S.Y.B.SC. (Computer Science) SEM –III (2014 COURSE) : SUMMER - 2019

SUBJECT : COMPUTER ORIENTED NUMERICAL METHODS (CS – 34)

Day : Tuesday
Date : 16/04/2019

S-2019-1140

Time : 12.00 NOON TO 02.00 PM
Max. Marks : 40

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY TWO** of the following: **[10]**

a) Estimate the root of $\log_e x - \cos x = 0$ by Newton Raphson method. Where root lies in (1, 2) (Perform 3 iteration).

b) Using Bisection method finds the root of $x^3 - 4x - 9 = 0$ perform 4 iterations.

c) Construct the network diagram for following depending table for particular project:

Activity	A	B	C	D	E	F	G	H	I
Restriction	A < B	B < E, I	C < G	D<C, F, A	E < I	F < H	G < B	H < B	---

Q.2 Attempt **ANY TWO** of the following: **[10]**

a) From the following table of values of x and f(x), find f(0.21).

x	0.20	0.22	0.24	0.26
f(x)	1.6596	1.6698	1.6804	1.6912

b) Using Lagrange's interpolation polynomial find the value of f(8) given that f(6) = 1.556, f(7) = 1.690, f(9) = 0.908, f(12) = 2.158.

c) Use Gaussian elimination method to solve:

$2x + y + 4z = 12$
$8x - 3y + 2z = 20$
$4x + 11y - z = 33$

Q.3 Attempt **ANY TWO** of the following: **[10]**

a) Evaluate $\int_3^5 \frac{4x}{(2+x)^2}\,dx$ by taking $h = 1, \frac{h}{2} = 0.5, \frac{h}{4} = 0.25$ by taking use Romberg's integration for approximation.

b) Use Trapezoidal rule to find $I = \int_0^1 \frac{1}{1+x}\,dx$ with $h = 0.125$.

c) Explain Euler's method.

Q.4 Attempt **ANY FIVE** of the following: **[10]**

a) Explain free float.

b) Explain critical activity.

c) Write the interval in which root of $x^3 - 2x - 5 = 0$ lies.

d) Write Newton Gregory formula for forward interpolation.

e) Write the formula for Simpson's $(3/8)^{th}$ rule.

f) Write the Runge – Kutta second order formulae.

g) Write the formula for Simpson's $(1/3)^{rd}$ rule.

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