

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020

B.Com.

BCM 3A 11—BASIC NUMERICAL SKILLS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part I

Answer all questions.
Each question carries 1 mark.

- $\{\emptyset\}$ is a _____ Set.
 - Singleton set.
 - Null set.
 - Powerset.
 - Subset.
- If A is a 2×3 matrix and AB is of order 2×2 then B is of order _____.
 - 2×2 .
 - 3×2 .
 - 2×3 .
 - 3×3 .
- The system of equations $x + y = 3$ and $2x + 2y = 7$ are _____.
 - Consistent.
 - Consistent and dependent.
 - Inconsistent.
 - None of these.
- The nature of roots of the equation $8x^2 - 2x - 4 = 0$ are _____.
 - Irrational and unequal.
 - Rational.
 - Imaginary.
 - Rational and equal.
- 20th term of AP whose First term is 5 and common difference is 2 is _____.
 - 34.
 - 43.
 - 54.
 - 45.

Turn over

18. What are Ogives ?
19. Find the harmonic Mean 250, 475, 75, 5, 0.8, 0.05, 0.009.
20. Explain cost of living index number.

(8 × 2 = 16 marks)

Part III (Short Essay Answers)

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

21. If $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$. Find A^{-1} .

22. The sum of first 3 terms of a GP is $\frac{13}{12}$ and their product is -1 . Find the common ratio and terms.
23. Divide 50 into two parts so that the sum of their reciprocals is $\frac{1}{12}$.
24. Compare Mean, Median and Mode.
25. Solve $\sqrt{x^2 - 2x + 49} - \sqrt{x^2 - 2x + 16} = 3$.
26. The following table gives the distribution of marks of 100 students in a examination. Represent the data by a frequency polygon.

| | | | | | | | | |
|-----------------|---|------|-------|-------|-------|-------|-------|-------|
| Marks | : | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| No. of students | : | 5 | 10 | 18 | 26 | 22 | 15 | 4 |

27. What are the problems in constructing index numbers ?
28. If $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{2, 4, 6, 8\}$ and $B = \{2, 3, 5, 7\}$. Verify that
- (i) $(A \cup B)' = A' \cap B'$; and (ii) $(A \cap B)' = A' \cup B'$.

(6 × 4 = 24 marks)

Turn over

Part IV (Long Essay Answers)

Answer any two questions.

Each question carries 15 marks.

29. Solve the system of equation using matrix method :

$$3x - 2y + 3z = 8; 2x + y - z = 1; 4x - 3y + 2z = 4.$$

30. Give 3 yearly moving averages for the following series :

| | | | | | | | | | | | | | | | | |
|---------------------------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Year | : | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Production (in tonnes) | } | 17.2 | 17.3 | 17.7 | 18.9 | 19.2 | 19.3 | 18.1 | 20.2 | 25.3 | 24.9 | 23.2 | 24.3 | 25.2 | 26.3 | 27.3 |

31. Samples of size 60 and 40 have means 100 and 150 with standard deviation 70 and 80 respectively. Calculate mean and standard deviation of combined group.

[2 × 15 = 30 marks]