THIRD SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CUCBCSS—UG)

B.C.A.

. BCA 3C 05—COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

(2017 Admissions)

Time : Three Hours   Maximum : 80 Marks

Part A

Answer all questions.
Each question carries 1 mark.

1. What is the number of Significant digits of the number 0.0002932 ?

2. What are inherent errors ?

3. What do you mean by a polynomial equation ?

4. How will you find A.M. in the equation of a continuous frequency table ?

5. Define Range.

6. How will you find the Standard deviation ?

bcamcas.in

7. Give any *two* properties of correlation co-efficient.

8. Write the normal equations corresponding to a straight line of the form $y = a + bx$.

9. Define sample space of a random experiment.

10. What do you mean by intersection of two events ?

(10 × 1 = 10 marks)

Part B

Answer all questions.
Each question carries 2 marks.

11. Find the linear interpolating polynomial for the set of points (–1, 1), (0, 1) and (1, 3).

12. Give the formula used in False Position Method.

13. How is Newton's Interpolation better than Lagrange formula ?

Turn over

14. Show that the Newton-Raphson Method converges to the solution quadratically.

15. Find median of the values :

    17, 32, 35, 33, 15, 21, 41, 32, 11, 10, 20

16. Find H.M for the following data :

Size	:	6	10	14	18
Frequency	:	20	40	30	10

17. What are the merits and demerits of Range ?

18. Write the Pdf of throwing a die.

                                                    (8 × 2 = 16 marks)

Part C

Answer any six questions.
Each question carries 4 marks.

19. Find the root of the equation by using Bisection Method $e^x - x - 2 = 0$.

20. Find the roots of the equation $f(x) = x^2 - 3x + 2$ by taking $x1 = 0$ as initial value using Newton Raphson Method.

21. Find the square root of 2.5 using the Second Order Lagrange Interpolation Polynomial.

22. Construct difference tables for the following data :

x	:	0.1	0.3	0.6	0.9	0.9	1.1	1.3
$f(x)$	:	.003	.067	0.148	0.248	0.310	0.518	.697

23. Find Median for the data :

Marks	:	0–2	2–4	4–6	6–8	8–10	10–12	12–14
Frequency	:	42	26	26	'35	60	45	50

24. Why S.D is considered to be the best measure of dispersion ?

25. Find S.D for the following data :

Size	:	2	4	6	8	10
Frequency	:	8	10	16	9	7

26. Find Karl Pearson's co-efficient of correlation for the following data :

Price	:	7	8	9	6	5
Demand	:	8	9	7	9	10

27. Write the P.d.f. corresponding to the sum of the two faces turning up when two dice are thrown.

(6 × 4 = 24 marks)

Part D

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

28. Use the False-position formula repeatedly to obtain the roots of (a) $x - e^{-x} = 0$. (b) $4x^3 - 2x - 6 = 0$.

29. Calculate Mode for the following data :

Marks (less than)	:	10	20	30	40	50	60	70	80	90
Frequency	:	4	9	15	18	26	30	38	50	54

30. Find Q.D for the following data :

Size	:	5–10	10–15	15–20	20–25	25–30	30–35	35–40
Frequency	:	8	10	20	25	30	26	24

31. For the data given below between x and y, find (a) Correlation co-efficient between x and y (b) Form the two regression equations :

x	:	12	20	15	22	18	24	20	12	15	22
y	:	30	35	28	36	29	39	30	25	30	38

32. (a) Evaluate the integral $\int_{-1}^{1} e^x \, dx$ using Simpson's $(1/3)^{\text{rd}}$ rule.

bcamcas.in

(b) Use Trapezoidal rule with $n = 4$ to estimate $\int_{0}^{1} \dfrac{dx}{\left(1 + x^2\right)}$.

(3 × 10 = 30 marks)