18U345　　　　　　　　(Pages: 2)　　　　　　　Name: ……..………….

Reg. No…………………

THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2019

(Regular/Supplementary/Improvement)

(CUCBCSS-UG)

CC17U BCA3 C05 - COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(Complementary Course)

(2017 Admission onwards)

Time: Three Hours　　　　　　　　　　　　　　　　　　　　　Maximum: 80 Marks

Part A

Answer *all* questions. Each question carries 1 mark.

1. Give an example for an algebraic equation.

2. State trapezoidal rule.

3. What is forward difference operator?

4. The normal form of the floating point number 0.0253×10^5 is …………..

5. If f(0)= 3 and f(4)= 19 then f(1) by Lagrange's formula is …………..

6. Define the empirical relation of measures of central tendency.

7. Define sample space.

8. The geometric mean of 2, 4, 8, 64 is …………..

9. In tossing three coins at a time, the probability of getting at most two head is …………..

10. Define random experiment.

(10 x 1 = 10 Marks)

Part B

Answer *all* questions. Each question carries 2 marks.

11. Distinguish between absolute error and relative error.

12. Define Lagrange's interpolation formula.

13. Explain bisection method.

14. Define Lorenz curve.

15. Define scatter diagram.

16. Distinguish between discrete and continuous random variables.

17. What are the properties of probability?

18. Define regression.

(8 x 2 = 16 Marks)

Part C

Answer any *six* questions. Each question carries 4 marks.

19. Using Newton's forward formula find the value of f(15) if

X	10	20	30	40	50
y	46	66	81	93	101

20. Express $\Delta^2 f_0$ and $\Delta^3 f_0$ in terms of the values of the function f.

21. Explain the principle of least squares.

22. Explain distribution function with its properties.

23. Use the trapezoidal rule with n=4 to estimate $\int_1^2 \frac{1}{x} dx$. Compare the estimate with the exact value of the integral.

24. Solve $x^3 - 9x + 1 = 0$ for the root between x = 2 and x = 4 by bisection method.

25. Fit the straight line y= a+ bx for the following data:

   X: 1 2 3 4 5 6 7

   Y: 80 90 92 83 94 99 92

26. Find standard deviation for the following data:

   Class : 0-10 10-20 20-30 30-40 40-50 50-60

   Frequency: 8 12 15 12 8 5

27. Explain the method of Karl Pearson's correlation coefficient.

(6 x 4 = 24 Marks)

Part D
Answer any **three** questions. Each question carries 10 marks.

28. Find Lagrange's interpolation polynomial fitting the points f(1) = -3, f(3) = 0, f(4) = 30 and f(6) = 132. Hence find f(5).

29. Using Newton – Raphson Method solve $f(x) = x^3 + x - 1$ correct to six decimal places. (start with $x_0 = 1$)

30. Calculate mean, median and mode for the following data:

Classes	130-134	135-139	140-144	145-149	150-154	155-159	160-164
Frequency	5	15	28	24	17	10	1

31. Explain measures of dispersion with their merits and demerits.

32. The following are the data on the average height of the plants and weight of yield per plot recorded from 10 plots of rice crop.

   Height: 28 26 32 31 37 29 36 34 39 40

   Yield : 75 74 82 81 90 80 88 85 92 95s

 Find (a) correlation coefficient between x and y

    (b) write down regression equation of x an y and y on x

    (c) probable value of the yield of a plot having an average plant height of 98

(3 x 10 = 30 Marks)

****