



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com., B.B.A. DEGREE EXAMINATION – B.COM.CORP & BUSI.ADMIN.

FOURTHSEMESTER – APRIL 2018

ST 4208- STATISTICS FOR MANAGEMENT

Date: 02-05-2018
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

SECTION A

(10 X 2 = 20 Marks)

Answer ALL questions.

1. State axioms of probability.
2. Explain the concept of standard error.
3. State any two properties of poisson distribution
4. What is standard error?
5. Distinguish between Type – I and Type –II error.
6. What are the objectives of Sampling?
7. Distinguish between process control and product control.
8. Define an unbalanced transportation problem.
9. Write any two uses of an index number.
10. What is degeneracy and non-degeneracy of the transportation problem?

SECTION B

(5 X 8 = 40 Marks)

Answer any FIVE questions

11. State and prove Boole's inequality
12. Five men in a company of 20 are graduates. If 3 men are picked out from this 20 persons at random, what is the probability that (i) all are graduate (ii) at least one is a graduate.
13. Explain different types of probability sampling.
14. A machine put out 20 imperfect items in a sample of 500. After the machine was overhauled it put out 5 imperfect in a batch of 150. Has the machine being improved after overhauling?
15. You are given below the values of sample mean (\bar{X}) and the range (R) for ten samples of size 5 each. Draw mean and range charts and comment on the state of control of the process.

Sample No:	1	2	3	4	5	6	7	8	9	10
\bar{X} :	43	49	37	44	45	37	51	46	43	47
R:	5	6	5	7	7	4	8	6	4	6

You may use the following control chart values for $n = 5$, $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.11$
16. Explain the following term: (i) control charts for variable (ii) control charts for attributes

17. Construct the cost of living index number from the following group data:

Group	Weights	Index number
Food	10	60
Fuel and light	13	75
Clothing	12	65
House rent	15	80
Miscellaneous	14	68

18. Explain the applications of operations research in business activities.

SECTION C

(2 X 20 = 40 Marks)

Answer any TWO questions

19.(a) The average daily sales of 500 branch offices was Rs.150 thousand and the standard deviation Rs.15 thousand. Assuming the distribution to be normal, find how many branches have sales between

- (i) Rs. 1,20,000 and Rs.1,45,000
- (ii) RS.1,40,000 and Rs.1,60,000

(b) A soap manufacturing company was distributing a particular brand of soap through a large number of retail shops. Before a heavy advertisement campaign, the mean sales per week per shop was 140 dozens. After the campaign a sample of 26 shops was taken and the mean sales was found to be 147 dozens with a standard deviation of 16 dozens. Can you consider that the advertisement is effective?

(12 +8)

20. Perform two-way ANOVA for the data given below:

Plots of Land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

Using coding method subtracting 40 from the given number

21. Calculate Laspeyre's Index number, Paasche's price index number and Marshall-Edgeworth Index and how it satisfies Time reversal test and Factor reversal test.

Commodity	2005		2006	
	Price (inRs.)	Quantity (inkgs.)	Price (inRs.)	Quantity (inkgs.)
A	10	80	20	100
B	11	140	24	130
C	14	90	25	120
D	12	60	15	70
E	15	70	22	100

22. For the following Transportation problem find the initial solution by using (a) North West Corner method(NWCM) (b) Least Cost method (LCM) (c) Vogel's Approximation method (VAM)

	A	B	C	D	Availability
P	48	60	56	58	140
Q	45	55	53	60	260
R	50	65	60	62	360
S	52	64	55	61	220
Demand	200	320	250	210	

(6+6+8)