

20U309S

(Pages: 2)

Name:

Reg. No:

THIRD SEMESTER B.Sc./B.C.A. DEGREE EXAMINATION, NOVEMBER 2021

(CUCBCSS - UG)

CC15U GN3 A11 (1) – BASIC NUMERICAL SKILLS

(Common Paper)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours

Maximum: 80 Marks

PART A

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

- One quadratic equation $ax^2 + bx + c = 0$ has equal roots if
a) $b^2 - 4ac < 0$ b) $b^2 - 4ac > 0$ c) $b^2 - 4ac = 0$ d) $b^2 - 4ac = 1$
- Find x if the number x, 7, 28 form a GP
a) 4 b) 0 c) 4/7 d) 7/4
- When the measure of kurtosis is greater than the distribution it is
a) Mesokurtic b) Leptokurtic c) Platykurtic d) Symmetric
- Define equivalent sets.
- Find the 8th term of the A.P. -1, -5, -9, ...
- Define Break-Even point.
- Check whether 1,4,9,16 ... is a Geometric progression.
- Define non-singular matrix.
- Solve $\frac{2}{7}x + \frac{3}{4} = 10$.
- Write the transpose of $A = \begin{bmatrix} -1 & 5 & 3 \\ -2 & -1 & 8 \end{bmatrix}$

(10 × 1 = 10 Marks)

PART B

Answer any *eight* questions. Each question carries 2 marks.

- Calculate the Harmonic mean of 2, 3, 4 and 5.
- Find the mean and mode of the given data: 5, 8, 3, 12, 25, 3, 25, 10, 3.
- Find the sum of 15 terms of the A.P: 40, 33, 26, ...
- If $A = \begin{bmatrix} 1 & 3 \\ -4 & -2 \end{bmatrix}$, find $A^2 - 3A$.
- $A = \{1 \ 2 \ 3\}$, $B = \{3 \ 4 \ 5\}$, $C = \{1 \ 3 \ 5\}$ Prove that $A - (B \cup C) = (A - B) \cap (A - C)$
- Solve $5x^2 - 125 = 0$.
- The sum of three continuous terms in GP is 35 and their product is 1000. Find the terms.
- Let $A = \begin{bmatrix} 2 & -5 \\ -3 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 4 & -5 \\ 3 & K \end{bmatrix}$ Find k if $AB = BA$.

19. Find the total interest and the amount at the end of fifth year for Rs. 5000 at 10% per annum Simple Interest.
20. Find the compound interest of Rs. 7000 for 4 years at 6% per annum compounded annually.

(8 × 2 =16 Marks)

PART C

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

21. $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$ Prove that A satisfies the equation $x^2 - 5x - 14 = 0$.
22. The mean and median of a frequency distribution are 23.5 and 25.5 respectively Find the approximate value of its mode. Calculate Karl Pearson coefficient of skewness if S.D is 4.5.
23. Find the sum of the series $8 + 88 + 888 + 8888 + \dots$
24. Using Venn diagram prove that $A \cap (B \cap C) = (A \cap B) \cap C$ and $A \cup (B \cap C) = (A \cup B) \cap C$.
25. Draw a frequency polygon and frequency curve for the following data.

Class Interval	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	8	15	20	12	7

26. Write a short note on scope of statistics.
27. Describe secular trend and seasonal variation in a time series.
28. Find the amount to be paid at the end of 2 years on Rs 2400 at 5% per annum compounded annually.

(6 × 4 = 24 Marks)

PART D

Answer any *two* questions. Each question carries 15 marks.

29. Use Cramer's rule to solve

$$2x - 3y + 5z = 11$$

$$5x + 2y - 7z = -12$$

$$-4x + 3y + z = 5$$

30. Find the coefficient of variation

Age	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No of persons	10	25	32	45	60	85	90	115

31. Find the inverse of the matrix $\begin{bmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$

(2 × 15 = 30 Marks)
