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JAR-003-004104 Seat No. _____

B. Sc. (I.T.) (Sem. I) (CBCS) Examination

December - 2019

CS-04 : Foundation of Mathematics & Statistics

(Old Course)

Faculty Code : 003

Subject Code : 004104

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

1 MCQ **20**

1. What is the size of the matrix [a,b,c,d]
2. (AB) ' = ...
3. Transpose of A is denoted as .....
4. Give an example of Row matrix.....
5. In Gauss – Jordan method unknown are found by doing only..... operation
6. The process of finding the value of a function inside the given range of argument is called.....
7. Δy_2 = ...
8. What is the central value of the class 10-15 ?
9. Name of difference operator ∇ is ....
10. Which method is used when the difference between x variable are equal ?
11. Write general form of linear equation ?
12. What we put on x axis to draw Histogram ?
13. What is represented on y – axis to dram ogive ?
14. If there is perfect Positive correlation between two variables than r = ...
15. If b_{xy} = 2 and b_{yx} = 0.01 than r^2 =.....
16. In rank correlation method if r = 1 than Σd^2 = ...
17. The value of r^2 is between ..... and .....
18. If bxy = 4 , r = 0.8 byx = ...
19. Fitting of a straight line of an information is y = 7.4 + 0.3 (X-1996). Forecast for the year 1999?
20. Correlation coefficient between two variables is denoted by .....

2 **(A) answer any three** **[06]**

1. Define with examples

   - Column Matrix with an examples

2. Write down condition for addition of two matrices & multiplication of two matrices

3. Construct Backward difference table for the following data.

X	1	2	3	4	5
Y=	5	3	10	12	2

4. If $A = \begin{pmatrix} 10 & 20 \\ 30 & 40 \end{pmatrix}$ find adj(adj A)

5. If $A = \begin{pmatrix} 1 & 1 \\ 5 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} -1 & 1 \\ 2 & 0 \end{pmatrix}$ Find AB

6. y' = x+y , Y(0) = 0 h= 0.2, find y(0.2) by Eular method

(B) Answer any three **[09]**

1. If $A = \begin{bmatrix} 1 & 3 & 2 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$ Find ajd(A)

2. Solve the following equations by Gauss Jordan method.
   X + 5y +2z = 6, 3x – y + z = -2, 2x + 3y + Z = 0

3. Find f(7) by langrage's method

X	1	3	4
F(x)	4	12	19

4. Find a root of $x^3 - x^2 - 1 = 0$ upto three iterative steps by bisection method. A root is between [1,2]
5. Explain Trapezoidal rule.
6. $f(x,y) = -xy^2$, Y(0) = 2 h = 0.1 find y(0.1) by modified Eular method

(C) Any Two **[10]**

1. Explain Gauss elimination Method
2. Explain N-R method
3. Find y at x= 105 by Newton Backward difference formula for interpolation

X	80	85	90	95	100
Y	5026	5674	6362	7088	7854

4. $f(x,y) = x + y^2$ y(0)=1, h=0.1 find y(0.1) by R-K 4th order method

5. Find $\int_0^{10} \frac{1}{1+x2}$ dx h =1 by simpson's 1 /3 rule.

3 **(A) Any Three** **[06]**

1. Define Correlation and Regression
2. Write properties of Correlation coefficient.
3. Write Normal equations of $y = a.e^{bx}$
4. Find Rank correlation coefficient from the following data.

X:	59	69	39	49	29
Y:	79	69	59	49	39

5. $n= 10, \Sigma xy =27, \Sigma x = 6, \Sigma y = 4, \Sigma x^2 =78, \Sigma y^2 = 224, \bar{x} = 1.6, \bar{y} = 4.2$ Find bxy.
6. Write merits of Scatter diagram method.

(B) Any Three **[09]**

1. Draw frequency curve for the following distribution.

Class :	10-15	15-20	20-25	25-30	30-35
Fre :	12	24	38	14	6

2. Find solution for T.P problem by NMCM

	B1	B2	B3	Supply
A1	26	23	10	61
A2	14	13	21	49
A3	16	17	29	90
Demand	52	68	80	200

3. Solve following T.P by LCM

	B1	B2	B3	B4	Supply
A1	5	3	6	4	30
A2	3	4	7	8	15
A3	9	6	5	8	15
Demand	10	25	18	7	60

4. Fit y= a + bx to the following data.

Year	1990	1992	1994	1996	1998
Value	30	45	54	70	85

5. Explain Scatter diagram method.

6. Find r by rank method.

X	28	27	26	35	39	42	39	37	32	22	
Y	40	42	38	49	40	50	38	44	45	36	

(C) Any Two **[10]**

1. Fit Second degree parabola to the data given below.

Year :	1990	1991	1992	1993	1994	1995
Profit:	100	107	128	140	181	192

2. find regression line y on x.

X:	5	6	7	8	9	10	11
Y:	10	12	12	16	16	15	17

3. Solve following T.P. by VAM

	B1	B2	B3	Supply
A1	2	7	4	5
A2	3	3	1	8
A3	5	4	7	7
A4	1	6	2	14
Demand	7	9	18	34

4. Solve LPP by Graph method

Z_{max} = 40x+ 45 y subject to

X+ 25 <= 60, 3x+ 2y <=120 , X,y >=0

5. Solve LPP by simplex method.

Z_{max} = 4x+ 6y subject to 2x+ 3y <=105, x+ y <=40, x, y >= 0