LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **COMMERCE**

THIRD SEMESTER – **NOVEMBER 2013**

ST 3104 - BUSINESS STATISTICS

Date : 16/11/2013 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

SECTION A

Answer ALL questions. **(10 x 2 = 20 marks)**

1. Define statistics.
2. Define classification.
3. What are the rules for tabulation of data?
4. Write short notes on:(a) Simple bar diagram
   (b) Sub-divided bar diagram
5. What is weighted arithmetic mean?
6. Explain the importance of dispersion.
7. Find the harmonic mean for the following data:
   6, 15, 35, 40, 900, 520, 300, 400
8. Write a brief note on rank correlation.
9. What is an index numbers? Explain.
10. Define feasible region.

SECTION B (5 X 8 = 40 Marks)

Answer any FIVE questions

11. Explain various types of diagrammatic representation.

12. In a class of 50 students, 10 have failed and their average marks are 25. The total marks secured by the entire class are 2810. Find the average marks of those who have passed.

13. Compute Geometric Mean for the following data:

Daily Income	200	300	400	500	600	700	800
No. of Employees	4	6	10	7	5	3	4

14. Find the Quartile Deviation and its Coefficient for the following distribution:

Class Interval	0 – 10	10 – 20	20 – 30	30 - 40	40 – 50	50 – 60
Frequency	8	20	25	30	12	5

15 . First of two sub-groups has 100 items with mean 15 and standard deviation 3. If the whole group has 250 items with mean 15.6 and standard deviation $\sqrt{13.44}$, find the standard deviation of the second sub-group.

16. Calculate Bowley's Coefficient of Skewness:

Age	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50	50 – 55	55 – 60
No. of persons	50	70	80	180	150	120	70	50

17 Find the correlation coefficient between production and sales of a factory for the period given below:

Month	1	2	3	4	5	6	7
Production(in thousands)	46	54	56	56	58	60	62
Sales(in thousands)	36	40	44	54	42	58	54

18. From the following data, calculate the four yearly moving average and determine the trend value. Find the short term fluctuations.

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Value	44	46	45	42	47	40	43	41	49	48

SECTION C **(2 X 20 = 40 Marks)**

Answer any TWO questions:

19.(a) Calculate the Arithmetic mean, Median of the following data

C.I	130-134	135-139	140-144	145-149	150-154	155-159	160-164
Frequency	5	15	28	24	17	10	1

(10)

19. (b) An analysis of the monthly wages paid to workers in two firms A or B, belonging to the same industry, gives the following result:

	Firm A	*Firm B*
Number of wage earners	550	650
Average monthly wages	Rs. 1,450	Rs. 1,400
S.D. of distribution of wages	Rs. √10,000	Rs. √19,600

Answer the following questions with proper justifications:
(a) Which firm A or B pays out the larger amount as monthly wages?
(b) In which firm A or B is there greater variability in individual wages?

(10)

20. a) Find the Mean values from the following two regression equations:
Regression Equations: $3Y - 2X - 10 = 0$
$2Y - X - 50 = 0$
And also find coefficient of correlation between X and Y.

(10)

20. b) Find the Rank Correlation coefficient between X and Y:

X	68	64	75	50	64	80	75	40	55	64
Y	62	68	68	45	81	60	68	48	50	70

(10)

21. a) Fit a straight line trend by the method of Least Squares for the following data: Also estimate the sales for the year 1991.

Year	1983	1984	1985	1986	1987	1988
Sales(Rs. in Lakhs)	3	8	7	9	11	14

(10)

21.(b) using the following data compute Fisher's Ideal price and Index numbers and verify the Time reversal test and factor reversal test.

COMMODITY	Base year price	Base year quantity	Current Year Price	Current Year quantity

A	6	50	10	56
B	02	100	02	120
C	04	60	06	60
D	10	50	12	24
E	08	40	12	36

(10)

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

Maximize $Z = 5x + 7y$

Subject to the constraints,

$12x + 12y \leq 840$

$3x + 6y \leq 300$

$8x + 4y \leq 480$

$x , y \geq 0$

(10)

22.(b)The head of department has 4 jobs A,B,C and D and 4 subordinates V,W,X, and Y. The number of hours each man would take to perform each job is as follows:-

	V	W	X	Y
A	42	35	28	21
B	30	25	20	15
C	30	25	20	15
D	24	20	16	12

Find the optimal assignment of jobs to machines and the corresponding time.

(10)

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