



HDH-003-004104 Seat No. _____

B. Sc. (IT) (Sem. I) (CBCS) Examination
November/December – 2017
Foundation of Mathematics & Statistics
(Old Course)

Faculty Code : 003
Subject Code : 004104

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

[Total Marks : 70

- Instructions :** (1) Q. 1 carries 20 marks.
(2) Give the answer of all questions in the main answer sheet.

- 1 (1) A Row matrix contains _____ Row. 20
(2) How many elements in a 3×3 determinant ?
(3) In Gauss-Elimination Method coefficient matrix of given system of equation are converted into.
(4) $\Delta y_0 =$ _____.
(5) Forward difference operator is denoted as.
(6) In Gauss-jordan method unknown are found by doing only _____ operation in matrix.
(7) The general formula for N-R method is.
(8) If all the elements of a given matrix are zero, then it is called _____.
(9) If $b_{yx} = 0.8$ and $b_{xy} = 0.2$ then $r =$ _____.
(10) In a rank correlation method $\sum d^2 = 0$ then $r =$ _____.
(11) The regression coefficient x on y is denoted by.
(12) Least cost Method is also known as _____.
(13) An exponential curve $y =$ _____.
(14) What is represented on x -axis to draw the Histogram ?
(15) What is represented on y -axis to draw a curve ?
(16) The value of r is _____.
(17) $y = 7.4 + 2.3(x - 1996)$. Forecast for the year 2000.

(18) A second degree parabola $y = \underline{\hspace{2cm}}$.

(19) A st.line $y = \underline{\hspace{2cm}}$.

(20) $b_{yx} \times b_{xy} = \underline{\hspace{2cm}}$.

2 (a) Attempt the following : (any **three**) **6**

(1) Define with example Null matrix.

(2) $y' = 1 - 2xy$, $y(0) = 0$, $h = 0.2$, find $y(0.2)$ by Euler method.

(3) Write uses of Interpolation : (any **two**)

(4) Defⁿ of Gauss-jorden method.

(5) Find the root of the equation $f(x) = x^3 - x - 11$ using the bisection method.

(6) Explain : Simpson's $\frac{1}{3}$ Rule.

(b) Attempt the following : (any **three**) **9**

(1) Find a root of the equation $3x = \cos x + 1$ using the N-R method.

(2) Solve the following equations using Gauss-eliminated method.

$$x + y + z = 9, 2x + 3y - z = 9, 3x - y - z = -1$$

(3) Find $adj A$, $A = \begin{bmatrix} 6 & 3 \\ 4 & 5 \end{bmatrix}$

(4) Explain Trapezoidal Rule.

(5) Using R-K 4th order method, find $y(0.1)$ give that

$$y' = 3x + \frac{y}{2}, y(0) = 1.$$

(6) $f(50) = 1.699$, $f(58) = 1.7634$, $f(60) = 1.7782$ find $x = 55$ using Langrage's method.

(c) Attempt the following : (any **two**) **10**

(1) Explain - Bi-section method.

(2) Explain : Gauss-Elimination method.

(3) Explain : Euler's method.

(4) Solve the following equation using Inverse matrix

$$x + y + z = 6, 2x + 3y + 5z = 23, 3x + 2y + 2z = 13$$

(5) Using R-K 4th order method, find $y(0.1)$ given that

$$y' = 3x + \frac{y}{2}, y(0) = 1.$$

3 (a) Attempt the following : (any **three**)

6

(1) Definition of Histogram.

(2) Explain : Graphical Method.

(3) Definition of Transportation problem.

(4) Find the both regression coefficients

$$r = 0.8, S_x^2 = 9, s_y^2 = 36$$

(5) Find r

$$n = 8, \bar{x} = 51, \bar{y} = 34, \sum (x - 51)^2 = 42, \sum (y - 34)^2 = 60$$

$$\sum (x - 51)(y - 34) = -16$$

(6) If $y = 52 + 3(x - 1997)$ the find y_{1992} .

(b) Attempt the following : (any **three**)

9

(1) Find r

$x :$	10	11	14	14	19	20	22	26
$y :$	9	8	10	12	11	14	15	17

(2) Define : Cumulative frequency curve.

(3) State the uses of LPP.

(4) Find b_{yx} .

$$n = 10, \sum x = 130, \sum y = 220, \sum x^2 = 2288, \sum xy = 3467$$

(5) Explain : N-W Corner Method.

(6) Find $y = a + bx$

$x:$	0	1	2	3	4
$y:$	12	15	25	22	26

(c) Attempt the following : (any **two**) 10

(1) Explain : Coefficient of regression.

(2) Find $y = a + bx + cx^2$

x	0	1	2	3	4	5
y	100	107	128	140	181	192

(3) Using Simplex method solve the following LPP :

$$Z_{\max} = 50x + 70y$$

Subject to $= x + y \leq 70, x + 2y \leq 100, 2x + y \leq 120, x, y \geq 0$

(4) Solve the following TP using least cost method

Origin	Destination				Available
	A	B	C	D	
O_1	1	2	1	4	30
O_2	3	3	2	1	50
O_3	4	2	5	9	20
Required	20	40	30	10	

(5) State the uses of TP.