D 71609

Name.................................

Reg. No...............................

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

(CUCBCSS—UG)

A 11—BASIC NUMERICAL SKILLS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Use of scientific / basic calculators and mathematical / statistical tables are permitted.

Part A

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

Choose the best answer from the options given :

1. If A and B are sets and $A \cup B = A \cap B$, then :

    (a) A = Null set.

    (b) B = Null set.

    (c) A = B.

    (d) All of these.

2. Solve $x^2 - 7x + 12 = 0$:

    (a) 3, 4.

    (b) 3, 1.

    (c) 1, 4.

    (d) 2, 3.

3. If $A = \begin{bmatrix} 2 & 4 \\ 3 & 5 \end{bmatrix}$. Find $|A|$:

    (a) 2.

    (b) -2.

    (c) 3.

    (d) -3.

4. 4, 8, 12, 16, 20.........Find 48th term of the series.

    (a) 142.

    (b) 172.

    (c) 192.

    (d) 202.

5. The data which have already been collected by someone are called :

    (a) Raw data.

    (b) Secondary data.

    (c) Primary data.

    (d) Array data.

Turn over

Fill in the Blanks :

6. The sum of the deviations about the mean is always ――――――.

7. The ―――――― is the transpose of the matrix of the cofactors.

8. What is the common difference of the AP 0.9, 0.6, 0.3 ――――――.

9. The Co-efficient of Skewness is always zero for ―――――― distribution.

10. The score that repeats the most often in a distribution is called the ――――――.

$(10 \times 1 = 10 \text{ marks})$

Part B (Short Answer Questions)

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

11. In a college, 200 students are randomly selected. 140 like tea, 120 like coffee and 80 like both tea and coffee. How many students like only one of tea or coffee ?

12. Solve $\begin{aligned} 4x + 2y &= 6 \\ 5x + y &= 6. \end{aligned}$

13. Find the inverse of matrix shown below :

$$\begin{bmatrix} 2 & 0 \\ 0 & 0 \end{bmatrix}.$$

14. Solve $2x^2 + 8x + 8 = 0$ by using quadratic formula.

15. Find the sum of first 30 positive integer multiples of 6.

16. Find the 5th term of the G. P. : $1/7, 1/14, 1/28....$

17. What is Parameter ?

18. What are the precautions to be taken while using secondary data ?

19. Given the following sample data set :

    6, 12, 9, 7, 8, 4, 3, 12, 15. Compute the Mean, Median and Mode.

20. Given co-efficient of skewness = – 0.23, Mean = 47.2 and S.D. = 12. Find mode and median of the distribution.

$(8 \times 2 = 16 \text{ marks})$

Part C (Short Essay Questions)

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

21. By means of Venn diagram, prove that $(A \cap B)^C = A^C \cup B^C$.

22. Solve the following simultaneous equation by using matrix

    $2x - 3y = 3$
    $4x - y = 11$.

23. Solve the equation $4x + \dfrac{10}{x} = 14$.

24. The sum of an infinite G. P. with positive terms is 48 and sum of its first two terms is 36. Find the second term.

25. Distinguish between Multiple and subdivided bar diagram.

26. Find Karl Pearson's co-efficient of skewness for the values 25, 18, 32, 20, 25, 48, 72, 24, 50, 25.

27. Index Numbers are called Economic barometers. Why ?

28. Find 3 yearly moving averages for the following series :

Year	:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Production	:	17.2	17.3	17.7	18.9	19.2	19.3	18.1	20.2	25.3	24.9

(6 × 4 = 24 marks)

Part D (Essay Questions)

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

29. If the equations below can be represented as the matrix equation AX = B, where $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$

    $5x - 6y + 4z = 15$
    $7x + 4y - 3z = 19$
    $2x + y + 6z = 46$

    Find the value of x, y, z by using AX = B.

30. Find standard deviation for the data on scores given below. Also find coefficient of variation.

Score	:	0–10	10–20	20–30	30–40	40–50	50–60	60–70
No. of students	:	10	15	25	25	10	10	5

31. Discuss the scope, utility and limitations of statistics.

(2 × 15 = 30 marks)