



JBH-P1050

Seat No. _____

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

December - 2019

**P-1050 : Comp. Oriented Numerical & Statistical
Method**

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

[Total Marks : 70

- 1 (a) Attempt following questions : 4
- (1) _____ method requires to find differentiation of the given $f'(x)$.
- (2) Give formula of false position method.
- (3) Give formula of bisection method.
- (4) Another name of Newton-Raphson Method.
- (b) Attempt any **one** : 2
- (1) Find out root (a and b) given by equation $x^2 - 16$ using bi-section.
- (2) Find out root(a and b) given by equation $x^2 - 12$ using Secant method.
- (c) Attempt any **one** : 3
- (1) Write a Regular false Position algorithm.
- (2) Write down bisection program.
- (d) Attempt any **one** : 5
- (1) Solve given equation $x^3 - 8x + 8$ using regular false position.
- (2) Write down Algorithm for Secant method.
- 2 (a) Attempt following questions : 4
- (1) Define Matrix.
- (2) Definition of Unit matrix.
- (3) Definition of Transpose matrix.
- (4) Give Direct Method name.
- (b) Attempt any **one** : 2
- (1) Create 3 * 3 matrix Sum.
- (2) Create 2 * 2 matrix Subtraction.
- (c) Attempt any **one** : 3
- (1) Explain Gaussian Elimination method algorithm.
- (2) Explain Gaussian Jordan method algorithm.

- (d) Attempt any **one** : 5
- (1) Solve equation :
 $(3x + 4y + 15z + 54.8, x + 12y + 3z = 39.66, 10x + y - 2z = 7.74)$
 using Jacobi method.
- (2) Solve equation :
 $(3x + 4y + 15z + 54.8, x + 12y + 3z = 39.66, 10x + y - 2z = 7.74)$
 using Seidel method.

- 3 (a) Attempt following questions : 4
- (1) Syntax of finding value of P.
 (2) Forward Operator is called _____.
 (3) Consider a set of _____ different tabulated points satisfied a relation $y=f(x)$.
 (4) $\Delta^2 y^2 =$ _____.

- (b) Attempt any **one** : 2
- (1) $\Delta^3 y^1 = ?$
 (2) $\Delta^3 y^2 = ?$

- (c) Attempt any **one** : 3
- (1) Solve the following data using Forward difference Table :

X	20	24	28	32
Y	2854	3162	3544	3942

- (2) Solve the following data using Backward difference Table :

X	0	1	2	3	4
Y	3	12	81	200	100

- (d) Attempt any **one** : 5
- (1) Solve the following data using Lagrange Interpolation method $x = 3$:

X	0	1	2	4	5	6
Y	1	14	15	5	6	9

- (2) Solve the following data using Newton's Central Forward difference method $x = 43$:

X	40	50	60	70	80	90
Y	184	204	226	250	276	304

- 4 (a) Attempt following questions : 4
- (1) Give Syntax for Trapezoidal method.
 - (2) How to find x_1 value in Euler's method?
 - (3) Give Syntax for Weddle's rule method.
 - (4) Give Syntax for Simpson's 1/3 rule method.
- (b) Attempt any **one** : 2
- (1) Solve given table using Trapezoidal rule method :

X	0	1	2	3	4
Y	1	0	1	10	33
 - (2) Solve given table using Simpson's 1/3 rule method :

X	0	1	2	3	4	5	6
Y	1	0	1	16	81	196	625
- (c) Attempt any **one** : 3
- (1) Solve given equation $(y' = x^2y)$
 $(y_0 = 1, y = 1, h = 0.25, x_0 = 0)$ using Euler method.
 - (2) Solve given equation $(y' = xy)(x = 1, y = 5, h = 0.1)$
 using Modified Euler method
- (d) Attempt any **one** : 5
- (1) Solve the following set of equations using R.K 2nd Order Method. (3 steps) $f(x, y) = xy$ Value
 $(x_1 = 1, y_1 = 5, h = 0.1)$.
 - (2) Write a Program for R.K. 4th Order Method.
- 5 (a) Attempt following questions : 4
- (1) Give syntax for Karl Pearson's Co-efficient.
 - (2) Give syntax for Spearman rank correlation.
 - (3) What is Upper Boundary ?
 - (4) Table (n) value means ?
- (b) Attempt any **one** : 2
- (1) Create histogram for given data :

<i>Class</i>	10–20	20–30	30–40	40–50	50–60
<i>Frequency</i>	8	15	22	20	35
 - (2) Create Frequency polygon for given data :

<i>Class</i>	0–10	10–20	20–30	30–40	40–50
<i>Frequency</i>	8	10	16	23	25

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

(1) Solve given Data using Frequency Distribution :

2 30 22 11 12 24 44 13 32 42
8 10 26 20 45 28 9 37 35 38
48 50 41 6 16 31 33 25 5 14

(2) Calculate the Mean of given data :

Family	A	B	C	D	E	F	G	H	I	J
Income	12	25	40	75	600	80	45	250	36	78

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

(1) Karl Person's co-efficient method through solve given data :

X	1	2	3	4	5	6	7	8	9	10
Y	2	4	8	7	10	5	14	16	2	20

(2) Spearman rank correlation method through solve given data :

X	50	55	55	60	65	65	65	60	60	50
Y	11	13	14	16	16	15	15	14	13	13
