

**K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH,
Vidyavihar, Mumbai- 400077**

Subject: Business Statistics-(PGDM-COMM-I Trim)

SET - II

End term Exam

Time: 3 hours

Date: 24/092018

Maximum Marks: 50

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. 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 and awareness level of the candidate in predicting the most expected salary of the candidate. Using data given in Excel worksheet 1 for your B school make **managerial report** on the basis of the following requirement given by the placement department which will be used to address the students:

- a. Reduce the data (separately column wise) by grouping it into class intervals
- b. Calculate relative frequency distribution and comment
- c. Represent graphically by using suitable graphs and charts

Q2.1 As head of the department of a consumer's research organization, you have the responsibility for testing and comparing lifetimes of four brands of electric bulbs. Suppose you test the life – time of seven electric bulbs of each of the four brands. The data are in worksheet 4, each entry representing the lifetime of an electric bulb, measured in hundreds of hours:

1. Can we infer that the mean and median lifetimes of the four brands of electric bulbs are equal?
2. Is the data of the average life time skewed?
3. Calculate Coefficient of Variance and suggest which brand would you recommend buying and why?

Q2.2 Twenty two executive trainees are assigned selling jobs right after their recruitment. After a fortnight they are withdrawn from their field duties and given a month's training for executive sales. Sales executed by them in thousands of rupees before and after the training, in the same period. Use data given in worksheet one and comment on the following:

- a. Do these data indicate that the training has contributed to their performance calculate on the basis of Central tendency and dispersion?
- b. Can correlation be measured using the same data? Calculate coefficient of correlation and comment

Q3.1 Two sets of candidates are competing for the positions on the Board of Directors of Company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first set wins, the probability of introducing a new product is 0.8, and the corresponding probability, if the second set wins, is 0.3. What is the probability that the new product will be introduced?

Q3.2 In a library, the visitors are classified according to the department that they visit. Using the given information, compute the following probability.

- a) Probability that a randomly selected visitor is a professor
- b) P (a randomly selected visitor has visited reference section)
- c) P (visitor is a professor and visited book section)
- d) Probability of a visitor who visited back issues section and is a student
- e) P (a book section visit / Professor)
- f) Comment on the statistical independence of type of visitor (professor or student) and department visited.

Q4.1 The time needed to complete final examination in a particular course is normally distributed with a mean of 80 minutes and SD of 10 minutes. Answer the following questions:

- a. What is probability of completing the exam in one hour or less?
- b. What is probability of completing the exam in more than sixty minutes but less than 75 minutes?
- c. Assume that the class has 60 students and that the examination period is 90 minutes. How many students will you expect will be unable to finish the exam in the given time?

Q4.2 Individual filing of income tax returns prior to 30 June had an average refund of Rs. 1000. Consider the population of 'last minute' filers who file their returns during the last week of June. For a random sample of 400 individuals who filed a return between 25 and 30 June, the sample mean refund was Rs.1054 and the sample standard deviation was Rs. 160. Using 5 per cent level of significance, test the belief that the individuals who wait until the last week of June to file their returns to get a higher refund than early the filers.

Q5.1 Every hour average number of telephone calls in a phone booth is 5. What is the

probability that during a particular hour there are a) no phone call, b) one phone call, c) More than 4 phone calls, d) At least 5 phone calls, e) At the most 3 phone calls.

Q5. 2. Ten percent of the undergraduate students carry credit card balances greater than \$8000. (Reader's Digest, May 2012). Suppose 20 undergraduate students are selected randomly to be interviewed about credit card usage.

- a) Is selection of 20 students is a discrete distribution? Comment about mean and variance of this distribution
- b) What is the probability that at least two of the students will have credit card balance greater than \$8000?
- c) What is the probability that none will have credit card balance greater than \$8000?
- d) What is the probability that at most 4 will have credit card greater than \$8000
- e) When can this distribution be approximated to Poisson distribution?

Q6. A study of the emergency service facilities investigated the relationship between the no. of facilities and average distance travelled to provide the emergency services. On the basis of the data given in excel sheet:

- a. Develop a scatter plot treating average distance travelled and dependent variable.
- b. Develop a simple liner regression model
- c. What are the indicators on the basis of which you will rely on your developed regression model

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