LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.B.A. & B.COM. DEGREE EXAMINATION – **BUSINESS ADMIN. & CORP. SEC.**

FOURTH SEMESTER – **APRIL 2016**

ST 4208 - STATISTICS FOR MANAGEMENT

Date: 27-04-2016 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

SECTION A

Answer ALL the questions: **(10 X 2 = 20 marks)**

1. State condition theorem on probability.
2. Six cards are drawn from a full pack of cards. Find the probability that three are spades and two are hearts.
3. Define binomial distribution on probability.
4. State the various methods of probability sampling.
5. Define standard error.
6. Mention the limitations of index number.
7. What are the uses of index number?
8. Distinguish between the control limits and tolerance limits.
9. What is balanced and unbalanced transportation problem?
10. Define feasible region.

SECTION B

Answer any FIVE questions **(5 X 8 = 40 Marks)**

11. State and prove multiplication on probability.
12. An insurance company has discovered that only 0.1% 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 5 of its clients are involved in such an accident next year ($e^{-10} = 0.000045$) .
13. The sales manager of a larger company conducted a sample survey in state A and state B taking 400 samples in each state . The results are

	State –A	State - B
Average sales	2500	2200
Standard deviation	400	550

Test whether average sales is the same in the 2 states at 1 % level .

14. 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 the advertisement effective ?
15. What is Sampling Technique ? Explain different types of Sampling.
16. Construct the cost of living index number from the following group data:

Group	Weights	Base Year price	current Year price
Food	**4**	**30**	**47**
Fuel and light	**2**	**8**	**12**
Clothing	**3**	**14**	**18**
House rent	**2**	**22**	**15**
Miscellaneous	**1**	**25**	**30**

17. Discuss the advantages of control charts.

18. Solve the following game using graphical method

		Player A			
		A_1	A_2	A_3	A_4
Player B	B_1	-3	4	-5	2
	B_2	5	- 2	4	- 4

SECTION C

Answer any TWO questions **(2 X 20 = 40 Marks)**

19.(a) Students of a class were given an aptitude test . Their marks were found to be normally distributed with mean 60 and standard deviation 5 . What percentage of students score (i) more than 60 marks (ii) less than 56 marks (iii) between 45 and 65 marks

(b) The following table shows the distribution of digits in numbers chosen at random from a telephone directory.

Digits:	0	1	2	3	4	5	6	7	8	9
Frequency:	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the – digits may be taken to occur equally frequently in the directory. **(10 + 10)**

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

	Treatment			
Plots of Land	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. **(20)**

21.(a) T The following table gives the number of defective items found in 10 successive samples of 100 items each

16, 18, 11, 18, 21, 10, 10, 20, 18, 17 and 21

Comment whether the process is under control. Suggest suitable control limits for the future.

(b) A company has 5 machines to be assigned to 4 of the 5 workers available for this purpose. The time to complete the work on different machines is given below

MACHINE

	W1	W2	W3	W4	W5
I	40	40	35	25	50
II	42	30	6	25	27
III	50	48	40	60	50
IV	20	19	20	18	25
V	58	60	59	55	53

Suggest optimal assignment of workers to machine. **(10 +10)**

22.Obtain the initial basic feasible solution of the transportation problem by using (a)North West Corner method(NWCM).(b) Least Cost method(LCM) (c) Vogel's Approximation method (VAM)

	A	B	C	D	Availability
F1	48	60	56	58	140
F2	45	55	53	60	260
F3	50	65	60	62	360
F4	52	64	55	61	220
Demand	200	320	250	210	

(20)

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