BCA(H) 3RD Semester Examination, 2021 (CBCS)

Paper Name: Mathematics-III Paper Code: BCA-304

Subject: Computer Application

FM: 80 Time: 3Hrs.

A. Answer any ***six*** questions: 6×5=30

1. Define probability of an event. If A and B are two mutually exclusive events, then prove that $P(A \cup B)=P(A)+P(B)$. 2+3
2. A lot contains 20 articles. The probability that the lot contains exactly 2 defective articles is 0.4, and the probability that it contains 3 defective articles is 0.6. The articles are drawn one-by-one at random, and without replacement and they are tested till all defectives are found. What is the probability that the testing procedure ends at the 12^{th} testing?
3. Let X be a Poisson distributed random variable with the parameterμ; then prove that $E(X)=\mu$ and $Var(X)=\mu$.
4. Briefly discuss on simple random sampling.
5. Find the value of ${}^{7}P_2$ and ${}^{7}C_2$.
6. Find the polynomial f(x), which satisfy the following data:

x	:	1	2	3	4	5
f(x)	:	4	13	34	73	136

7. Evaluate $\int_0^1 x^3 dx$, by Trapezoidal rule, with n=5.
8. Briefly discuss on CHI square distribution.

B. Answer any ***five*** questions: 5×10=50

1. Define Mean, Median and Mode with suitable example.
2. Use Gauss-elimination method to solve the following system:

$$x+3y+2z=5$$
$$2x-y+z=-1$$
$$x+2y+3z=2$$

Correct up to two significant figures.

3. Compute y(0.4), from the equation $dy/dx = x - y, y(0) = 1$, taking h=0.1, by Runge-Kutta method(order-2), correct to five decimal places.

4. Find positive root of the equation $x^3 - 3x + 1.06 = 0$ by method of bisection, correct to three decimal places.

5. What is regression line and why it is important? Draw the scatter diagram for the given pair of variables and understand the type of correlation between them. 5+5

No. of students	Marks obtained (out of 100)
12	40-50
10	50-60
8	60-70
7	70-80
5	80-90
2	90-100

6. A continuous distribution is given by the density function

$$f(x) = \frac{1}{x\sqrt{2\Pi}} e^{-(1/2)(\log x)^2} \text{ for } x>0 \text{ and } f(x) = 0 \text{ for } x<0$$

Find the mean, mode and standard deviation of the distribution.

7. Briefly discuss on Bivariate continuous distribution.