



A-2624

**First Year B. Com. (Hon.) (Sem. - I) Examination**  
**March / April - 2015**  
**Mathematics & Statistics : Paper - I**

Time : Hours]

[Total Marks : 50

**Instructions :**

(1)

नीचे दृष्टावेव निशानीवाणी विगतो उत्तरवाडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="FIRST YEAR B. COM. (HON.) (SEM. - I)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="MATHEMATICS &amp; STATISTICS : PAPER - I"/>	<input type="text"/>
Subject Code No. : <input type="text" value="2"/> <input type="text" value="6"/> <input type="text" value="2"/> <input type="text" value="4"/>	<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 full marks of the questions.

1 (a) Explain the following terms : 3

Transpose of a matrix, Diagonal matrix, Triangular matrix.

(b) Show that the determinants  $\begin{vmatrix} x & y+z & 1 \\ y & z+x & 1 \\ z & x+y & 1 \end{vmatrix}$  4

and  $\begin{vmatrix} 90 & 91 & 92 \\ 93 & 94 & 95 \\ 96 & 97 & 98 \end{vmatrix}$  have equal values.

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

$$x - 2y + 3z = 4$$

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

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

- 2 (a) If  $A = \begin{vmatrix} x & -5 & a \\ b & y & 8 \\ 3 & c & z \end{vmatrix}$  then 4
- (i) Find  $a, b, c$  if  $A$  is a symmetric matrix
- (ii) Find  $x, y, z, a, b, c$ , if  $A$  is a skew symmetric matrix.
- (b) If  $A = \begin{vmatrix} -5 & 2 \\ -6 & 3 \end{vmatrix}$  and  $B = \begin{vmatrix} 4 & -3 \\ 3 & -1 \end{vmatrix}$  then 4
- verify that  $\text{adj}(AB) = (\text{adj } B) (\text{adj } A)$
- (c) Solve the following equations by using inverse of a matrix : 4
- $2y + x = 8, 3x = -4y + 14$
- 3 (a) Evaluate :  $\lim_{x \rightarrow 0} \frac{2^{3x} - 2^{2x} + 2^x - 1}{2x}$  3
- (b) Find  $\frac{dy}{dx}$  from,  $x^2 + y^2 = xy$  3
- (c) Evaluate :  $\int \left[ \frac{2^x \cdot e^x + e^{2x}}{e^x} \right] dx$  3
- (d) Evaluate :  $\int_1^9 \frac{dx}{\sqrt{x}}$  3
- 4 (a) Evaluate :  $\lim_{x \rightarrow 0} \frac{9^x - 8^x}{x}$  3
- (b) The total cost function to produce  $x$  units of a commodity is,  $500 + 13x + \frac{1}{5}x^2$  and the demand function of it is,  $5x = 375 - 3p$ , then how many units should be produced to get maximum profit ? 4
- (c) Explain Leontiff Input-output model briefly. 3
- (d) Evaluate :  $\int x \cdot e^x dx$ . 3