D 91624 (Pages : 4) Name.....

Reg. No.....

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.*

1. $\{\phi\}$ is a ———— Set.

   a) Singleton set. b) Null set.

   c) Powerset. d) Subset.

2. If A is a 2×3 matrix and AB is of order 2×2 then B is of order ————.

   a) 2×2. b) 3×2.

   c) 2×3. d) 3×3.

3. The system of equations $x + y = 3$ and $2x + 2y = 7$ are ————.

   a) Consistent. b) Consistent and dependent.

   c) Inconsistent. d) None of these.

4. The nature of roots of the equation $8x^2 - 2x - 4 = 0$ are ————.

   a) Irrational and unequal. b) Rational.

   c) Imaginary. d) Rational and equal.

5. 20^{th} term of AP whose First term is 5 and common difference is 2 is ————.

   a) 34. b) 43.

   c) 54. d) 45.

Turn over

6. The interest on Rs. 800 at 6 % per month for 9 months is _____.

a) 342. b) 532.

c) 623. d) 432.

7. Statistics in plural sense denote _____.

a) Data. b) Methods.

c) Statement. d) None.

8. Pie diagrams are _____ dimensional diagram.

a) One. b) Two.

c) Three. d) Four.

9. Median is the average of _____.

a) Position. b) Dispersion.

c) Skewness. d) None.

10. If variance is 1024 then standard deviation is _____.

a) 12. b) 22.

c) 32. d) 42.

(10 × 1 = 10 marks)

Part II

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

11. Define i) equal set ; and ii) equivalent set.

12. Define Scalar matrix and give example.

13. Solve $2x + y = 7$ and $5x + 7y = 22$.

14. Find the roots of the equation $2x^2 - 11x + 5 = 0$.

15. Third term of an AP is 25 and 10^{th} term is – 3. Find the first term and common difference.

16. In how many years will Rs. 2,000 amount to Rs. 2,662 at 10 % compound interest ?

17. Misuse of Statistics.

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]