



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com. & B.B.A. DEGREE EXAMINATION – CORPORATE SEC. & BUSI. ADMIN.

FOURTH SEMESTER – NOVEMBER 2016

ST 4208 - STATISTICS FOR MANAGEMENT

Date: 11-11-2016
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

SECTION A

(10 X 2 = 20 marks)

Answer ALL questions.

1. State the Axioms of Probability
2. State condition theorem on probability of two events.
3. Two dice are thrown. Find the probability of a total greater than 12
4. State any four properties of binomial distribution.
5. What is meant by sample?
6. Define index number and discuss its importance.
7. Distinguish between the control limits and tolerance limits
8. What are control chart? Explain the construction of a p-chart and c-chart.
9. What is degeneracy and non-degeneracy of the transportation problem?
10. Explain the terms feasible solution and optimal solution.

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 graduates (ii) at least one is a graduate?
13. An insurance company has discovered that only 0.2% of the population is involved in a certain type of accidents each year. If its 10,000 policy holders were randomly selected from the populations. What is the probability that not more than 10 of its clients are involved in such an accident next year? ($e^{-10} = 0.000045$).
14. What 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 150 dozens. After the campaign a sample of 36 shops was taken and the mean sales was found to be 157 dozens with a standard deviation of 20 dozens. Can you consider the advertisement effective?

15. An IQ test was administered to 5 persons before and after they were trained. The results are given below:

Candidates	I	II	III	IV	V
IQ before training	110	120	123	132	125
IQ after training	120	118	125	136	121

Test whether there is any change in IQ after the training programme. Use 5% level of significance.

16. What do you understand by process control? How does it differ from 'Acceptance Inspection?'

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

Group	Weights	Group Index Number for a given year
Food	47	247
Fuel and light	7	293
Clothing	8	289
House rent	13	100
Miscellaneous	14	236

18. Solve the following Transportation problem by using North West corner Method.

	A	B	C	D	Availability
X	14	10	12	13	60
Y	12	11	14	10	140
Z	10	13	10	15	100
Demand	85	65	60	90	

SECTION C

(2 X 20 = 40 Marks)

Answer any TWO questions

19.(a) The average daily sales of 500 branch offices was Rs.150,000 and the standard deviation

Rs.15,000. 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) In a company of 500 employees 280 participate in company's profit sharing plan (p) , 400 have major medical insurance coverage (m) and 200 employees participate in both programs . What is the probability that (i) A randomly selected employee will be a participant in at least one of the two program, (ii) Determine the probability that an employee will be a participant of (p) given that he has insurance coverage (m). (10 +10)

20. The following table gives the fields of 15 samples of plot under three varieties of seed.

A	B	C
20	18	25
21	20	28
23	17	22
16	15	28
20	25	32

(20)

Test whether the three varieties of seeds are equal? Test at 5 % level.

21.(a) A company keeps records of accidents . During a recent safety review a random sample of 60 accidents was selected and classified by the day of the week on which they occur

Day	Mon	Tue	Wed	Thu	Fri
No . Of accidents	8	12	9	14	17

Test whether there is any evidence that accidents are more likely on some days than others ?

(b) The following data refer to the number of defectives in 10 samples of 100 items each. Construct an appropriate control chart and interpret the control limits:

16 18 11 18 21 10 20 18 17 21

Do these indicate that the quality characteristic under inspection is under statistical control?

(10 +10)

22. (a) Solve the following L.P. problem by graphical method.

$$\text{Maximize } Z = 5x + 7y$$

Subject to constraints,

$$x + y \leq 4$$

$$3x + 8y \leq 24$$

$$10x + 7y \leq 35$$

$$x, y \geq 0$$

(b) Solve the following game using graphical method

		Player A			
		A ₁	A ₂	A ₃	A ₄
Player B	B ₁	-2	6	-3	4
	B ₂	5	-1	4	-2

(10 +10)
