



UA-2529

First Year B. Com. (Honours) (Sem. - I) Examination
March/April - 2012
Mathematics & Statistics : Paper - I

Time : 3 Hours]

[Total Marks : 70

Instructions :

(1)

नीचे दृष्टावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कभववी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="F. Y. B. Com. (Honours) (Sem. - 1)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Mathematics & Statistics - 1"/>	<input type="text"/>
Subject Code No. : <input type="text" value="2"/> <input type="text" value="5"/> <input type="text" value="2"/> <input type="text" value="9"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="Nil"/>	<input type="text"/>
	Student's Signature

(2) Answer all the questions.

(3) Figures to the **right** indicate marks of the question.

1 (a) State difference between matrix and determinant. 3

(b) If $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ then prove that $A^3 - 6A^2 + 9A - 4I = 0$. 5

(c) Solve the following equations by using inverse of matrix. 6

$$2x + 3y - z = 5$$

$$3x + 2y + z = 10$$

$$x - 5y + 3z = 0$$

2 (a) State the properties of determinant. Obtain the inverse of the following matrix 5

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

(b) Solve the following equation using inverse of matrix 5

$$2x + y = 4$$

$$5x + 3y = 9$$

(c) If $A = \begin{bmatrix} 0 & 4 & 3 \\ 1 & -3 & -3 \\ -1 & 4 & 4 \end{bmatrix}$ prove that $A^2 = I$. 4

3 Evaluate : **14**

(a) $\lim_{x \rightarrow 1} \left(\frac{1}{x^2 - 1} - \frac{2}{x^4 - 1} \right)$.

(b) If $y = \frac{x^4}{\log x}$ then find $\frac{dy}{dx}$.

(c) $\int_6^{10} \left(\frac{x-2}{x+2} \right) dx$.

(d) If $y = x^2 e^x \log x$ then find $\frac{dy}{dx}$.

4 (a) Find maximum and minimum values of $f(x) = x + \frac{1}{x}$. **5**

(b) Evaluate $\lim_{n \rightarrow 3} \left[\frac{1}{n^2 - 1} + \frac{2}{n^2 - 1} + \frac{3}{n^2 - 1} + \dots + \frac{n}{n^2 - 1} \right]$. **3**

(c) Evaluate $\int \frac{(1-x)^3}{x} dx$. **3**

(d) Evaluate $\int_1^2 \left(\frac{x^2 + 2x + 5}{x} \right) dx$. **3**

5 (a) Evaluate $\lim_{x \rightarrow -1} \frac{x^3 + 1}{x^2 - 1}$. **4**

(b) Obtain maximum and minimum value of **5**
 $y = x^3 - 9x^2 + 24x + 2$.

- (c) Obtain $A+B-C$ and mention the type of the matrix obtained. 5

$$A = \begin{bmatrix} 2 & 5 & 7 \\ 6 & 2 & 4 \\ 0 & 1 & 6 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & -4 & -7 \\ -3 & 1 & -5 \\ 1 & -1 & -4 \end{bmatrix}$$

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