SANT GADGE BABA AMRVATI UNIVERSITY, AMRAVATI
Summer Examination 2020
HVPM's College of Engineering and Technology, Amravati
Department of Information Technology
Bachelor of Engineering Sem. :- IV

Subject :-NMORT **Code :-4IT05**

Instructions:-

1) **Solve any two questions**
2) **All question carry equal marks**

Q1.

a) Solve the equation x^3-9x+1=0 for the root between x=2 and x=4 by using bisection method. **02 Credit Point**

b) Apply guass elimination method to solve the equations.

x + 4y - z= - 5
x + y- 6z = - 12
3x + y – z = 4 **02 Credit Point**

c) Evaluate $\int_0^1 e^x \, dx$, approximately in step of 0.05 using trapezoidal rule. **02 Credit Point**

d) Explain equipment replacement problem with suitable example. **02 Credit Point**

e) What are the properties of Simplex method. **01 Credit Point**

f) Explain Bayes decision procedure without data **01 Credit Point**

Q2.

a) Obtain a root for the following equation correct upto three decimal places using method of false position x^3-x^2-1=0 **02 Credit Point**

b) Solve the following equation by using guass-jordan method

x + y + z= 9
2x + 3y + 4z = 13
3x - 4y + 5z = 40 **02 Credit Point**

c) Evaluate $\int_{0.5}^{0.7} x^{1/2} \, e^{-x} dx$, approximately using simpson's 1/3 rule and at least five points. **02 Credit Point**

d) Define operation research and discuss various phases of operation research with example **02 Credit Point**

e) Explain in detail two phase method. **01 Credit Point**

f) Explain sample point **01 Credit Point**

Q3.

a) Find a real root of equation x^3-2x-5=0 using Newton raphson method correct upto three decimal places. **02 Credit Point**

b) Apply guassseidel method to solve the equations.

2x + y + 6z= 9
8x + 3y+ 2z = 13
x + 5y + z = 7 **02 Credit Point**

c) From the following table find f(3.5) using lagranges interpolation. **02 Credit Point**

x	1	2	3	4
f(x)	1	8	27	64

d) What is dynamic programming. Explain the principle of optimality. **02 Credit Point**

e) Explain simplex method for solving linear programming problem with example **01 Credit Point**

f) Explain Sample space **01 Credit Point**

Q4.

a) Find a real root of equation x^3-x-1=0 by secant method correct upto 4 decimal places. **02 Credit Point**

b) Fit a least square line for the following data **02 Credit Point**

X	2	3	5	7	9	10
Y	1	3	7	10	12	17

c) Obtain the values of y at x=0.1, 0.2 using rungekutta method of forth order for the differential equation $\frac{dy}{dx} = -y$ given y(0)=1 **02 Credit Point**

d) Explain Stagecoach problem in detail**.** **02 Credit Point**

e) Explain the procedure to find out dual of a given primal problem. **01 Credit Point**

f) Explain conditional probability. **01 Credit Point**