THIRD SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2021
(CBCSS - UG)
(Regular/Supplementary/Improvement)
CC19U BCA3 C05 - COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS
(Computer Application - Complementary Course)
(2019 Admission onwards)

Time : 2.00 Hours   Maximum : 60 Marks

Credit: 3

Part A (Short answer questions)
Answer *all* questions. Each question carries 2 marks.

1. What you meant by numerical instability?

2. Write Newton's forward and backward difference formula.

3. Define Median. Discuss its merits and demerits.

4. Define trapezoidal rule.

5. Define population and sample.

6. Find the AM and HM of first ten odd natural numbers.

7. Define deciles and percentiles.

8. Define qaurtile deviation.

9. What is the principle of least squares?

10. If $b_{yx}=.83, \quad\sigma_{x}=20, \quad\sigma_{y}=12$ find the correlation coefficient.

11. State classical definition of probability.

12. Define a random variable.

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)
Answer *all* questions. Each question carries 5 marks.

13. Find the real solutions of the following equation by the bisection method. $x^3-x-4=0$

14. Use Newton-Raphson method to find a root of the equation $x^3-2x-5=0$.

15. Prove:

- $\Delta = \epsilon - 1$
- $1 + \Delta = (\epsilon - 1) \nabla^{-1}$
- $\nabla = \Delta \epsilon^{-1}$

16. Find an approximation value of $\int_0^1 x^2 dx$ by Simpson's 1/3 rule with n=10

17. For the following pairs of values, obtain the rank correlation cofficient.

X : 4 6 5 9 7 11 8
Y : 6 14 10 17 12 18 15

18. What is a scatter diagram? What are its merits and demerits?

19. Define distribution function of a random variable and write down its properties.

(Ceiling: 30 Marks)

Part C (Essay questions)
Answer any *one* question. The question carries 10 marks.

20. The runs scored by two players in 10 innings are given below.

| Player A | 25 | 65 | 45 | 0 | 50 | 100 | 35 | 80 | 10 | 90 |
| Player B | 45 | 55 | 50 | 35 | 50 | 65 | 45 | 60 | 40 | 60 |

Find who is more consistent player.

21. 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(x) (cms) | 28 | 26 | 32 | 31 | 37 | 29 | 36 | 34 | 39 | 40 |
| Yield(y) (kg) | 75 | 74 | 82 | 81 | 90 | 80 | 88 | 85 | 92 | 95 |

Find:
(a) Corrleation coefficinet between X and Y
(b) The regression coefficient and hence write down regressionequation of y on x and that of x on y.
(c) Probable value of the yield of a plot having an average plant height of 98 cms.

(1 × 10 = 10 Marks)

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