D 51485 **(Pages : 4)** **Name.....**

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2023

B.Com./B.B.A.

BCM 3A 11/BBA 3A 11—BASIC NUMERICAL SKILLS

(2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

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

I. Choose the correct answer :

1 If $A = \begin{bmatrix} 3 & 2 \\ 2 & 4 \end{bmatrix}$, 2A is ————————.

a) $\begin{bmatrix} 6 & 3 \\ 9 & 24 \end{bmatrix}$.

b) $\begin{bmatrix} 6 & 4 \\ 4 & 8 \end{bmatrix}$.

c) $\begin{bmatrix} 15 & 10 \\ 10 & 20 \end{bmatrix}$.

d) $\begin{bmatrix} 65 & 4 \\ 10 & 18 \end{bmatrix}$.

2 If $3x + 4 = 13$, value of x is ————————.

a) 2.

b) 3.

c) 4.

d) 5.

3 Mean of five items is 50. Three of them are 100, 50, 50 and 20. What is the other ?

a) 10.

b) 20.

c) 30.

d) 40.

Turn over

4 Let A = $\{a, b, c, d\}$ and B = $\{d, e, f\}$, A $\cap$ B is ————————.

a) $\{a, c\}$. b) $\{f\}$.

c) $\{e\}$. d) $\{d\}$.

5 Statistics are ————————.

a) Aggregate of facts. b) Numerically expressed.

c) Systematically collected. d) All these.

II. Fill in the blanks :

6 Simple interest for Rs. 15,000 at the rate of 10 % per annum for 4 years is ————————.

7 If A = $\begin{bmatrix} 98 & 87 \\ 56 & 555 \end{bmatrix}$, minor of element 555 is ————————.

8 6^{th} term of series 4, 8, 12 ———————— is ————————.

9 ———————— average is obtained on dividing the sum of observations by their number.

10 For calculation of ————————, we have to construct cumulative frequency distribution.

(10 × 1 = 10 marks)

Part B

Answer any **eight** *questions from the following.*
Each question carries 2 *marks.*

11 Define Statistics.

12 What do you mean by Pictograms ?

13 What is meant by Time series ?

14 If $\cup = \{1, 3, 4, 5, 6, 7, 8, 9, 10\}$, A = $\{3, 4, 7, 10\}$ and B = $\{2, 4, 7, 8\}$. Find A′ $\cap$ B.

15 Find the Range and Co-efficient of Range : 70, 29, 88, 15,7,8, 11, 6, 43.

16 Find the 17^{th} term of series 11, 21, 30 ————————.

17 Find the value of the determinant $\begin{vmatrix} 91 & 24 \\ 11 & 3 \end{vmatrix}$.

18 Find median of the values 5 7, 9, 4, 2, 3, 8, 13, 10.

19 If $A = \begin{bmatrix} 6 & 7 & 4 \\ 11 & 5 & 8 \\ 33 & 2 & 20 \end{bmatrix}$. Find the minor of element 4.

20. Solve $7x + 20x - 17x = 30$.

(8 × 2 = 16 marks)

Part C

Answer any **six** *questions from the following.*
Each question carries 4 *marks.*

21 What are the limitations of statistics ?

22 What are the Essential properties of a good average ?

23 Compute 3 yearly moving average from the following data :

Year	:	2017	2018	2019	2020	2021
Sales (in 000 units)	:	150	171	146	197	180

24 Solve the equation $x^2 + x - 4 = 8$.

25 In a college, there are 10 teachers, who teach Statistics or Accounting. Of these 6, teach Statistics and 3 teach both Statistics and Accounting. How many teach Accounting ?

26 Solve the following equations by using Cramer's rule :

$x + 5y = 19$
$2x + 4y = 20$.

27 Calculate Mean Deviation from mean for the following values :

23, 16, 23, 20, 11, 44, 19, 18, 27

28 Calculate Arithmetic mean from the following data :

Values	:	1	2	3	4	5	6	7	8
Frequency	:	37	45	68	75	81	64	43	26

(6 × 4 = 24 marks)

Turn over

Part D

Answer any **two** *questions from the following.*
Each question carries 15 *marks.*

29 What is statistical enquiry ? What are the different stages of statistical enquiry ?

30 Calculate Standard deviation and Co-efficient of variation from the following data :

Marks	:	0–10	10–20	20–30	30–40	40–50
Frequency	:	2	3	5	7	9

31. Following are the data related with the prices and quantities consumed for the years 2015 and 2020 :

Commodity	2015		2020	
	Price	Quantity	Price	Quantity
Rice	9	20	13	15
Wheat	12	14	14	15
Sugar	20	15	25	18
Onion	18	13	28	15

Construct price index numbers by :

1 Laspeyre's method ;

2 Paasche's method ;

3 Bowly's – Dorbish method ; and

4 Fisher's method.

(2 × 15 = 30 marks)

D 51485–A **(Pages : 4)** **Name.....**

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2023

B.Com./B.B.A.

BCM 3A 11/BBA 3A 11—BASIC NUMERICAL SKILLS

(2018 Admissions)

(Multiple Choice Questions for SDE Candidates)

Time : 15 Minutes	**Total No. of Questions : 20**	**Maximum : 20 Marks**

INSTRUCTIONS TO THE CANDIDATE

1. This Question Paper carries Multiple Choice Questions from 1 to 20.
2. The candidate should check that the question paper supplied to him/her contains all the 20 questions in serial order.
3. Each question is provided with choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and enter it in the main answer-book.
4. The MCQ question paper will be supplied after the completion of the descriptive examination.

BCM 3A 11/BBA 3A 11—BASIC NUMERICAL SKILLS

(Multiple Choice Questions for SDE Candidates)

1. George cantor is the :

   (A) Father of Mathematics. (B) Father of statistics.

   (C) Father of Set Theory. (D) None.

2. If $A \cap B = \varnothing$ means :

   (A) A and B are union. (B) A and B are disjoint.

   (C) A and B are intersected. (D) None.

3. The Value of the determinant $\begin{vmatrix} 5 & 6 \\ 3 & 4 \end{vmatrix}$ is ————.

   (A) 2. (B) – 2.

   (C) 38. (D) – 38.

4. If the discriminant of a quadratic eqn is zero, the roots are :

   (A) Real and equal. (B) Real and unequal.

   (C) Complex. (D) Nothing.

5. Simultaneous eqns means a set of eqn in ———— unknowns.

   (A) One. (B) Two.

   (C) Three. (D) Any number.

6. Elimination by judicious multiplication is the other commonly used method to solve :

   (A) Simultaneous eqn. (B) Linear eqn.

   (C) Simultaneous linear Eqn. (D) None.

7. If 2, 5, 8 ———— is A. P. the t 20 is :

(A) 60. (B) 59.

(C) 58. (D) None.

8. Given the term in the sequence 1, 3, 7, 15, 31 next is ————.

(A) 62. (B) 63.

(C) 46. (D) 66.

9. Statistic deals with :

(A) Qualitative information. (B) Quantitative information.

(C) Both. (D) None.

10. A frequency distribution can be :

(A) Dicrete. (B) Continuous.

(C) Neither. (D) Either.

11. Which method of data collection covers the widest area ?

(A) Direct personal investigation. (B) Mailed questionnaire method.

(C) Direct interview method. (D) All these.

12. In direct personal investigation, the investigator should be :

(A) Biased. (B) Tactful.

(C) Optimistic. (D) All these.

13. The degree to which numerical data tend to spread about an average value is called :

(A) Dispersion. (B) Harmonic mean.

(C) Kurtosis. (D) Quartiles.

14. The second quartile is equal to :

(A) Mean. (B) Median.

(C) Mode. (D) Standard deviation.

15. A time series is unable to adjust the influences like.

(A) Customs and policy changes. (B) Seasonal changes.

(C) Long term influences. (D) None of these.

16. The best average for constructing an Index number is :

(A) Arithmetic mean. (B) Harmonic mean.

(C) Geometric mean. (D) Weighted mean.

17. When mean is less than median and median is less than mode the distribution is called ?

(A) Symmetric. (B) Negatively skewed.

(C) Positively skewed. (D) None.

18. Measures of central tendency are called averages of the ———— order.

(A) First. (B) Second.

(C) Third. (D) None.

19. ———— is called positional measure.

(A) Mean. (B) Median.

(C) Mode. (D) Harmonic Mean.

20. Index number for the base period is always taken as :

(A) 200. (B) 50.

(C) 1. (D) 100.

D 31526 **(Pages : 4)** **Name.....**

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2022

B.Com./B.B.A.

BCM 3A 11/BBA 3A 11—BASIC NUMERICAL SKILLS

(2017—2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

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

I. Choose the correct answer :

1 Tabulation is the presentation of data in :

a) Groups. b) Rows.

c) Columns. d) Rows and columns.

2 Statistics deals with :

a) Qualitative information. b) Quantitative information.

c) Both. d) None.

3 Skewness refers to :

a) Symmetry. b) Asymmetry.

c) Flatness. d) Peakedness.

4 ———————— Index number is called ideal Index number.

a) Kelley's. b) Paasche's.

c) Laspeyer's d) Fisher's.

5 Mean of 3 items is 25, two of them are 25 and 35. What is the other ?

a) 40. b) 30.

c) 15. d) 60.

Turn over

II. Fill in the blanks :

6 If $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$, 3A is ————————.

7 If $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$, $A \cap B =$ ————————.

8 Simple interest for Rs. 10,000 at the rate of 10 % per annum for 2 years is ————————.

9 If $2x + 3 = 7$, value of x = ————————.

10 Mode of values 5, 6, 7, 3, 4, 8, 2, 5,4, 5 is ————————.

(10 × 1 = 10 marks)

Part B

Answer any **eight** *from the following.*
Each question carries 2 *marks.*

11 Define Statistics.

12 What do you mean by Index Numbers ?

13 What is meant by Cartograms ?

14 If $U = \{2, 3, 4, 5, 6, 7, 8, 9, 10\}$, $A = \{4, 7, 10\}$ $B = \{2, 4, 5, 8\}$. Find $A' \cap B$.

15 Find the value of the determinant $\begin{vmatrix} 51 & 33 \\ 12 & 19 \end{vmatrix}$.

16 If $A = \begin{bmatrix} 44 & 22 \\ 33 & 55 \end{bmatrix}$. Find the minor of element 55.

17 Find the 7^{th} term of series 1, 4, 7 ————————.

18 Solve $14x - 21 - 3x + 13 = 41 + 6x - 19$.

19 Find median for the following values :

87, 54, 63, 12, 78, 34, 36, 98

20 Find the Range and Co-efficient of Range for the following values :

65, 29, 98, 15,7, 8, 11,7, 43.

(8 × 2 = 16 marks)

Part C (Short Essay Questions)

Answer any **six** *questions from the following.*
Each question carries 4 *marks.*

21 What are the essentials of a good questionnaire ?

22 What are the important functions of statistics ?

23 In a factory there are 50 workers, 30 can speak in Hindi, 25 in Malayalam and 15 can speak in both the languages. Find the number of people who can speak at least one of the languages. How many cannot speak in any of these languages ?

24 Compute 3 yearly moving average from the following data :

Year	:	2015	2016	2017	2018	2019
Sales (in 000 units)	:	130	141	147	167	189

25 Calculate Arithmetic mean from the following data :

Values	:	5	15	25	35	45	55	65	75
Frequency	:	10	14	44	35	23	16	12	5

26 Compute Mean Deviation about mean from the following data :

Values	:	1	3	5	7	9	11
Frequency	:	2	4	6	4	2	6

27 Solve the equation $x^2 + x - 12 = 0$.

28 Calculate simple index number from the following data :

Commodities	Price in 2015	Price in 2020
A	5	8
B	4	6
C	2	4
D	8	11
E	13	17

(6 × 4 = 24 marks)

Turn over

Part D (Essay Questions)

Answer any **two** *questions from the following.*
Each question carries 15 *marks.*

29 What is statistical enquiry ? What are the different stages of statistical enquiry ?

30 Solve the following equations by using matrix :

$2x - 3y = 14$
$3x + 4y = 4.$

31 Calculate Standard Deviation and coefficient of variation from the following values :

Size	:	1	3	5	7	9	11	13	15
Frequency	:	2	4	5	7	9	8	4	2

(2 × 15 = 30 marks)

D 11760 **(Pages : 3)** **Name.....**

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION
NOVEMBER 2021

B.Com.

BCM 3A 11—BASIC NUMERICAL SKILLS

(2017–2018 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

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

I. Choose the correct answer :

1 Which of the following are examples of null set ?

(a) Set of even prime numbers.

(b) Set of letters in English alphabets.

(c) Set of odd natural numbers divisible by 2.

(d) All the above.

2 A matrix in which every element is Zero :

(a) Unit. (b) Diagonal.

(c) Scalar. (d) Null.

3 Equation ax2 + b = 0

(a) Pure quadratic equation.

(b) General quadratic equation.

(c) Not a quadratic equation.

(d) None.

4 A series obtained by adding a constant number to its preceding terms is

(a) GP. (b) AP.

(c) GP or AP. (d) None.

5 Ogives can be used to locate

(a) Median. (b) Quartiles.

(c) Deciles. (d) All.

Turn over

II. Fill in the blanks.

6. Find the 10th term of the series 4, 2, 0, –2 ————————.
7. The transpose of a matrix A is denoted by ————————.
8. $x^2 - 4 = 0$ implies x = ————————..
9. The number of observations corresponding to a particular class is known as ————————.
10. Mean of 3 items is 30 two of them are 20 and 30. The third number is ————————.

(10 × 1 = 10 marks)

Part B

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

11. What is a power set ?
12. If A = {1, 3, 5, 7 }, B = { 5, 9, 13, 17 } C = {1, 3, 9, 13 }, find :

    (a) A ∩ B ; (b) (A - B) - C.
13. Solve $7x - 21 - 3x + 13 = 7 + 6x - 19$.
14. Find two numbers whose sum is 30 and difference is 4.
15. What is an arithmetic progression ?
16. Find the 12th term of 2, 6, –18, 54 ————————.
17. What is sampling ? What are the two methods or techniques of sampling ?
18. Find the median for the following data : 4, 25, 45, 15, 26, 35, 55, 28, 48.
19. What are the absolute measures of dispersion or variability of data ?
20. Find the simple interest and amount for Rs. 25,000 at 10% p. a for 26 weeks. Assume 52 weeks in a year.

(8 × 2 = 16 marks)

Part C

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

21. Each student in a class, studies at least one of the subject English, Mathematics and Accountancy. 16 study English, 22 Accountancy and 26 Mathematics. 5 study English and Accountancy, 14 study Mathematics and Accountancy and 2 English, Accountancy and Mathematics. Find the number of student who study

    (i) English and Mathematics; (ii) English, Mathematics but not Accountancy.

22 Solve the equation :

$$2\begin{bmatrix} x & y \\ z & t \end{bmatrix} + 3\begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix} = 5\begin{bmatrix} 3 & 5 \\ 4 & 6 \end{bmatrix}.$$

23 Solve $4x + 2y = 6$ and $5x + y = 6$.

24 Which term of the A.P 21, 18, 15, ———————— is - 81 (negative eighty- one) ?

25 X borrowed Rs. 26,400 from a bank to buy a scooter at the rate of 15% p.a. compounded yearly. What amount will be pay at the end of 2 years and 4 months to clear the loan ?

26 Draw a multiple ba r diagram for the following data :

	Production [in units]		
Year	A	B	C
2000	45	55	65
2009	35	60	70
2010	50	70	80
2011	55	80	60

27. What is kurtosis ? What are its types ?

28. Compete Standard Deviation of the series 4, 8, 10, 12, 15, 9, 7, 7.

(6 × 4 = 24 marks)

Part D

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

29. Find the sum of all natural numbers from 1 to 200 excluding those divisible by 5.

30. If $A = \begin{bmatrix} 2 & 3 \\ 1 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -2 \\ -1 & 3 \end{bmatrix}$, then verify that $(AB)^{-1} = B^{-1}A^{-1}$.

31. What is Index numbers ? What are its uses? What are the weighted aggregate methods of calculating index and give equations ?

(2 × 15 = 30 marks)

D 11758 **(Pages : 4)** **Name.....**

Reg. No.....

THIRD SEMESTER (CUCBCSS–UG) DEGREE EXAMINATION
NOVEMBER 2021

B.Com.

BCM 3A 11—BASIC NUMERICAL SKILLS

(2014—2016 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

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

I. Choose the correct answer :

1 $ax^2 + c = 0$ is a ————————.

(a) Simple linear equation. (b) Simultaneous equations.

(c) Quadratic equations. (d) Differential equation.

2 $A \cap B' =$ ————————.

(a) A. (b) B'.

(c) A – B. (d) A – B'.

3 Which of the following statement is wrong ?

(a) Mean is rigidly defined.

(b) Mean has some mathematical properties.

(c) Mean is not affected due to sampling fluctuations.

(d) Mean is not affected by extreme values.

4 Statistics is defined in terms of numerical data in the :

(a) Singular sense. (b) Plural Sense.

(c) Both. (d) None.

5 Which one is an absolute measure of dispersion ?

(a) Range. (b) Quartile deviation.

(c) Standard deviation. (d) None.

Turn over

II. Fill in the blanks :

6 How many terms are there in 20, 25, 30, ———— 140 ?

7 Given the term in the sequence 1, 3, 7, 15, 31, next term is ————.

8 ———— is defined as the set of all possible subsets of a given set.

9 ———— refers column headings.

10 ———— is one of the solutions to the equation $3x^2 - 4x + 1 = 0$.

(10 × 1 = 10 marks)

Part B

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

11 If $A = \{1,2, 3, 4, 5\}$ $B = \{4, 5, 6, 7\}$ $C = \{1, 3, 6, 7\}$. Prove that :

$(A - B) \cap (A - C) = A - (B \cup C)$.

12 Represent $(A \cap B)'$ by using Venn diagram.

13 If $A = \{1, 2\}$ $B = \{4, 5\}$. Find A × B.

14 Find A – 3B :

$$A = \begin{pmatrix} 2 & 3 & 1 \\ 0 & -1 & 5 \end{pmatrix} B = \begin{pmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \end{pmatrix}.$$

15 Find the value of determinants :

$$A = \begin{vmatrix} 1 & 2 & -3 \\ 2 & -1 & 2 \\ 3 & 2 & 4 \end{vmatrix}.$$

16 Solve the equation $x^2 - 4x + 3 = 0$.

17 Solve $4x + 2y = 6$
$5x + y = 6$.

18 What is geometric progression ?

19 Find the rate of interest per annum if the simple interest on a principal of Rs. 5000 is 800 for 4 years.

20 The mean mark obtained by 50 boys in a class is 40 and mean marks of 30 girls of the same class is 46. Find the mean of the marks of all the students taken together.

(8 × 2 = 16 marks)

Part C

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

21 Find median from the following :

Wage	10	12	15	18	20	25	30
Frequency	3	5	8	12	13	12	7

22 For the following data calculate standard deviation and its co-efficient of variation :

Marks	:	2	4	6	8	10
Number of students	:	8	10	16	9	7

23 Compute Quartile Deviation from the following data :

Class	0-40	41-80	81 - 120	121 - 160	161-200	201 - 240	241 & Above
Frequency	394	461	391	334	169	113	148

24 Explain the steps in the construction of index numbers.

25 Explain different types of diagrams used for the presentation of data.

26 Solve $X^2 - 4x = -3$.

27 By using Venn diagram prove that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.

28 Find the sum of 8 terms of the GP 1, 3, 9, 27,.....

(6 × 4 = 24 marks)

Part D

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

29 Out of the total 200 students who appeared for B.Com examination from a centre, 95 failed in accounts, 100 failed in statistics, and 120 in costing. Those who failed both in accounts and statistics were 80, those who failed both in statistics and costing were 82 and those who failed both accounts and costing were 85. The students who failed in all subjects were 75. Find out the number who failed at least in any one of the subjects.

Turn over

30 Solve the following equations by using matrices :

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

31 Calculate standard deviation and co-efficient of variation from the following data :

Class	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	6	8	10	15	12	19

(2 × 15 = 30 marks)

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)

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]

D 91623 (Pages : 4)

Name.....

Reg. No.....

THIRD SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2020

B.Com. (2014—2016 Admissions)/B.B.A. (2014—2018 Admissions)

BCM 3A 11—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 80 Marks

Part I

Answer **all** *questions.*

Each question carries 1 *mark.*

I. Choose the correct answer :

1 The measure of dispersion based on all the observations of the series is :

a) Range. b) Quartile deviation.

c) Standard deviation. d) Inter quartile range.

2 A matrix with a single column is called a :

a) Column matrix. b) Zero matrix.

c) Identity matrix. d) Row matrix.

3 A statement of equality of two expressions is known as :

a) Equation. b) Association.

c) Co-efficient. d) Equality.

4 Sequence of numbers whose terms increase or decrease by a 'constant ratio' is called :

a) Permutation. b) Geometric Progression.

c) Common ratio. d) Arithmetic progression.

5 The weight used in Paasche's formula belongs to :

a) Current period. b) Base period.

c) Any arbitrary chosen period. d) None.

II. Fill in the blanks :

6 The equation of the first degree is called ————————.

7 A^{-1} means ————————.

8 Index numbers shows ———————— changes rather than absolute changes.

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

10 The midpoint of a class is ————————.

(10 × 1 = 10 marks)

Part II

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

11 What is complex numbers ?

12 Define Polynomials.

13 If $A = \{1, 4, 7, 10\}$, $B = \{2, 4, 5, 8\}$, $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ find $A \cap B$.

14 Insert 5 Geometric Means between 2 and 31, 250.

15 Rs. 10,000 for 3 years @ 15 % p.a. Calculate the simple interest and amount for the investment.

16 What is Triangular Matrix ?

17 Find Range :

Wage	:	10	15	18	20	25
No. of Employer	:	3	5	12	8	6

18 Which term of the A.P. 49, 44, 39,....9 ?

19 Calculate determinant of $A = \begin{pmatrix} 2 & 7 \\ 5 & 3 \end{pmatrix}$.

20 Find the 15^{th} term of the series 3, – 6, 12, – 24.....

(8 × 2 = 16 marks)

Part III

Answer any **six** *questions in about* 200 *words.*
Each question carries 4 *marks.*

21. What is Graph ? What are the uses of graphs ?

22. Solve : $x^2 - y^2 = 20$
$x + y = 10.$

23. Find the sum to n terms of the series 6 + 66 + 666 +..... n terms.

24. A person borrows Rs. 10,000 at 10 % simple interest and lends it out at the same rate of compound interest. What is his net earnings in 4 years ?

25. Calculate determinant of the matrix,

$$A = \begin{bmatrix} 2 & 7 & 3 \\ 6 & 4 & 8 \\ 1 & 2 & 5 \end{bmatrix}.$$

26 From the following distribution find the harmonic mean :

x	:	15	237	1345	45678	0.5	0.015	.00237
f	:	7	6	5	4	3	2	1

27. Calculate simple index number by average relative method :

Items	:	1	2	3	4	5
Price in base year	:	5	10	15	20	8
Price in current year	:	7	12	25	18	9

28. What is Price Index Numbers and what are the methods used for the construction of price index numbers ?

(6 × 4 = 24 marks)

Part IV (Essay Questions)

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

29 If $A = \begin{bmatrix} 1 & 5 & 2 \\ 3 & -2 & 4 \\ 6 & 2 & 1 \end{bmatrix}$, find the inverse of A.

30 The marks of two students A and B during a examination are as follows. Examine who is more consistent in marks, who is more efficient ?

Student A	:	10	12	80	70	60	100	0	4
Student B	:	8	9	7	10	5	9	10	8

31 Explain the different stages in a statistical enquiry.

(2 × 15 = 30 marks)

D 71551 (Pages : 4) Name.....

Reg. No.....

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

(CUCBCSS—UG)

B.Com./B.B.A.

BCM 3A 11—BASIC NUMERICAL SKILLS

(2017 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

Answer **all** *questions.*

Each question carries 1 *mark.*

I. Choose the correct answer :

1 If the fifth term of a GP is 81 and second term is 24, find the GP :

(a) 16, 24, 36, 54.....

(b) 12, 24, 36, 48,....

(c) 8, 16, 32, 64,....

(d) 9, 27, 81,....

2 Transpose of is :

(a) $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \\ 3 & 4 & 2 & 1 \end{bmatrix}$.

(b) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 2 \\ 4 & 1 & 1 \end{bmatrix}$.

(c) $\begin{bmatrix} -1 & -2 & -3 \\ -2 & -3 & -4 \\ -3 & -4 & -2 \\ -4 & -1 & -1 \end{bmatrix}$.

(d) $\begin{bmatrix} -1 & -2 & -3 & -4 \\ -2 & -3 & -4 & -1 \\ -3 & -4 & -2 & -1 \end{bmatrix}$.

3 If $A = \{1, 3, 5, 7, 9, 11, 13, 15\}, B = \{5, 9, 13, 17, 21\}$ and $C = \{1, 3, 9, 13, 17, 21\}$ $A \cap B =$ ———.

(a) $\{5, 9, 13\}$.

(b) $\{5, 7, 9, 11\}$.

(c) $\{5, 9, 17, 21\}$.

(d) $\{13, 17, 21\}$.

Turn over

4 Median of the series 4, 11, 12, 19, 20, 26, 27, 45, 52, 60, 83 is :

(a) 20. (b) 26.

(c) 27. (d) 23.5.

5 The data used by the investigator, which was already collected and used by someone else for his study, is called :

(a) Primary data. (b) Secondary data.

(c) Tertiary data. (d) Public data.

II. Fill in the blanks :

6 If $ax^2 + bx + 8 = 0$ does not have 2 distinct real roots, the minimum value of $2a + b =$ ————.

7 Twelfth term of the AP 7, 14, 21... is ————.

8 If $A = \{a, b, c, d, e, f\}$ and $B = \{a, e, i, o, u\}$ $A \cup B =$ ————.

9 Determinant of the matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ is ————.

10 Collection of data by direct conversation with respondent is called ————.

(10 × 1 = 10 marks)

Part B (Short Answer Questions)

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

11 Define Statistics.

12 What is Pie chart ?

13 Find mean of the following figures : 25, 32, 18, 20, 35, 40, 70, 49, 50, 24.

14 Find the mean deviation from mean and its coefficient for the following values :

25, 63, 85, 75, 62, 70, 83, 28, 30, 12.

15 Calculate geometric mean of the following figures :

57.5, 87.75, 53.5, 73.5, 84.75.

16. Construct an index number for 2001 taking 2000 as base :

Commodity	Price in 2000	Price in 2001
A	5	7
B	8	9
C	12	15
D	25	24
E	3	4

17 Determine trend using semi averages method :

Year :	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Values :	45	58	62	50	70	72	68	70	78	75

18 If $A = \{1234\}, B = [2468], C = \{3456\}$, prove that $A \cap (B \cap C) = (A \cap B) \cap C$.

19 Find the 15 the 20 the terms of the series 2, 8, 14, 20....

20 Solve $15/(x+4) = 10/(x-3)$.

(8 × 2 = 16 marks)

Part C (Short Essay Questions)

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

21 Distinguish between less than ogive and more than ogive.

22 Why is arithmetic mean considered to be the best average ?

23 Calculate median from the following series :

Number of family members :	1	2	3	4	5	6	7	8	9
Number of houses :	26	113	120	95	60	42	21	14	54

24 For the following values find standard deviation, variance and coefficient of standard deviation

5, 8, 7, 11, 9, 10, 8, 2, 4, 6.

25. Find quantity index number by weighted average relative method :

Item	Quantity		Weight
	2004	2008	
A	10	12	5
B	8	10	4
C	12	15	3

26 If 5^{th} and 9^{th} terms of an arithmetic progression are 44 and 68 respectively, calculate the sum of the first 25 items :

27 Solve

$$\frac{2x+4}{2x-2}=\frac{x+4}{2x-4}.$$

28 Solve $3x^2+11x-4=0$.

(6 × 4 = 24 marks)

Part D (Essay Questions)

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

29 Calculate standard deviation of the following two series and state which one is more variable :

Marks	No. of students	
	Section A	Section B
20–30	5	7
30–40	10	15
40–50	25	30
50–60	5	15
60–70	5	8

30 For the following data find Fisher's Index :

Commodities	2005		2008	
	Price	Quantity	Price	Quantity
A	2	3	3	2
B	8	2	9	3
C	5	5	6	5
D	4	2	5	3
E	3	4	4	2

31 What is a questionnaire ? What are its essential qualities ?

(2 × 15 = 30 marks)

D 71550 (Pages : 4)

Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION NOVEMBER 2019

(CUCBCSS—UG)

B.Com./B.B.A.

BCM 3A 11—BASIC NUMERICAL SKILLS

(2014 Admissions)

Time : Three Hours Maximum : 80 Marks

Part A

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

Choose the correct answer :

1. The quadratic equation $ax^2 + bx + c = 0$ has equal roots if,

   (a) $b^2 - 4ac < 0$. (b) $b^2 - 4ac > 0$.

   (c) $b^2 - 4ac = 0$. (d) $b^2 - 4ac = 1$.

2. Value of $7P_7$ is :

   (a) 7. (b) 0.

   (c) 1. (d) 7.

3. Face value of a bill due 6 months at 12 % p.a. whose present worth is Rs. 4,500 is :

   (a) Rs. 5,040. (b) Rs. 4,770.

   (c) Rs. 6,750. (d) Rs. 4,545.

4. Which of the following represents statistics ?

   (a) A single value. (b) Only two values in a set.

   (c) A group of values. (d) Aggregate of values.

5. The most commonly used measure of central tendency is :

   (a) AM. (b) Median.

   (c) Mode. (d) HM.

Turn over

Fill in the blanks :

6. ——— means lack of symmetry.

7. ——— refers to the column headings.

8. A matrix in which every element is zero is ———.

9. The common ratio of the series 9, 6, 4 is ———.

10. The value of the determinant $\begin{vmatrix} a & b \\ c & d \end{vmatrix}$ is ———.

(10 × 1 = 10 marks)

Part B (Short Answer Questions)

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

11. Solve $2x^2 + 8x + 8 = 0$.

12. 'A' is six times as old as 'B'. Fifteen years later 'A' will be three times as old as 'B'. Find the ages of 'A' and 'B'.

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

14. The average weight for a group of 25 boys was calculated to be 78.4 lb. It was later discovered that the weight of one boy was misread as 69 lb instead of the correct weight of 96 lb. Calculate the correct average.

15. State the limitations of statistics.

16. Write a note on : (a) Range ; and (b) Mean deviation.

17. Explain the significance of index numbers.

18. Given the matrices $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & -1 & 5 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ find $2A - 3B$.

19. Explain the concept of bar diagram.

20. Find three numbers in A.P. whose sum is 9 and the product is – 165.

(8 × 2 = 16 marks)

Part C (Short Essay Questions)

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

21. Find out the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 6 & 9 \\ 2 & 4 & 6 \end{bmatrix}$.

22. Explain the steps in the construction of index numbers.

23. (a) If the mode and mean of a moderately asymmetrical series are 80 and 68, what will be the most probable median ?

    (b) In a moderately asymmetrical distribution the value of median is 40 and mode is 37. Find the value of mean ?

24. Calculate price index by using Paasche's method :

Items		*Base Year*		*Current Year*	
		P	Q	P	Q
A	..	6	50	10	56
B	..	2	100	2	120
C	..	4	60	6	60
D	..	10	30	12	24
E	..	8	40	12	36

25. Determine the modal value from the following data :

Wages	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60	Below 70	Below 80	Below 90
No.of Workers	4	12	30	60	80	90	95	98	100

26. Find two natural numbers whose sum is 18 and whose product is 72.

27. Calculate geometric mean from the following data 2, 4, 8, 12, 16, 24.

28. Calculate mode and median values from the following particulars :

    $SK_p = 0.40$, S.D. = 8, Mean = 30.

(6 × 4 = 24 marks)

Part D (Essay Questions)

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

29. "Statistics is a body of methods for making wise decisions in the face of uncertainty". Examine the statement.

30. The scores of two batsman A and B during a certain match are given. Examine which of the two batsman is more consistent in scoring. Who is the efficient batsman ?

Batsman A	:	10	12	80	70	60	100	0	4
Batsman B	:	8	9	7	10	5	9	10	8

31. Out of 1200 students who appeared for B.Com. examination, 750 failed in Accountancy, 600 failed in Auditing and 600 failed in costing, 450 failed in both Accountancy and Auditing and 400 failed in both. Accountancy and Costing. 150 failed in Auditing and Costing, 20 failed in all subjects. How many students passed all the three ?

(2 × 15 = 30 marks)

D 51183 (Pages : 4) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION NOVEMBER 2018

(CUCBCSS—UG)

BCM 3A 11—BASIC NUMERIC SKILLS

(2017 Admissions)

Time : Three Hours Maximum : 80 Marks

Use of Scientific / Basic Calculators and Mathematical / Statistical tables are permitted.

Part A

This part consist of **two** *bunches of questions.*
Each bunch has **five** *questions.*
Each question carries 1 *mark.*
Answer **all** *the ten questions.*

A. Choose the best answer from the options given :

1 $x^{a-b}\, x^{b-c}\, x^{c-a}$ is ———.

(a) x. (b) 1.

(c) 0. (d) $x^{2a+2b+2c}$.

2 A matrix in which every element is zero is called ——— matrix.

(a) Unit. (b) Diagonal.

(c) Scalar. (d) Null.

3 If each value is multiplied by 10, the C.V. will be increased by :

(a) 10 %. (b) 5 %.

(c) 15 %. (d) 0 %.

4 ——— is called positional measure.

(a) Mean. (b) Median.

(c) Mode. (d) H.M.

5 In a positively skewed distribution :

(a) Mean < median < mode. (b) Mean > median > mode.

(c) Both. (d) None.

Turn over

B. Fill in the blanks :

6 In De Morgan's Law $(A \cap B)^1$ = ———.

7 Simple interest for the sum of 3,000 at 7 % p.a. for 3 years is ———.

8 One quadratic equation $ax^2 + bx + c = 0$ has equal roots if ———.

9 If the sum of two numbers is 8 and their product is 15, numbers are ———.

10 When a frequency curve is more flat topped than the normal curve, it is called ———.

(10 × 1 = 10 marks)

Part B (Short Answer Questions)

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

11 Define the term 'Rank' of the matrix.

12 Determine the A.P. whose 3rd term is 5 and the 6th term is 8.

13 Name some secondary data collection sources.

14 If P = 4/5 Q and Q = 2 ½ R, then compute P : R.

15 For a Normal Distribution, Mean is 60 and S.D. is 8. Find Median and QD.

16 Prove that for two numbers 2 and 4, AM × HM = GM^2.

17 Find the Range and its Coefficient :

Weight	:	5	8	10	12	25	30	38
No. of Children	:	2	3	8	10	9	3	2

18 If the arithmetic mean for an observation is assumed to be 39 and its mode is 52. Its SD is 20. Calculate Karl Pearson's Coefficient of Skewness. To what extent is it skewed ?

19 Solve $3^{x+3} = 9^{2x+1}$.

20 What is an Ideal Index Number ?

(8 × 2 = 16 marks)

Part C (Short Essay Questions)

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

21 Among 60 people, 35 can speak in English, 40 in Malayalam and 20 can speak in both the languages. Find the number of people who can speak in at least one of the language. How many can't speak in any of these languages ?

22 Solve $\sqrt{6+\sqrt{6+\sqrt{6+\ldots\infty}}}$.

23 Draw a Pie diagram to represent the expenditure during a year in a state as given below :

Particulars		*Amount (in Crores)*
Industries	...	100.00
Irrigation	...	92.50
Agriculture	...	127.50
Transport and Roads	...	92.50
Education	...	68.00

24 Ages of 2 people are in the ratio of 3 : 4. After 10 years, their ages would be in the ratio of 4 : 5. Find their present ages.

25 If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, show that $A^2 - 4A - 5I = 0$.

26 "Index Numbers are also Economic Barometers". Why ?

27 Mean and SD of 100 items are calculated by a student as 40 and 5. While calculating, items were taken as 40 and 50 instead of 60 and 30. Find the correct mean and variance.

28 What are the components of Time Series ? Explain.

(6 × 4 = 24 marks)

Part D (Essay Questions)

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

29 If the roots of the equation $x^2 + ax - b = 0$ differ by unity. Prove that $a^2 + 4b - 1 = 0$.

30 Calculate the Fisher's Ideal Index from the following data. Prove if it satisfies the Time Reversal and Factor Reversal tests :

Commodity	2016		2017	
	Price (P_0)	*Quantity* (Q_0)	*Price* (P_1)	*Quantity* (Q_1)
A	6	50	10	56
B	2	100	2	10
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

31 Define Statistics. Discuss its functions and limitations in the field of business and commerce.

(2 + 7 + 6 = marks)

[2 × 15 = 30 marks]

C 33495 (Pages : 4) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2017

(UG—CCSS)

BC 3A 13—BASIC NUMERICAL SKILLS

(Common with B.Com./B.B.A.)

Time : Three Hours Maximum : 30 Weightage

Use of scientific / Basic calculators and mathematical / Statistical tables are permitted.

Part A

This part consists of **three** *bunches of questions carrying equal weightage.*
Each bunch has **four** *questions.*
Answer all **twelve** *questions.*

A. Answer in single word :

1 The set of all fist elements of the ordered pairs which belongs to R is called ———.

2 Consider $A = \begin{pmatrix} 4 & 10 \\ 2 & 5 \end{pmatrix}$ $B = \begin{pmatrix} 5 & -18 \\ -2 & -2 \end{pmatrix}$ Find A + B.

3 Solve $4y + 8 = 3y + 15$.

4 ——— is the value of the determinant formed with elements obtained when the row and the column in which the element lies are deleted.

B. Fill in the blanks :

5 11, 17, 23, 29 ——— Find 53rd term of the series.

6 If 'a' is the first term and 'r' is the common ratio, then the n^{th} term of a GP is ———.

7 In case of ——— enquiry only a part of the population is studied.

8 Total of all items related to a study is ———.

C. Answer in one word :

9 Rectangle is a ——— dimensional diagram.

10 If A and B are two disjoint sets, the A n B will be ———.

Turn over

11 Represent A^c by means of Venn diagram

12 Find mode : 23, 35, 28, 42, 62, 53, 42, 35, 23, 42.

(12 × ¼ = 3 weightage)

Part B

Answer all **nine** *questions.*
Each question carries a weightage of 1.

13 Mean marks obtained by 100 students was found to be 40. Later on it was noted that one value was read as 83 instead of 53. Find the correct mean.

14 Find the harmonic mean of the following values. 2, 3, 4, 5.

15 What are the uses of measures of dispersion ?

16 What do you mean by analysis of time series ?

17 Find the sum of 8 terms of the GP 1, 3, 9, 27,.....

18 The 6th and 17^{th} terms of an A P are 19 and 41 respectively. Find the 40^{th} term.

19 Find the compound interest for Rs. 7,000 for 4 years if interest is payable half yearly at 6% p.a.

20 Sole $2x - y = 5$

$3x - 4y = 10$

21 Represent $A \cap (B \cup C)$ using venn diagram.

(9 × 1 = 9 weightage)

Part C

Answer any **five** *questions from seven.*
Each question carries a weightage of 2.

22 Solve $8x + 7y = 10$

$11x = 10\,(1 - y)$.

23 Find the sum of all integers between 50 and 500 which are divisible by 7.

24 The n^{th} term of sequence is given by $a_n = 4_n + 7$

List the first 5 terms of the sequence and find the 35^{th} term of the AP.

25 The following data relate to the number of students admitted to first year class in different courses in a college. Show this data by means of a sub divided bar diagram :

Year	Arts	Commerce	Science
2004	300	200	100
2005	250	250	200
2006	250	300	200

26 Write a short note on Lorenz Curve. What are the uses of Lorenz Curve ?

27 Calculate simple index number by average relative method :

Items	Price in Base Year	Price in Current Year
1	5	7
2	10	12
3	15	25
4	20	18
5	8	9

28 What is trend ? What are the various methods of measuring trend ? Explain.

(5 × 2 = 10 weightage)

Part D

Answer any **two** *questions from three.*
Each question carries a weightage of 4.

29. Solve completely the following equations using matrices :

$2x - 3y = 3$

$4x - y = 11$

30. Find standard deviation of the following distribution :

Income per month	Number of Employees
0-500	90
500-1000	218
1000-1500	86
1500-2000	41
2000-3000	15

31. Workout the trend values by 4 yearly moving average' method for the following data and plot the given values and trend values on a graph.

Year	production
1997	1102
1998	1250
1999	1180
2000	1340
2001	1212
2002	1317
2003	1452
2004	1549
2005	1586
2006	1476
2007	1614
2008	1586

(2 × 4 = 8 weightage)

D 14091 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE (SUPPLEMENTARY) EXAMINATION, NOVEMBER 2016

(UG–CCSS)

Common Course

A 13—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 30 Weightage

I. Objective Type Questions. Answer *all* questions. Choose the most appropriate answer :

1 The roots of the equation $x^2 - 2x + 1 = 0$.

(a) + 1, 1. (b) – 1, 1.

(c) – 1, – 1. (d) 1, 0.

2 If a, b and c are three consecutive numbers of a GP, then :

(a) $b^2 = ac$. (b) $2b = a + c$.

(c) $2a = b + c$. (d) $2a = bc$.

3 An additive model 'Y' of time series with components T, S, C and I is :

(a) Y = T + SXC + I. (b) Y = T + S + C × I.

(c) Y = T + S + C + I. (d) Y = T + S × C × I.

4 The standard deviation of first 5 natural numbers is :

(a) $\sqrt{3}$. (b) $\sqrt{2}$.

(c) 2. (d) 3.

Fill in the blanks :

5 If sum of 'n' observation is 150 and their mean is 50, then the value of n is ———.

6 The quartile deviation is given by ———.

7 A = {a, b, c, d}, then the cardinality of set A is ———.

8 The 10th term of the AP 2, 4, 6, ... is ———.

State whether the following statements are *True* or *False* :

9 For a symmetric data, mean = mode = median.

10 $n(A \cup B) = n(A) + n(B) + n(A \cap B)$.

11 Index numbers are expressed in percentage.

12 Bar diagram is a two dimensional representation.

(12 × ¼ = 3 weightage)

Turn over

II. Short Answer Type Questions. Answer *all* nine questions :

13 Define singular and non-singular matrix.

14 Let 'A' be a set of all whole numbers greater than 3 and smaller than 16 and divisible by 3 and 'B' be the set of all whole numbers greater than 5 and smaller than 35 and divisible by 5. Find $A \cap B$.

15 A sum of money at simple interest amounts to Rs. 815 in 3 years and Rs. 854 in 4 years, then find the sum of money.

16 Find the sum of the GP :

1, 3, 9, 27 ... upto 10th term.

17 Define combined arithmetic mean.

18 Explain the construction of frequency curves.

19 What is meant by time series ?

20 Distinguish between chronological and qualitative data.

21 Solve the following equation :

$12 + 2(3x - 7) = 5x - 4$.

(9 × 1 = 9 weightage)

III. Short essay questions. Answer any *five* questions :

22 What are the properties of a good measure of central tendency ?

23 Define mean deviation. How we obtain mean deviation for a grouped data ?

24 Solve the quadratic equation $6x^2 + 11x - 35 = 0$.

25 A man invests Rs. 10,000 in an account that pays 8.5 % interest per year, compound quarterly. What is the amount of money that he will have after 3 years ?

26 Which term of GP, 5, – 10, 20, – 40 ... is 320.

27 Solve using Cramer's rule :

$$\begin{aligned} 5x + y &= -13 \\ 3x - 2y &= 0 \end{aligned}$$

28 Explain about Index Numbers.

(5 × 2 = 10 weightage)

IV. Essay questions. Answer any *two* :

29 Find the inverse of the matrix $\begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$.

30 Calculate standard deviation and arithmetic mean for the following data :

Class	:	20—30	30—40	40—50	50—60	60—70	70—80	80—90
Frequency	:	3	61	132	153	140	51	2

31 The first term of an AP is 10 and last term is 50. If the sum of all the term is 480, find the common difference and number of terms.

(2 × 4 = 8 weightage)

C 31087 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, NOVEMBER 2017

(CUCBCSS—UG)

Common Course

A 11—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 80 Marks

Part I

Answer **all** *questions.*

1. Given the term in the sequence 1, 3, 7, 15, 31, next term is :

   (a) 62. (b) 46.

   (c) 63. (d) 60.

2. A set contains only one element is called _____.

   (a) Singleton set. (b) Null.

   (c) Power set. (d) None of these.

3. The classification 10-19, 20-29, 30-39 is the example of :

   (a) Exclusive. (b) Inclusive.

   (c) Both. (d) None.

4. Lorenz Curve is used to study :

   (a) Skewness. (b) Kurtosis.

   (c) Correlation. (d) Dispersion.

5. Pie diagrams are _____ dimensional diagrams.

   (a) One. (b) Two.

   (c) Three. (d) Four.

6. A series is obtained by adding a constant number to its preceding term is _____.

   (a) G.P. (b) A.P.

   (c) G.P. or A.P. (d) None.

Turn over

7. A well defined collection of defined object is called _____.

(a) Matrix. (b) Set.

(c) Equation. (d) None.

8. If A matrix of order 3 × 7 and B is order of 7 × 4, then AB is of order _____.

(a) 3 × 4. (b) 7 × 7.

(c) 3 × 7. (d) 7 × 3.

9. What is the median for the following 1, 3, 5, 2, 6, 4, 7 ?

(a) 2. (b) 5.

(c) 6. (d) 4.

10. _____ is filled by the enumerator.

(a) Questionnaire. (b) Schedule.

(c) Questionnaire or schedule. (d) All.

(10 × 1 = 10 marks)

Part II (Short Answer Questions)

Answer any **eight** *questions.*

11. What is quadratic equation ?

12. What is editing ?

13. Define set.

14. What is geometrical progression ?

15. Name the type of data for which multiple diagrams is used.

16. Represent $A = \{x/x \text{ is an integer}, x^2 \leq 4\}$ in roster form.

17. Solve $4x = 20$.

18. Find the Q.D. of the following :

391, 384, 591, 407, 672, 522, 777, 1490, 2488.

19. The third term of a GP is 4. Find the product of its first 5 terms.

20. Rahul borrows Rs. 500 for four months at a simple interest rate of 12%. How much interest does he pay ?

(8 × 2 = 16 marks)

Part III (Short Essays)

Answer any **six** *questions.*

21. Distinguish between questionnaire and schedule.

22. Consider the statement : "Integers between —3 and 3". Write the roster and set builder forms.

23. Find the inverse of a matrix A given by :

$$A = \begin{matrix} 5 & -2 & 4 \\ -2 & 1 & 1 \\ 4 & 1 & 0 \end{matrix}$$

24. Which term of the AP 4,9,14,....is 109 ?

25. A lorry covers the first 30 km. at the speed of 15 km. per hour, the second 30 km at the speed of 20 km. per hour and the last 30 km. at the speed of 25 km. per hour. Find the average speed of the lorry.

26. Find the simple interest rate for Rs. 3,000 to earn Rs. 270 interest in 9 months.

27. In an election 72,000 votes were casted. Out of four candidates, the first got 24,000 votes, the second got 20,000 votes, the third got 18,000 votes and the fourth got 10,000 votes. Draw a Pie-chart for these data.

28. Solve $5y + y = 30$.

(6 × 4 = 24 marks)

Part IV (Long Essays)

Answer any **two** *questions.*

29. Construct with the help of the data given below Fisher's Ideal Index Number :

Commodity	*Base Year Price*	*Base Year Quantity*	*Current Year Price*	*Current Year Quantity*
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

30. Solve : $3x + 8 = 17$.

31. From the following data find the trend values by 5 yearly moving averages :

Year	:	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sales	:	36	43	43	34	44	54	34	24	14

(2 × 15 = 30 marks)

D 12351 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION, NOVEMBER 2016

(CUCBCSS—UG)

Common Course

A 11—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 80 Marks

Part I

Answer **all** *questions.*

1. A series is obtained by adding a constant number to its preceding term is ———.

   (a) G.P. (b) A.P.

   (c) G.P. or A.P. (d) None.

2. Which of the following measure is based on all the observations ?

   (a) A.M. (b) G.M.

   (c) H.M. (d) All.

3. Which measure ensures highest degree of reliability ?

   (a) Range. (b) MD.

   (c) SD. (d) QD.

4. Circle diagram is also called :

   (a) Pictogram. (b) Cartogram.

   (c) Pie diagram. (d) None.

5. ——— index is known as the 'ideal' index.

   (a) Laspeyre's. (b) Paasche's.

   (c) Fisher's. (d) Kelley's.

6. Example of probability sampling is :

   (a) Quota sampling. (b) Judgement sampling.

   (c) Convenience sampling. (d) None.

7. One common difference of the A.P. 1, – 1, – 3, – 5, ——— is :

   (a) 1. (b) – 1.

   (c) – 2. (d) 2.

Turn over

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

   (a) 2. (b) 8.

   (c) 1. (d) 4.

9. Statistics deals with :

   (a) Qualitative data. (b) Quantitative data.

   (c) Both. (d) None of these.

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

    (a) Ascending. (b) Descending.

    (c) Chronological. (d) None.

(10 × 1 = 10 marks)

Part II (Short Answer Questions)

Answer any **eight** *questions.*

11. What is power set ?

12. What is a pie-diagram ?

13. What is progression ?

14. What do you understand by classification of data ?

15. Define matrix.

16. Represent A = {x/x is an integer, $x^2 \leq 4$} in roster form.

17. Find mode from the following data :

Size	:	5	8	10	12	29	35	40	46
No. of items	:	3	12	25	40	31	20	18	7

18. P + 2, 4P – 6, 3P – 2 are three consecutive terms of an A.P. Find the value of P.

19. Solve : $3x + 8 = 17$.

20. Find the compound interest earned on Rs. 100 invested for two years at 10% compounded semiannually.

(8 × 2 = 16 marks)

Part III (Short Essays)

Answer any **six** *questions.*

21. Define primary data. State the various methods of collecting primary data.

22. The third term of a GP is 4. Find the product of its first 5 terms.

23. Calculate median for the following data :

Class	:	0-5	5-10	10-15	15-20	20-25
Frequency	:	5	10	15	12	8

24. Consider the statement : "Integers between – 3 and 3". Write the roster and set builder forms.

25. Solve $5y + y = 30$.

26. Draw the less-than ogive of the following frequency distribution and locate the median there from :

Marks	:	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	:	4	8	11	15	12	6	3

27. In Mumbai city, there are 1000 families. A survey indicated that 300 subscribe to 'The Hindustan Times' daily newspaper and 250 subscribe to 'The Indian Express daily newspaper. Of these two categories, 100 subscribe to both. Express the data using Venn diagram.

28. A man travelled from one place to another at the rate of 20 kms/hour and returned at the rate of 30 kms/hour. Find the average speed in the whole journey.

(6 × 4 = 24 marks)

Part IV (Long Essays)

Answer any **two** *questions.*

29. From the following data find the trend values by 5 yearly moving averages :

Year	:	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sales	:	36	43	43	34	44	54	34	24	14

30. In an election 72,000 votes were casted. Out of four candidates, the first got 24,000 votes, the second got 20,000 votes, the third got 18,000 votes and the fourth got 10,000 votes. Draw a pie-chart for these data.

31. Find the inverse of a matrix A given by :

$$A = \begin{bmatrix} 5 & -2 & 4 \\ -2 & 1 & 1 \\ 4 & 1 & 0 \end{bmatrix}.$$

(2 × 15 = 30 marks)

D 92218 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION NOVEMBER 2015

(CUCBCSS—UG)

Common Course

A 11—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 80 Marks

Part A

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

I. Choose the correct answer :

1 The middle most item of a distribution is :

(a) Mean. (b) Mode.

(c) Median. (d) None of these.

2 Reciprocal of X values is related with :

(a) Harmonic Mean. (c) Linear equation.

(b) Mean deviation. (d) All of the above.

3 Which of the following is a measure of central tendency ?

(a) Standard deviation. (b) Range.

(c) Median. (d) Kurtosis.

4 The median of 35, 23, 45, 50, 80, 61, 92, 40, 52, 61 :

(a) 51. (b) 80.

(c) 50. (d) 40.

5 The compound interest for Rs. 7,000 for 4 years ,interest payable half yearly at 6 % is :

(a) 1,867. (b) 1,000.

(c) 300. (d) 2,000.

II. Fill in the blanks :—

6 A set which contains no elements is ————.

7 ———— ignores + or – sign while computing measure of dispersion.

Turn over

8 If A = {1, 2, 3} B = {2, 5,} then A ∪ B is ———.

9 ——— is considered as the ideal index number.

10 The second term of G P series is 9 and the fifth term is 243, the fourth term of series is ———.

(10 × 1 = 10 marks)

Part B (Short Answer Questions)

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

11 The sum of three continuous terms in G P is 35 and their product is 1000. Find the terms.

12 What do you mean by harmonic Mean ?

13 What is an index number ?

14 If U = {1, 2, 3, 4, 5} and A = {2, 4, 5}, Find A^c.

15 If $A = \begin{bmatrix} 1 & -3 & 2 \\ 0 & 3 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 5 & 6 \\ 1 & 1 & -2 \end{bmatrix}$ find 2A – 3B.

16 Represent, A ∪ B A ? B, and A – B by means of venn diagram.

17 Solve $5x^2 - 125 = 0$.

18 Of the 100 borders of a hostel 80 drink tea , 40 drink coffee and 20 drink tea and coffee. How many of them drink neither tea nor coffee ?

19 Explain the limitations of statistics.

20 Explain the uses of index numbers.

(8 × 2 = 16 marks)

Part C

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

21 Find an appropriate index from the following data :—

Items	Price 2004	Price 2007	Quantity consumed
A	2	4	3
B	8	9	5
C	7	8	8
D	5	6	2

22 If $A\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$ and $B\begin{bmatrix}5 & 6\\ 0 & -2\end{bmatrix}$ verify whether AB = BA.

23 Draw a histogram to the frequency distribution showing the ages of people :

Ages	:	10 – 15	15 – 20	20 – 30	30 – 40	40 – 50	50 – 75	75 – 100
Frequency	:	4	12	20	18	14	25	10

24 By means of Venn diagram, prove that $(A \boxed{?} B) = A' \cup B'$ (Demorgan's law).

25 Find the standard deviation and co-efficient of variation of the values

10, 12, 80, 70, 60, 100, 0, 4.

26 What are the main types bar diagram ?

27 The population of a country increases every year by 2.4 % of the population at the beginning of that year. In what time will the population double itself ? Answer to the nearest year.

28 What are the functions of statistics

(6 × 4 = 24 marks)

Part D (Essay Questions)

Answer any **two** *questions.*

Each question carries 15 *marks.*

29 With median as the base calculate the mean deviation and compare the variability of the two series A and B :

Series A :	3484	4572	4124	3682	5624	4388	3680	4308
Series B :	487	508	620	382	408	266	186	218

30 Find the two numbers whose sum is 18 and product is 72.

31 Explain in detail the steps in statistical investigation.

(2 × 15 = 30 marks)

Bowley
- Simpson
- comparison
- Multiple bar
- Sub division

D 92563 (Pages : 4) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE (SUPPLEMENTARY/ IMPROVEMENT) EXAMINATION, NOVEMBER 2015

(UG—CCSS)

Common Course

A 13—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 30 Weightage

Use of Scientific / Basic Calculators and Mathematical / Statistical tables are permitted.

Part A

This part consist of **three** *bunches of questions carrying equal weightage.*
Each bunch has **four** *questions.*
Answer all **twelve** *questions.*

A. Fill in the blanks :

1 A quadratic equation has ———— number of solution.

2 A square matrix with all its elements except leading diagonal are one are called ———— matrix.

3 In De Morgan's law $(A \cup B)^c$ = ————.

4 Pie diagrams are ———— dimensional diagrams.

B. Choose the correct answer from the bracket :

5 If A ={ 1, 2, 3}, then how many subsets does the set A have ?

(a) 3. (b) 6.

(c) 7. (d) 8.

6 The fourth term of the geometric progression whose first term is 2 and common ratio 3 is ————.

(a) 6. (b) 18.

(c) 54. (d) 162.

7 Ogives for more than type and less than type distribution intersect at :

(a) Mean. (b) Median.

(c) Mode. (d) Origin.

8 Class intervals of the type 30-39,40-49,50-59 represents :

(a) Inclusive type. (b) Exclusive type.

(c) Open-end type. (d) None.

Turn over

C. Answer in *one word* :

9 If A = { a, e, i, o, u } and B = { a, b, c, d, e, f }. Then A-B =

10 The value of the determinant $\begin{vmatrix} 2 & -4 \\ 1 & 8 \end{vmatrix}$ is _____.

11 You have \$1,000 and want it to grow to \$2,000 in 4 years, what compound interest rate do you need ?

12 What is an index number ?

(12 × ¼ = 3 weightage)

Part B

Answer all **nine** *questions.*
Each question carries a weightage of 1.

13 If $A = \begin{bmatrix} 2 & 1 \\ -5 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & 4 \\ 3 & -2 \end{bmatrix}$, then what is $3A + B^T$?

14 Compute quartiles for the data given below :

25, 18, 30, 8, 15, 5, 10, 35, 40, 45.

15 Solve $x^2 - 4x - 8 = 0$.

16 The third term of an arithmetic progression is 43 and common difference is 12. Then find its first term.

17 What are the points that are to be considered in the use of secondary data ?

18 In a survey, it was found that 24 families bought milk (in litres) in the following quantities in a particular month. Construct a continuous frequency distribution making classes of 5—9, 10—14 and so on.

19	16	22	9	22	12	39	19
10	7	18	28	24	20	14	23
14	23	6	24	16	18	7	17

19 If the arithmetic mean of two observations is 25 and their harmonic mean is 9, find their geometric mean.

20 Discuss the importance of statistics in business and commerce.

21 Give the names of different methods of measuring trend.

(9 × 1 = 9 weightage)

Part C

Short essay **or** *paragraph.*
Answer any **five** *questions from* **seven.**
Each question carries a weightage of 2.

22 Find the values of x, y, z and a which satisfy the matrix equation

$$\begin{bmatrix} x+3 & 2y \\ z-1 & 4a-6 \end{bmatrix} = \begin{bmatrix} 0 & -7 \\ 3 & 2a \end{bmatrix}.$$

23 If 6 arithmetic means are inserted between 1 and 9/2, find the 4th arithmetic mean.

24 Define median. Discuss its advantages and disadvantages as an average.

25 A certain store's profits were Rs. 50,000 ; Rs. 1,00,000 and Rs. 8,00,000 in 2002, 2003 and 2005 respectively. Determine the average rate of growth of the store's profit.

26 Draw a frequency polygon for the following data :

Monthly Wages (in Rs.)	No. of family
0—1000	21
1000—2000	35
2000—3000	56
3000—4000	74
4000—5000	63
5000—6000	40
6000—7000	29
7000—8000	14

27 What purpose does cost of living index number serve ? Explain.

28 Find three yearly moving average from the following time series data :

Year ..	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Value ..	20	22	23	21	19	20	23	24	25	28	22

(5 × 2 = 10 weightage)

Part D

Essay questions.
Answer any **two** *questions from* **three.**
Each question carries a weightage of 4.

29 What is a time series ? What are the objectives of time series analysis ? Also explain the various components of a time series.

30 Share price of two companies A Ltd. and B Ltd. were recorded as follows :

A Ltd.	12	13	15	14	14	14	13	17
B Ltd.	113	114	113	115	117	114	112	114

Which company's share price is more variable ?

31 An enquiry into the budgets of the middle class families in a certain city in India are as follows :

Item	Food	Fuel	Garments	Rent	Miscellaneous
Expenditure	35%	15%	20%	10%	20%
Price in 2004	140	60	110	60	90
Price in 2010	170	90	130	80	110

What change in the cost of living of 2010 has taken place as compared to 2004 ?

(2 × 4 = 8 weightage)

B.Com, BBA
55+27 = 82

D 72346 (Pages : 4) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION NOVEMBER 2014

(UG—CCSS)

Common Course

A13—BASIC NUMERICAL SKILLS

Time : Three Hours Maximum : 30 Weightage

Use of Scientific / Basic Calculators and Mathematical / Statistical tables are permitted.

Part A

This part consist of **three** *bunches of questions carrying equal weightage.*
Each bunch has **four** *questions.*
Answer all **twelve** *questions.*

A. Fill in the blanks :

1 In a Venn Diagram ———— represents the universal set.

2 The n^{th} term of an Arithmetic progression whose first term is 'a' and common difference 'd' is ————.

3 Let A and B are two disjoint matrices and $n(A) = 2$, $n(B) = 3$ then $n(A \cup B) =$ ————.

4 Bar diagrams are ———— dimensional diagrams.

B. Choose the correct answer from the brackets :

5 An example of a infinite set is :

(a) $\{\ \}$ (b) $\{x : x \in N \text{ and } 0 \leq x \leq 10\}$.

(c) Set of integers. (d) Set of English alphabets.

6 If 3, x, 12 are in GP. Then $x =$ ————.

(a) 7.5 (b) 6.

(c) 9. (d) None of these.

7 The trace of the matrix is $\begin{bmatrix} 3 & -1 \\ 0 & 3 \end{bmatrix}$

(a) 5. (b) 6.

(c) 9. (d) None of these.

Turn over

8 The sum of squares of deviations from mean is :

(a) Least (b) Zero.

(c) Maximum. (d) None of these.

C. Answer in one word :

9 Write the transpose of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 2 & 1 \\ 2 & 4 & 3 \end{bmatrix}$.

10 How long will it take any sum of money to double itself at simple interest rate of 5% ?

11 The common ratio of the G.P : $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64} \cdots$ is _____.

12 Name a graph which represents frequency distribution.

(12 × ¼ = 3 weightage)

Part B

Answer all **nine** *questions.*
Each question carries a weightage of 1.

13 Solve by factoring $x^2 - x - 12$.

14 Let $A = \begin{bmatrix} 2 & 3 & -4 \\ 6 & 7 & 8 \end{bmatrix}$, $B = \begin{bmatrix} 6 & -3 & 2 \\ 5 & 0 & 8 \end{bmatrix}$. Find 4A – 3B.

15 If A = {1, 2, 3,} B = {2, 3, 4} then find $A \cup B$, $A \cap B$, A – B and B – A.

16 Find the sum 1 + 4 + 7 . . . . upto 20 terms.

17 Write a short note on the scope of statistics.

18 Find compound interest on Rs.6250 at 4% per annum for 2 years computed annually.

19 Write a short note on Lorenz curve.

20 If the arithmetic mean of two observations is 25 and their harmonic mean is 9, find their geometric mean.

21 What is time series ? What are its components ?

(9 × 1 = 9 weightage)

Part C

Answer any **five** *questions from* **seven.**
Each question carries a weightage of 2.

22 If $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$. Find A^{-1}.

23 Find three numbers in AP whose sum is 9 and product is –165.

24 Explain the concepts of effective rate of interest, nominal rate of interest and force of interest. Bring out the relationship among them.

25 What are the essentials of a good questionnaire ?

26 Fifty students appeared in an examination. The results of the passed students are given below :

Marks	...	40	50	60	70	80	90
No. of students	...	6	14	7	5	4	4

If the average marks of all students are 52. Find the average marks of the students who failed in the examination.

27 From the following data, calculate standard deviation :

Xi	...	10	11	12	13	14	15	16	17	18
fi	...	2	7	10	12	15	11	10	6	3

28 Explain the term secular trend. What is the objectives of measuring trend ?

(5 × 2 = 10 weightage)

Part D (Essays Questions)

Answer any **two** *questions from three.*
Each question carries a weightage of 4.

29 Solve the system of equations with the help of matrices.

$2x - 2y + z = 1$
$x + 2y + 2z = 2$
$2x + y - 2z = 7.$

30 Fit a straight line trend to the following data by the method of least squares and estimate the likely profit for the year 2013. Also calculate the trend values :

Year ...	2004	2005	2006	2007	2008	2009	2010
Profit (in Rs.) ...	60	72	75	65	80	85	95

31 An enquiry into the budgets of the middle class families in a certain city in India are as follows :

Item ...	Food	Fuel	Garments	Rent	Miscellaneous
Expenditure ...	35%	10%	20%	15%	20%
Price in 2005 ...	150	25	75	30	40
Price in 2010 ...	175	38	85	40	62

What change in the cost of living of 2010 has taken place as compared to 2005 ?

(2 × 4 = 8 weightage)

D 51456

(Pages : 3)

Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A. DEGREE EXAMINATION
NOVEMBER 2013

(U.G.—CCSS)

Common Course

A 13—BASIC NUMERICAL SKILLS

Time : Three Hours

Maximum : 30 Weightage

Use of scientific / basic Calculators and Mathematical / Statistical tables are permitted.

Part A

This part consists of **three** *bunches of questions carrying equal weightage.*
Each bunch has **four** *questions.*
Answer all **twelve** *questions.*

A. Fill in the blanks :

1 The collection of all subsets of a set is called _____.

2 There are _____ quadrants in a XY graphical plane.

3 Value of the matrix (determinant)

$$A = \begin{bmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{bmatrix} \text{ is } \_\_\_\_\_.$$

4 _____ is the empirical relation between mean, median and mode.

B. Choose the right answer from bracket :

5 The transpose of A is B. Its transpose is :

(a) B itself. (b) A.

(c) A + B. (d) AB^T.

6 The sum of first 'n' terms of an AP is :

(a) $a + (n-1)d$. (b) ar^{n-1}.

(c) $\frac{n}{2}(2a + (n-1)d)$. (d) $\frac{a(r^n - 1)}{r - 1}$.

Turn over

7 If discriminant = 0, the roots are :

(a) Real and unequal. (b) Real and equal.

(c) Imaginary and unequal. (d) None of these.

8 Amount of deviation present in the data 8, 8, 8, 8, 8 is :

(a) 8. (b) 40.

(c) 0. (d) 5.

C. Answer in *one* word :

9 Which is the ideal weighted index number ?

10 $(A \cup B)^C = (A \cap B)^C$. Say True *or* False.

11 Write the condition for a matrix X to be symmetric.

12 The square of standard deviation is an important measure of deviation. Name it.

(12 × ¼ = 3 weightage)

Part B

Answer all **nine** *questions.*
Each question carries a weightage of 1.

13 Solve $2a + b = 10$
$a + 2b = 11$.

14 Find all the minors of the matrix $A = \begin{bmatrix} 2 & 4 \\ -5 & -10 \end{bmatrix}$.

15 If $A = \{x / 2 < x < 5\}$

$B = \{x / 3 \leq x \leq 7\}$ where x is a positive integer find $(A \cup B)$ and $(A \cap B)$.

16 Find the number of terms in the A.P. 7, 13, 19, . . . 205.

17 Write a short note on moving average method of trend analysis.

18 What do you mean by sampling a population ?

19 Note the difference between (basic concepts alone) central tendency and dispersion.

20 Distinguish between quantitative and qualitative data.

21 Define Index Number.

(9 × 1 = 9 weightage)

Part C (Short Essay or Paragraph)

Answer any **five** *questions from seven.*
Each question carries a weightage of 2.

22 Distinguish between Primary and Secondary data.

23 Define Time series. Write its uses.

24 If the sum of first 14 terms of an A.P. is 1050 and its first term is 10, find the 20^{th} term.

25 Explain the construction of :

(a) Pie diagram.

(b) Bar diagram.

26 If demand function is $p^2 + 2q = 1600$, supply function is $200 - p^2 + 2q = 0$ find equilibrium price and quantity.

27 (a) If a, b, c, are in A.P. show that $b = \frac{a+c}{2}$.

(b) If x, y, z are in G.P. show that $y = \sqrt{xz}$.

28 Write a short note on lottery method. What do you mean by random numble table ?

(5 × 2 = 10 weightage)

Part D (Essay Questions)

Answer any **two** *questions from three.*
Each question carries a weightage of 4.

29 Explain Probability (Random) Sampling.

30 Distinguish between Skewness and Kurtosis. Write Pearson measures.

31 Find the variance of :

Class	:	2	4	5	6	7
f	:	10	20	25	15	15

(2 × 4 = 8 weightage)

D 73525 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER B.Com./B.B.A./B.M.M.C. DEGREE (U.G.—CCSS) EXAMINATION, NOVEMBER 2014

(SDE)

Common Course

A 13—BASIC NUMERICAL SKILLS

Time : Two Hours and Forty-Five Minutes Maximum : 27 Weightage

Part B

Section I

Short Answer Type Questions.
Answer all **nine** *questions.*

1. Use the union rule to answer the question. If $n(A) = 24$, $n(B) = 69$, and $n(A \cup B) = 81$; What is $n(A \cap B)$?
2. If $A = (1,2,3)$, $B = (a, b)$. Find $A \times B$ and $B \times A$.
3. Define square matrix.
4. Solve $7(x-2) + 8(x-3) - 22 = x + 10$.
5. Find the sum of the first 20 terms of the sequence 4, 6, 8, 10, ...
6. Define Statistics.
7. Define Kurtosis.
8. State the meaning of arithmetic progression.
9. Find the total interest and amount at the end of 5th year for Rs. 5,000 at 10 % per annum, simple interest.

(9 × 1 = 9 weightage)

Section II

Short Essay **or** *Paragraph questions.*
Answer any **five** *questions out of seven.*

10. Find the 31st term of an A.P. whose 11th term is 38 and the 16th term is 73.
11. If $A = \{1, 2, 3\}, B = \{3, 4, 5\}$, $C = \{1, 3, 5\}$. Prove that $A - (B \cup C) = (A - B) \cap (A - C)$.

Turn over

12. If $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$, $B = \begin{pmatrix} -1 & -2 \\ 0 & 4 \\ 3 & 1 \end{pmatrix}$ find the matrix X such that A + B – X.

13. Solve $Y = 3(x+1)$ and $4x = Y + 1$.

14. During 2004-2008 the number of students in university is as follows. Represent the data by sub-divided bar diagram.

Year	*Arts*	*Science*	*Law*	*Total*
2004-05	18,000	9,000	4,000	31,000
2005-06	20,000	10,000	5,000	35,000
2006-07	26,000	9,000	7,000	42,000
2007-08	31,000	9,500	7,500	48,000

15. Compute the mean deviation and its co-efficient for the following data :

X	:	0	1	2	3	4	5	6
Frequency	:	171	82	50	25	13	7	2

16. What is an index number ? What are its characteristics ?

(5 × 2 = 10 weightage)

SECTION III (Essays)

Answer **two** *out of three.*

17. Solve the following equations by using matrices.

$2x - 3y = 3$

$4x - y = 11$.

18. The mean annual salary paid to all employees of a company was Rs. 5,000. The mean annual salaries paid to male and female employees were Rs. 5,200 and Rs. 4,200 respectively. Determine the percentage of males and females employed in the company.

19. The third term of a geometric progression is 12 and the sixth term is 96. Find the first term and the common ratio of the progression.

(2 × 4 = 8 weightage)