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MI-P1050

Seat No. _____

M. C. A. (Sem. I) (CBCS) Examination

January – 2018

P-1050 : Comp. Oriented Numerical & Statistical Method

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

1 (A) Attempt following questions : **4**

(1) Another name of Newton-Raphson Method.

(2) Give formula of false position method.

(3) Another name of bisection method.

(4) _____ Method is also known as Fix point method.

(B) Attempt any **one** : **2**

(1) Write Newton-Raphson algorithm.

(2) Find Out only roots for given equation $x^3 - 8x + 8$ using regular false position.

(C) Attempt any **one** : **3**

(1) Solve given equation $x^2 - 12$ using secant method.

(2) Explain Bi-section program.

(D) Attempt any **one** : **5**

(1) Algorithm Successive approximation method.

(2) Solve given equation $\left(e^x \sin x - 1\right)$ using Newton-Raphson method.

2 (A) Attempt following questions : **4**

(1) Trace of Matrix Means _____.

(2) Square matrix means ?

(3) Definition of upper triangular matrix.

(4) Definition of diagonal matrix.

(B) Attempt any **one** : **2**

(1) Create 3 * 3 matrix sum.

(2) Give the difference between direct and indirect method.

(C) Attempt any **one** : **3**

(1) Explain sidel method algorithm

(2) Solve given equation for using Gauss Jacobi method.

(1) $10x + y = 12$

(2) $X + 10y = 21$

(D) Attempt any **one** : **5**

(1) Solve using matrix elimination : $x - y + z = 1$, $-3x + 2y = 3z = -6$, $2x - 5y - 4z = 5$

(2) Explain Jordan method algorithm.

3 (A) Attempt following questions : **4**

(1) Delta $Y_0 = ?$

(2) Forward Operator called _____

(3) Syntax of finding value of P.

(4) Delta Y_1 = _____

(B) Attempt any one : **2**

(1) Delta $Y_3 = ?$

(2) Create the backward difference table

1	3	5	7
1	9	25	49

(C) Attempt any **one** : **3**

(1) Differentiate forward and backward table.

(2) Solve the following data using Backward difference method

x	40	50	60	70	80	90
y	184	204	226	250	276	304

(D) Attempt any **one** : **5**

(1) Solve the following data using Newton's Forward difference method $x = 4.25$.

x	2.5	3.0	3.5	4.0	4.5
y	9.75	12.45	15.70	19.52	23.75

(2) Solve the following data using Langrangian Interpolation method $x = 10$

x	5	6	9	11
y	12	13	14	16

4 (A) Attempt the Following Objective questions : **4**

(1) Give Syntax for Euler's method.

(2) How to find x_1 value in Euler's method ?

(3) Give Syntax for Trapezoidal method.

(4) What is Integration ?

(B) Attempt any **one** out of two from the following Objective questions : **2**

(1) Solve below given table using Simpson Veddles rule method.

(2) Solve given table using trapezoidal method

x	0	2	4	6	8	10	12
y	4	6	16	34	60	94	136

(C) Attempt any **one** out of two from the following Objective questions : **3**

(1) Solve the following set of equations using R.K 4^{th} Order Method. (1 steps)

$y = \left(x^2 + y\right)$ Value $\left(x_1 = 1, y_1 = 5, h = 0.1\right)$

(2) Solve given $\left(y' = xy\right)\left(x = 1, y = 5, h = 0.1\right)$ equation using Modified Euler method.

(D) Attempt any **one** out of two from the following Objective questions : **5**

(1) Solve the following data using Simpson 1/8 rule.

x	0	2	4	6	8	10	12
y	0	22	30	27	18	7	0

(2) Write a program for R K 2^{nd} Method.

5 (A) Attempt the Following Objective questions : **4**

(1) With the help of given value find out Mode.

1 2 3 4 5 6 7 8

2 0 3 3 4 3 8 2

(2) Two way Frequency Table _____ Value Must be same.

(3) Give syntax for Spearman rank correlation.

(4) The geometric mean of a set values lies between arithmetic mean and _____.

(B) Attempt any **one** out of two from the following Objective questions : **2**

(1) Create Frequency Polygon form the given table

(2) Create histogram for given data

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	5	11	16	23	20

(C) Attempt any **one** out of two from the following Objective questions : **3**

(1) Spearman rank correlation method through solve given data

x	60	72	42	40	45	50	60	51	66
y	35	30	52	54	48	50	30	35	25

(2) Find out median for above given table.

(D) Attempt any **one** out of two from the following Objective questions : **5**

(1) Regression method through solve given data

x	1	2	3	4	5	6	7	8	9
y	9	8	10	12	11	13	14	16	15

(2) Solve table for two way frequency

Y \ *X*	100 – 200	200 – 300	300 – 400	400 – 500	500 – 600	600 – 700
50 – 100				1	3	4
100 – 150			6	7	5	2
150 – 200		3	12	8	5	2
200 – 250	2	7	8	4	4	
250 – 300	3	6	4			
300 – 350	1	4				