

END TERM EXAMINATION

FIRST SEMESTER [MBA] DECEMBER 2014- JANUARY 2015

Paper Code: MS-103

Subject: Decision Sciences

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions.

- Q1 (a) From the following data, calculate the Karl Pearson's coefficient of correlation between age of students and their playing habits: (6)

Age	15	16	17	18	19	20
No. of Students:	250	200	150	120	100	80
Regular Players:	200	150	90	48	30	12

- (b) From the information given below: (2x3=6)

	X	Y
Arithmetic Mean	5	12
Standard Deviation	2.6	3.6
Correlation Coefficient R=0.7		

- (i) Obtain two regression equations
 (ii) Estimate Y when X=9
 (iii) Estimate X when Y=12

- Q2 (a) A car hiring firm has two cars which it hires out daily. The number of demand for a car on each day is distributed as Poisson distribution with mean 1.5. Calculate the number of day out of 100 days on which (i) neither car is used and (ii) some demand is refused. (Given $e^{-1.5} = .2231$). (6)
- (b) A bag contains 5 white and 3 red balls and four balls are successively drawn out and not replaced. What is the chance that (i) white and red balls appear alternatively and (ii) red and white balls appear alternatively? (6)

- Q3 Food X contains 6 units of vitamin A per gram and 7 units of vitamin B per gram and costs 12 paise per gram. Food Y contains 8 units of vitamin A per gram and 12 units of vitamin B per gram and costs 20 paise per gram. The daily minimum requirement of vitamin A and vitamin B is 100 units and 120 units respectively. Find the minimum cost of product mix using the simplex method. (12)

- Q4 (a) What is the difference between the slack, surplus, and artificial variables? How do they differ in their structure and utility? (6)
- (b) Describe the general rules for writing the dual from a primal. (6)

- Q5 (a) In a small town, there are two stores, ABC and XYZ, which handle sundry goods. The total number of customers is equally divided between the two, as the price and quality of goods sold are equal. Both stores have equally good reputation in the community and can render equally good customer service. Assume that the gain of customer by ABC is loss to XYZ and vice versa. Both stores plan to run annual pre-Diwali sale during the first week of November. Sales are advertised through local newspaper, radio and television media. With the aid of the advertising firm, store ABC has constructed the game matrix as given in table below: