

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2020

(CBCSS - UG)

CC19U BSH3 A11 - BASIC NUMERICAL METHODS

(Hotel Management & Catering Science - Common Course)

(2019 Admission - Regular)

Time: 2.5 Hours

Maximum: 80 Marks

Credit: 4

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

1. Solve $4x^2 - 8 = 0$.
2. Solve $2x + \frac{5}{x} = 7$, using quadratic formula.
3. What is idempotent matrix?
4. Find the transpose of $B = \begin{bmatrix} 5 & 7 & 2 \\ 2 & 3 & 1 \\ 4 & 6 & 2 \end{bmatrix}$
5. Find the n^{th} term of the sequence 3, 5, 7, ...
6. Find 15^{th} term of the sequence 3, -6, 12, -24, ...
7. Find the Geometric mean between 5 and 20.
8. Find the sum at the end of 4 years for Rs.10,000 at 10% per annum, compound interest.
9. An investor were able to lock in a 5% interest rate for the coming year and if the expected inflation rate is 2%, what is the real rate ?
10. Define annuity.
11. Define Equated Monthly Instalment (EMI).
12. Find the Arithmetic mean of 173, 231, 433, 177, 375, 295, 306
13. What is mode?
14. What is measures of dispersion?
15. What is skewness?

(Ceiling: 25 Marks)

Part B (Paragraph questions)

Answer **all** questions. Each question carries 5 marks.

16. Solve $x + y = 1, y + z = 1, z + x = 4$
17. Find $A^2 + 5A$ if $A = \begin{bmatrix} 0 & 10 & 4 \\ 3 & 5 & 1 \\ 2 & 0 & 2 \end{bmatrix}$
18. Find the rank of the matrix $A = \begin{bmatrix} 1 & 1 & 2 \\ 2 & 4 & -3 \\ 3 & 6 & -5 \end{bmatrix}$
19. The rate of monthly salary of an office assistant increased annually in A. P. If he was drawing Rs. 200 a month during the 11th year and Rs. 380 a month during the 29th year find out his initial salary and the rate of annual increment. Find also his salary at the time of completion of 32 years of service.
20. Insert 4 Arithmetic Means between 5 and 20.
21. You are scheduled to receive Rs.13,000 in two years. When you receive it, you will invest it for six more years at 8% per year. How much will you have in 8 years?
22. Find the mean deviation from the mean for the following data 38, 70, 48, 40, 42, 55, 63, 46, 54, 44
23. Find quartile deviation and inter quartile range.

Age	:	0-20	20-40	40-60	60-80	80-100
No of persons	:	4	10	15	20	11

(Ceiling: 35 Marks)

Part C (Essay questions)

Answer any **two** questions. Each question carries 5 marks.

24. Solve by using crammer's rule $3x - 2y + 3z = 8, 2x + y - z = 1, 4x - 3y + 2z = 4$
25. *i*) The sum of three numbers in *G. P.* is 35 and their product is 1000. Find the numbers.
ii) Three numbers in ascending order are in *G. P.* such that their product is 512. Find the middle number.
26. *i*) A man deposits a certain sum of money into a bank. It amounts Rs.12325 in 8 years and amounts to Rs.13565 in 10 years. Find the sum invested.
ii) Mr. A lent a simple interest, Rs.7200 partly at 6% per annum and partly at 7% per annum. If the interest received after one year is Rs.450, how much did he lend at different rate of interest ?
27. Calculate the median.

Group	:	15-25	25-35	35-45	45-55	55-65	65-75	75-85
f	:	3	5	12	15	9	9	7

(2 × 10 = 20 Marks)
