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## MCADD-302

M.C.A. (Integrated), III Semester

Examination, June 2022

### Computer Oriented Numerical Methods

Time : Three Hours

Maximum Marks : 70

**Note:** i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain Arithmetic Operations for normalized floating point numbers with suitable examples.  
b) Distinguish among four types of errors and Explain how can be minimized?
2. a) Derive Newton's forward interpolation formula and how it uses to find the value of  $f(1.3)$  From the following?  

X :	1	1.4	1.8	2.2
F(x) :	3.5	4.8	6.0	6.5

  
b) Evaluate  $\int_0^6 \frac{1}{1+x^2} dx$  by using  
i) Using Simpson's 1/3 Rule  
ii) Simpson's 3/8 Rule
3. a) Solve the following system of equation using Gauss-side method.  
$$28x + 4y - z = 32$$
$$x + 3y + 10z = 24$$
$$2x + 17y + 4z = 35$$



- b) Write short note on partial and complete pivoting and Gauss elimination method.
4. a) Derive mean and Variance of Binomial Distribution.  
b) Briefly explain Poisson distribution and Rectangular Distribution.
5. Explain the following  
i) Null hypothesis  
ii) Levels of Significance  
iii) Standard errors  
iv) Testing Hypothesis
6. a) Explain Bisection method for solving Algebraic and Transcendental equations.  
b) Find the first term of series whose second and subsequent terms are 8, 3, 0, -10.
7. a) Given  $\frac{dy}{dx} = -xy^2$  with  $y(0)=1$ , find  $y(1.0)$  by taking  $h=0.5$  using Runge-kutta method.  
b) Explain Euler's method for the solution of differential equations.
8. Write short notes on any two.  
a) Hyper geometric distribution  
b) Inverse interpolation  
c) Gauss-Legendre integration method  
d) Normal Distribution  
e) F-curve

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