

TDC Even Semester Exam., 2019

UNIT—2

COMPUTER APPLICATION

(Pass)

(2nd Semester)

Course No. : EBCA-201

(Numerical and Statistical Methods)

Full Marks : 35

Pass Marks : 12

Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—1

1. Find the root of the equation by bisection method : 7

$$x^3 - x - 1 = 0$$

2. By using Newton-Raphson method, find the root of $x^4 - x - 10 = 0$. 7

3. Calculate $f(35.5)$ from the following table using Lagrange's interpolation formula : 7

x	:	35	36	39	41
$f(x)$:	42875	46656	59319	68921

4. State and prove Newton's backward interpolation formula. 7

UNIT—3

5. Find the value of $\int_0^6 f(x) dx$ by using Simpson's $\frac{1}{3}$ rd and Simpson's $\frac{3}{8}$ th rule from the following table : 4+3=7

x	:	0	1	2	3	4	5	6
$f(x)$:	6.9897	7.4036	7.7815	8.1291	8.4510	8.7506	9.0309

6. Compute the value of the definite integral

$$\int_0^1 \int_2^4 (\sin x \log_e x + e^x) dx$$

by Trapezoidal rule. [Take, $h = 0.2$] 7

UNIT—4

7. (a) Let X be a random variable with the probability distribution

X	:	0	1	2	3
$P(X = x_i)$:	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{24}$	$\frac{1}{8}$

Calculate $E(X)$. 3

- (b) Find the expected value of the number X shown on the face when a dice is thrown. 4

8. Prove that expected value of the product of the two independent random variables is equal to the product of their expected value. 7

UNIT—5

9. (a) Calculate the coefficient of correlation between the following values : 3

X	:	1	3	5	7	8	10
Y	:	8	12	15	17	18	20

- (b) What are regression lines? Explain clearly why there are two lines of regression. 4

10. Find the equation to the lines of regression. 7
