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Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION NOVEMBER 2020

Common Course

A11—BASIC NUMERICAL SKILLS

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part I

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

Choose the correct answer :

1. An association of an unique real number with a square matrix is known as :

   (a) Determinant. (b) Transpose.

   (c) Inverse. (d) Index.

2. Laspeyer's index formula use the weights of the ————.

   (a) Base year. (b) Current year.

   (c) Previous year. (d) None of these.

3. Which one of the following is not uniquely defined ?

   (a) Mean. (b) Median.

   (c) Mode. (d) All of these.

4. Compound interest of Rs. 25,000 at the rate of interest 12% p.a for 5 years is

   (a) 12000. (b) 44058.

   (c) 15000. (d) 19058.

5. Geometric mean of 8, 4, 2 is :

   (a) 8. (b) 2.

   (c) 4. (d) None.

Fill in the blanks :

6. Histogram is a ————.

7. ———— is the value of the variable corresponding to the highest frequency.

8. When A = $\{a, b\}$, its power set has ———— elements.

Turn over

9. A time series is a set of values arranged in ———— order.

10. If mean is 100 and standard deviation is 15 then co-efficient of variation is ————.

(10 × 1 = 10 marks)

Part II

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

11. Solve $\frac{15}{x+4} = \frac{19}{x-3}$.

12. Find the 15^{th} and 20^{th} terms in the series 2, 8, 14, 20 ————.

13. Calculate the amount invested when it gives a simple interest Rs. 15,000 for a period of 2.5 years at 12 % interest per annum.

14. What is an element ?

15. Find the transpose of the matrix $A = \begin{pmatrix} 2 & 6 & 4 \\ 5 & 3 & 0 \\ 1 & 9 & 7 \end{pmatrix}$.

16. What is secular trend ?

17. Find the co-efficient of range for the following values :

    25, 32, 85, 32, 42, 10, 20, 18, 28.

18. Find the Harmonic mean from the following data :

Size	:	6	10	14	18
f	:	20	40	30	10

19. Find the median for the following values :

    4, 45, 60, 20, 83, 19, 26, 11, 27, 12, 52.

20. What is common ratio ?

(8 × 2 = 16 marks)

Part III

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

21. What is Statistics and explain the features ?

22. Find the product of matrices :

(i) $\begin{pmatrix} 1 & 3 & 2 \\ 0 & 2 & 1 \\ 0 & 5 & 3 \end{pmatrix}$ and $\begin{pmatrix} 3 & 1 & 2 \\ 4 & 2 & 3 \\ 4 & -1 & 1 \end{pmatrix}$.

(ii) $\begin{pmatrix} 2 & 3 & 4 \\ -1 & 2 & -5 \end{pmatrix}$ and $\begin{pmatrix} 1 & 2 \\ 3 & -4 \\ -5 & 6 \end{pmatrix}$.

23. If A = {1, 2, 3}, B = {3, 4, 5}, C ={1, 3, 5), prove that $A-(B\cup C)=(A-B)\cap(A-C)$.

24. Calculate the total interest on Rs. 500 for 73 days, Rs. 720 for 14 weeks and on Rs. 900 for 3 months, all at 6% per annum.

25. Find the Geometric mean from the following data :

Size	:	5	8	10	12
Frequency	:	2	3	4	1

26. Solve $xy+x+y=27, \frac{1}{x}+\frac{1}{y}=\frac{1}{2}$.

27. Find the sum of all natural numbers between 500 and 600 which are divisible by 9.

28. What are the different types of index numbers ?

(6 × 4 = 24 marks)

Part IV (Essay Questions)

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

29. The savings of X increases each month by Rs. 50 more than the previous month. If his total savings for 2 years amounted to Rs. 25,800. Find out his savings for the first month.

30. Find the missing frequency if arithmetic mean is 28. Also find the median :

Marks	:	0–10	10–20	20–30	30–40	40–50	50–60
No of students	:	12	18	27	?	17	6