K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH,
Vidyavihar, Mumbai- 400077
Subject: Business Statistics-(PGDM-RM-I Trim)
SET-II
End term Exam

Time: 3 hours   Maximum Marks: 50   **Date:**
24/092018

Instructions

1. Attempt any 5 questions. (10 marks each)

2. Take assumptions where ever necessary and make a note of it.

3. Data is in Excel file where ever required (in separate worksheet)

4. Final answers are given in Single **Excel** sheet only (all answers in separate worksheet).

Q1.1 A study investigated the perception of corporate ethical values among individuals specializing in marketing. Use the data given in excel sheet (higher ethical score indicate higher ethical value) to test for significant difference in perception among three groups namely marketing managers, marketing research and advertising.

1. Calculate all three measures of central tendency.
2. Measures of variation
3. Keeping variability as one of the indicators also, comment on the ethical value of the three groups.

Q1.2. A sugarcane factory claims to pay highest wage to its daily wage workers among similar sugarcane factories. In order to validate that claim of daily wage as Rs. 200, a leading labor activist on voluntary basis collects data of 400 workers. On the collected data answer the following:

a. Represent data in a more presentable form by grouping.
b. Find relative frequency and interpret it
c. Is the claim of the sugarcane factory is validated on the basis of mean and median calculated on raw data. Comment.

Q2 In a survey taken by placement department of a leading B school four parameters were identified of utmost importance namely marks, common score at the time of admission, awareness level and IQ level of the candidate in predicting the most expected salary of the candidate. Use predictive model to analyze the relationship among variables and answer the following:

a. Use bivariate regression analysis to investigate the relationship between salaries

offered to the candidate and other common score. Discuss your findings.

b. Use regression analysis to investigate the relationship between salaries offered to the candidate and other common score and IQ level. Discuss your findings.

c. Show your findings using scatter plot also.

Q3 The table given in sheet 3 of the Excel sheet shows school enrollment (in thousands) for public and private schools for the year 1965 to 2005.

1. Draw charts that allow you to claim that enroll in schools is "skyrocketing"
2. Draw charts to "prove" that enrollment in public school is stagnant.

Q4.1 A large leading retail giant is interested in surveying certain attitudes in a small community. There are 125 households broken down according to income, ownership of a telephone and ownership of a TV.

	Households with annual Income of Rs. 10,000 or less		Households with annual income above Rs. 10,000	
	Telephone Subscriber	No Telephone	Telephone Subscriber	No Telephone
Own TV set	27	20	18	10
No TV set	18	10	12	10

I. What is the probability of obtaining a TV owner in drawing at random?

II. If a household has income over Rs. 10,000 and is a TV holder, what is the probability that he has a telephone?

III. What is the probability of drawing a household that owns a TV, given that the household is a telephone subscriber?

IV. Are the events 'ownership of a TV' and 'telephone subscriber' statistically independent? Comment.

Q4.2 A local bank reviewed its credit card policy with the intention of recalling some of its credit cards. In past approximately 5% of the card holders defaulted, leaving the bank unable to collect its outstanding credit balance. Hence the management established a prior policy of 0.05 that any particular card holder will default. The bank also found that the probability of missing a monthly payment is 0.20 for a customers who do not default. Of course the probability of missing a monthly payment for those who default is 1.

a. Given a customer missed one or more monthly payments, compute the posterior probability that the customer will default.

b. The bank would like to recall its card if the customer will default is greater than 0.20. Should the bank recall its card if the customer misses a monthly payment?

Why or why not?

Q5.1 During the period of time that the university takes phone in call registrations, calls come in at a rate of one in every two minutes.
   a. What is the probability of no call in an hour
   b. What is the probability of 3 calls in 5 minutes
   c. What is the probability of at most 5 calls in an hour

Q5.2 Eight percent of the undergraduate students carry credit card balances greater than $7000. (The Economist, May 2002). Suppose 10 undergraduate students are selected randomly to be interviewed about credit card usage.

a)   Is selection of 10 students is a discrete distribution? Explain the assumptions of applied distribution
b)   What is the probability that at least two of the students will have credit card balance greater than $7000?
c)   What is the probability that none will have credit card balance greater than $7000?
d)   What is the probability that at most 4will have credit card greater than $7000

Q6.1. The average amount parents and children spend on back to school clothes in autumns 2012 was $527 (CNBC, Sept 5,2012). Assume the SD is $160 and the amount spent is normally distributed.
   a. What is the probability that the amount spent on randomly selected child is more than $700?
   b. What is the probability that the amount spent on randomly selected child is less than $100?
   c. What is the probability that the amount spent on randomly selected child between $400 and $700?
   d. What is the probability that the amount spent on randomly selected child is no more than $300?
   e. What is the least   amount spent by richest 10% of the parents spent on clothes.

Q6.2 A continuous manufacturing process of steel rods is said to be in 'state of control' and produces acceptable rods if the mean diameter of all rods produced is 2 inches. Although the process standard deviation exhibits over time with standard deviation, s = 0.01 inch. The process mean may vary due to operator error or problems of process adjustment. Periodically, random samples of 100 rods are selected to determine whether the process is producing acceptable rods. If the result of a test indicates that the process is out of control, it is stopped and the source of trouble is sought. Otherwise, it is allowed to continue operating. A random sample of 100 rods is selected resulting in a mean of 2.1 inches. Test the hypothesis to determine whether the process be continued.

*******************************All the best************************\