SHREE H. N. SHUKLA COLLEGE OF I.T. & MGMT.

(AFFILIATED TO SAURASHTRA UNIVERSITY)

3- Vaishalinagar
Nr. Amrapali Railway Crossing
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BBA Sem - 2
Sub: Advance Techniques of Busi. Maths.

Prelims Exam – 2022
Marks 70

1 (a) Explain : Rules of Determinants.   **10**

   (b) Solve the equations, using Cramer's Rule   **10**

   $$4x + 10y = 2xy, \quad 5x + 16y = 3xy$$

<div align="center">OR</div>

1 (a) If $\begin{vmatrix} 16 & 8 & 26 \\ 6 & 3 & 9 \\ 2 & 1 & 4 \end{vmatrix} = \begin{vmatrix} 1 & 2 & 5 \\ 2 & k & 0 \\ 7 & 14 & 9 \end{vmatrix}$ find the value of k.   **10**

   (b) Prove that $\begin{vmatrix} x+a & b & c \\ c & x+b & a \\ a & b & x+c \end{vmatrix} = x^2(x+a+b+c)$.   **10**

2 (a) Explain : Unit matrix, Skew-symmetric matrix.   **10**
   Adjoint matrix.

   (b) If $A = \begin{bmatrix} 1 & 0 \\ 3 & -2 \end{bmatrix}, AB = \begin{bmatrix} 3 & 1 \\ 5 & 1 \end{bmatrix}$ find Matrix B.   **10**

<div align="center">OR</div>

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2 Using inverse matrix solve the following equations :   **20**

$$2x - 3y + z = 3, \ x + y - 2z = -1, \ 3x - 2y + 2z = 8$$

3 **Attempt any three:**   **15**

(1) $\displaystyle \lim_{x \to -3} \frac{x^3 + x^2 - 2x + 12}{x^3 + 6x^2 + 11x + 6}$

(2) $\displaystyle \lim_{x \to 0} \frac{\sqrt{x^2 + x + 4} - 2}{1 - \sqrt{1 + x}}$

(3) $\displaystyle \lim_{n \to \infty} \frac{\sum n^2}{\left(n^2 + 2\right)\left(n + 7\right)}$

(4) $\displaystyle \lim_{x \to 0} \frac{2^{4x} - 3^{2x}}{x}$

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

(6) $\displaystyle \lim_{x \to 1} \frac{x^{7/3} - 1}{x^{2/3} - 1}$

4 (a) Explain : Compound Interest.   **8**

(b) Explain : Present value of an Annuity.   **7**

<div align="center">OR</div>

4 (a) Explain : Sinking Fund.   **8**

(b) At what percent rate of simple interest a sum will double itself in 25 years ?   **7**

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