C. ABDUL HAKEEM COLLEGE (AUTONOMOUS), MELVISHARAM - 632 509.

SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.COM., COMMERCE

SEMESTER III

U15MCM304 / U14MCM304 – BUSINESS STATISTICS AND OPERATIONS RESEARCH - I

Time: Three Hours

Maximum: 75 Marks

SECTION - A (10 X 2 = 20 Marks)

Answer ALL Questions.

1. Write a note on Secondary data.

2. What is meant by Cluster sampling?

3. Write a note on Geometric mean.

4. What do you understand by median?

5. State the meaning of Standard deviation.

6. Find the coefficient of range for the following data.

Wages (in Rs.)	35-45	45-55	55-65	65-75	75-85
Number of workers	18	22	30	6	4

7. In a distribution the sum of the two quartiles is 78.2 and their difference is 14.3 and if its median is 35.7. Find the coefficient of skewness.

8. Pearson's coefficient of skewness is – 0.7 and the value of the median and standard deviation are 12.8 and 6, respectively. Determine the value of the mean.

9. A dietician wishes to mix two types of food in such a way that the vitamin contents of the mixture contains at least 8 units of vitamin A and 10 units of vitamin B. Food I contains 2 units per kg of vitamin A and 1 unit per kg of vitamin B while the food II contains 1 unit per kg of vitamin A and 2 units per kg of vitamin B. It costs Rs.5 per kg to purchase food I and Rs.8 per kg to purchase food II. Prepare a mathematical model of the problem stated above.

10. What is L.P.P?

SECTION - B (5 X 5 = 25 Marks)

Answer ALL Questions.

11. a) What is Statistics? Explain its limitations?

(Or)

b) Explain the different methods of Sampling.

12. a) Find the Median for the following frequency distribution.

Number of days absent	Number of students
Less than 05	29
Less than 10	224
Less than 15	465
Less than 20	582
Less than 25	634
Less than 30	644
Less than 35	650
Less than 40	653
Less than 45	655

(Or)

b) Find the mode of the following distribution.

Class limits	46-50	51-55	56-60	61-65	66-70
Frequency	2	3	5	7	9
Class limits	71-75	76-80	81-85	86-90	91-95
Frequency	11	7	2	3	1

13. a) Find the Standard deviation for the following data giving wages of 220 persons.

Wages	70-80	80-90	90-100	100-110
No. of persons	12	18	35	42
Wages	110-120	120-130	130-140	140-150
No. of persons	50	45	20	8

b) Find the mean deviation about the mean for the following data.

Class Total	0-5	5-10	10-15	15-20	20-25
Frequency	3	5	12	6	30

(Or)

14. a) Calculate Pearson's measure of skewness for the following data.

Size	7	8	9	10	11	12	13	14
Frequency	2	11	36	64	39	39	22	2

b) Find out Bowley's Coefficient of skewness from the following data.

Weight (in Kgs) more than	40	50	60	70	80	90
No. of Persons	185	167	132	82	38	12

15. a) Use graphical method to solve the following L.P. problem.

Maximize $Z = 10X + 15Y$
Subject to constraints,
$2X + Y \leq 26$
$2X + 4Y \leq 56$
$-X + Y \leq 5$
and $X,Y \geq 0$

(Or)

b) Use the graphical method to solve the following L.P. problem.

Minimize $Z = 3X + 2Y$
Subject to constraints,
$5X + Y \geq 10$
$X + Y \geq 6$
$X + 4Y \geq 12$
and $X,Y \geq 0$

SECTION - C (3 X10 = 30 Marks)

Answer **ANY THREE** Questions.

16. Construct a histogram and frequency curve for the following frequency distribution.

Weights (in kg.)	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80
Number of men	4	5	9	6	11	5	7	3

17. Find the mean, median and mode for the following data and verify the empirical relation.

Class	1-10	11-20	21-30	31-40	41-50	51-60
Frequency	3	7	13	17	12	10
Class	61-70	71-80	81-90	91-100		
Frequency	8	8	6	6		

18. From the given frequency distribution of height of 360 boys in the age group 10 – 20 years. Calculate the Quartile deviation and its Coefficient.

Height (in cms)	Number of boys
126 – 130	31
131 – 135	44
136 – 140	48
141 – 145	51
146 – 150	60
151 – 155	55
156 – 160	43
161 – 165	28

19. Calculate Karl Pearson's coefficient of Skewness for the following data.

Class	3-7	8-12	13-17	18-22	23-27	28-32	33-37	38-42
Frequency	2	10	580	175	80	32	18	5

20. Solve the following problem using Simplex method.

Maximize $Z = 21 X_1 + 15 X_2$

Subject to the constraints

$- X_1 - 2 X_2 \geq - 6$

$4 X_1 + 3 X_2 \leq 12$

$X_1 \geq 0, \ X_2 \geq 0$

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