

**THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION  
NOVEMBER 2020**

Common Course

A11—BASIC NUMERICAL SKILLS

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

**Part I**

*Answer all questions.*

*Each question carries 1 mark.*

1. The set of cubes of natural nos is \_\_\_\_\_.
  - a) Finite set.
  - b) Infinite set.
  - c) Null set.
  - d) Equal set.
2. The number of all possible matrices of order  $3 \times 3$  with each entry 0 or 1 is \_\_\_\_\_.
  - a) 27.
  - b) 18
  - c) 81.
  - d) 512.
3. The system of equations  $x + y = 3$  and  $2x + 2y = 6$  are \_\_\_\_\_.
  - a) Consistent.
  - b) Inconsistent.
  - c) Consistent and dependent.
  - d) Dependent.
4. The nature of roots of the equations  $x^2 - 4x + 4$  is \_\_\_\_\_.
  - a) Imaginary.
  - b) Rational.
  - c) Equal and rational.
  - d) Irrational and unequal.
5. The 9<sup>th</sup> term of the sequence 3,6,12 ..... is :
  - a) 256.
  - b) 128.
  - c) 64.
  - d) 768.

Turn over



16. On what sum of money will compound interest for 2 years of 5 % year amount to Rs. 164 ?
17. Limitation of Statistics.
18. What is pictogram and Cartogram ?
19. Find the geometric mean of 85, 15, 500, 250, 70, 75, 45, 8, 40, 36
20. Why Fisher index number is called ideal ?

(8 × 2 = 16 marks)

**Part III (Short Essays)***Answer any six questions.**Each question carries 4 marks.*

21. For matrix  $A = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 2 & 1 \\ 2 & 0 & 3 \end{bmatrix}$  prove that  $A^3 - 6A^2 + 7A + 2I = 0$ .

22. How many terms of the AP  $-6, -\frac{11}{2}, -5, \dots$  are needed to give the sum  $-25$ .

23. Find the positive value of 'k' if one root of  $x^2 - kx + 243 = 0$  is thrice the other

24. Compare standard deviation and mean deviation.

25. Solve  $(x+3)(x+6) + (x+6)(x+9) + (x+9)(x+3) = 0$ .

26. Draw ogive for the following data :

Mid x	:	5	10	15	20	25	30
Frequency	:	10	12	85	100	80	13

27. What are the steps in the construction of cost of living index number ?

28. Let  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ;  $A = \{1, 2, 3, 4\}$ ;  $B = \{2, 4, 6, 8\}$ ; and  $C = \{3, 4, 5, 6\}$ .

Find (i)  $A'$  ; (ii)  $B'$  ; (iii)  $(A \cup C)'$  ; and (iv)  $(A \cup B)'$ .

(6 × 4 = 24 marks)

Turn over

**Part IV (Long Essays)**

*Answer any two questions.*

*Each question carries 15 marks.*

29. Solve the system of equation using matrix method  $x + y + z = 6$ ;  $y + 3z = 11$ ;  $x + z = 2y$ .
30. Find a 4 yearly moving average and the centered 4 year moving average from the following data :

Year	:	2000	2001	2002	2003	2004	2005	2006	2007
Output	:	301	454	393	414	424	464	466	492

31. The scores of 2 batsman Lara and Sachin in 10 innings during a certain season are :

Lara	:	32	28	47	63	71	39	10	60	96	14
Sachin	:	19	31	48	33	67	90	10	62	40	80

Find which of the two batsman, Lara or Sachin is more consistent in scoring ?

(2 × 15 = 30 marks)