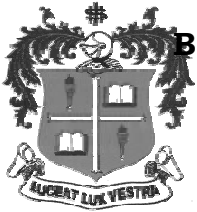


LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



B.B.A. B.COM. DEGREE EXAMINATION – BUSIN.ADMIN. & CORP.SEC.

FOURTH SEMESTER – NOVEMBER 2013

ST 4208 - STATISTICS FOR MANAGEMENT

Date : 04/11/2013
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

SECTION A

(10 X 2 = 20 marks)

Answer ALL questions:

1. State multiplication theorem on probability.
2. Two dice are tossed .What is the probability that total is divisible by 3 or 4?
3. What are the objectives of Sampling ?
4. Distinguish between standard error and sampling error.
5. What are the characteristic of an index number?
6. Discus the steps involved in the construction of an index number.
7. Explain the construction of a p-chart .
8. Distinguish between process control and product control.
9. Define feasible region.
- 10.What is unbalanced transportation problem?

SECTION B

(5 X 8 = 40 Marks)

Answer any FIVE questions

11. In a factory, there are 6 skilled workers and 4 unskilled workers. What is the probability that (i) a worker selected is skilled ? (ii) the two workers selected are skilled?
12. Find the binomial distribution if the mean is 12 and the standard deviation is 2.
13. What is probability sampling? 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. Find Chain Base Indices from the following data.

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2005
Index	37	39	43	48	48	52	48	49	54	56	87

16. Explain the following term: (i) control charts for variable (ii) control charts for attributes.

17. The following data gives readings for 10 samples of size 6 each in the production of a certain components.

Sample	:	1	2	3	4	5	6	7	8	9	10
Sample Mean	:	15	17	15	18	17	14	18	15	17	16
Sample Range	:	7	7	4	9	8	7	12	4	11	5

Draw control chart for mean. Can one assume that all the samples are from homogeneous lot. (Given for $n = 5$, $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.11$)

18. Solve the following L.P. problem by graphical method.

$$\begin{aligned} \text{Maximize } Z &= 25x + 40y \\ \text{Subject to constraints,} \\ 4x + 4y &\leq 48 \\ 2x + 5y &\leq 50 \\ 5x + 3y &\leq 60 \\ x, y &\geq 0 \end{aligned}$$

SECTION C

(2 X 20 = 40 Marks)

Answer any TWO questions:

19.(a) A factory has two machines A and B. Past records show that machine A produces 30% of the total output and machine B the remaining 70%. Machine A produces 5% defectives and machine B produces 1% defective items. An item is drawn at random and to be defective. What is the probability that it was produced (a) by machine A (b) by machine B found to be. (10)

19.(b) Students of a class were given an aptitude test. Their marks were found to be normally distributed with mean 45 and standard deviation 10. If 1000 students appeared at the examination, calculate the number of students scoring (i) less than 40 marks and (ii) more than 60 marks. (10)

20. Set up two way ANOVA table for the data given below and write your conclusion.

Pieces of field	Treatment			
	A	B	C	D
P	45	40	38	37
Q	43	41	45	38
R	39	39	41	41

Use coding method subtracting 40 from given number. (20)

21.(a) The following table gives the classification of 100 workers according to sex and the nature of work. Test whether the nature of work is independent of the sex.

	Skilled	Unskilled
Male	40	20
Female	10	30

(10)

21(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)

22. Solve the following Transportation problem by using (i) Least cost method (ii) 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	

(20)
