

**THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, NOVEMBER 2020**

(CBCSS - UG)

**CC19U BCM3 A11 / CC19U BBA3 A11 - BASIC NUMERICAL METHODS**

(Common Course for B.Com./B.B.A.)

(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  $-8x + 3 - 2x = -6x + 3 - 4x$
2. Solve  $8x + 7y = 10$  and  $11x = 10(1 - y)$
3. Solve  $x^2 - 6x + 8 = 0$
4. What is diagonal matrix?
5. What you mean by sequence and series?
6. Explain different types of progressions?
7. Find the sum of the infinite GP = 4, 2, 1, .....
8. Rithwika takes a loan of Rs. 5,000 at 15% per year as the rate of interest. Find the interest she has to pay at end of the year.
9. Find the sum at the end of 4 years for Rs. 20,000 at 20% p.a, compound interest.
10. Calculate the amount and compound interest on Rs. 10, 000 for 1 year at 8% p.a. compounded half yearly.
11. What effective rate will a stated annual rate of 6% yield when compounded semi annually?
12. Calculate the present value of Rs. 50,000 to be received after 5 years, provided the interest rate is 9%.
13. Define mean.
14. Find mode from the value 40, 25, 60, 35, 81, 75, 90, 10.
15. Explain two measures of skewness.

**(Ceiling: 25 Marks)**

**Part B** (Paragraph questions)

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

16. Find the value of the determinant of the Matrix  $B = \begin{bmatrix} 1 & 2 & -3 \\ 2 & -1 & 2 \\ 3 & 2 & 4 \end{bmatrix}$
17. If the 9<sup>th</sup> term of an AP is 99 and 99<sup>th</sup> term is 9 find 108<sup>th</sup> term.
18. What is standard deviation and how is it important?
19. What is future value and calculate the Future Value of Rs. 34 in 5years if the interest rate is 5%
20. A property investor takes out a mortgage of Rs. 10,00,000 at an interest rate of 12% for 20 years. Compute EMI.
21. What is average? Explain types of mathematical average.
22. Compute median
- |      |   |   |    |    |    |    |    |
|------|---|---|----|----|----|----|----|
| Size | : | 5 | 8  | 10 | 15 | 20 | 25 |
| f    | : | 3 | 12 | 8  | 7  | 5  | 4  |
23. Find QD and its coefficient. wages : Below 5 Below 10 Below 15 Below 20 Below 25 Below 30 No of workers : 4 10  
13 21 33 40

**(Ceiling: 35 Marks)**

**Part C** (Essay questions)

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

24. Solve  $8x + 5y - 22z = 0$  and  $12x - 15y - 16z = 0$  and  $5x + 6y - 11z = 13$
25. Find the Adjoint of Matrix  $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$
26. Solving of simultaneous equations with the help of Matrices (Cramer's Rule)
- $$\begin{aligned} 3X + 2Y + Z &= 6 \\ 2X - 3Y + 3Z &= 2 \\ X + Y + Z &= 3 \end{aligned}$$
27. The following data is about the number of days patients stayed in a hospital after an operation. Calculate the SD.
- |                |   |     |     |      |       |       |       |       |
|----------------|---|-----|-----|------|-------|-------|-------|-------|
| Hospital stay  | : | 1-4 | 4-7 | 7-10 | 10-13 | 13-16 | 16-19 | 19-22 |
| No of patients | : | 32  | 108 | 67   | 28    | 14    | 7     | 3     |

**(2 × 10 = 20 Marks)**

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