly for one year. Find the effective annual rate of interest. **7.5**