<u>K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH,</u>
<u>Vidyavihar, Mumbai- 400077</u>

Program:*PGDM A & B (Batch2016-17), Sem.-I*
<u>Subject: Business Statistics</u>
(EndTerm Examination)

<u>Maximum Marks: 50</u>
Duration: 3 hours

Date: 23rd Sep., 2016

Instructions
1. **Answer any four**

2. **All questions carry equal marks**

<u>QUESTION 1</u>

Case 1 – The Wall street Journal reported some interesting statistics on the job market. One statistics is that 40% of all workers say they would change jobs for "slightly higher pay". In addition, 88% of companies say that there is a shortage of qualified job candidates. Suppose 16 workers are randomly selected and asked if they would change jobs for "slightly higher pay".

a) What is the probability that nine or more say yes?

b) If 13 companies are contacted, what is the probability that all of the companies say that there is a shortage of qualified job candidates?

c) What is the probability that three, four or six say yes?

Case 2 - Ship collisions in the Houston Ship Channel are rare. Suppose the number of collisions is Poisson distributed, with a mean of 1.2 collisions every four months.

a) What is the probability of having no collision occur over a four-month period?

b) What is the probability of having exactly one or fewer collisions in six-month period?

c) What is the probability of having one or fewer collisions in a six-month period?

Question 2

According to the Internet Revenue Service, income tax returns one year averaged $1332 in refunds for taxpayers. One explanation of this figure is that taxpayers would rather have the government keep back too much money during the year than to owe it money at the end of the year. Suppose the average amount of tax at the need of the year is a refund of $1332, with a standard deviation of $725. Assumed that amounts owed or due on tax returns are normally distributed.

   a) What proportion of tax returns show a refund greater than $2,000?
   b) What proportion of the tax returns show a refund between $100 and $700?
   c) What proportion of tax returns show a refund less than $3,000?
   d) What proportion of the tax returns show a refund between $450 and $1000?

Question 3

   a) Runzheimer Internationally publishers, results of studies on overseas business travel cost. Suppose as a part of one of these studies the following per dime travel accounts (in $) are obtained for fourteen business travelers staying in Johannesburg, South Africa. Use this data to construct a 98% confidence interval to estimate the average per dime expense for business people travelling to Johannesburg. Assume per dime rates for any locale are approximately normally distributed.

142.59	148.48	159.63	171.93	146.90	168.87	141.94
159.09	156.32	142.49	129.28	151.56	132.87	178.34

   b) According to the Stern marketing group nine out of ten professional women say that financial planning is more important today than it was five years ago. Where do these women go for help in financial planning? 47% use a financial advisor (broker, tax consultant, financial planner). 28% use return sources such as magazines, books and News papers. Suppose this figures were obtained by taking a sample of 560 professional women who said that financial planning is more important toady then it was five years ago. Construct a 90% confidence interval for the proportion of professional women who use written sources.

Question 4 –
Testing Job Applicants- The recruiting process at many firms involves tests to determine the suitability of candidates. The tests may be written to determine whether the applicant has sufficient knowledge in his or her area of expertise to perform well on the job. There may be oral tests to determine whether the applicant's personality matches the needs of the job. Manual or technical skill can be tested through a variety of physical tests. The test results contribute to the decision to hire. In some cases, the test result is the only criterion to hire. Consequently, it is vital to ensure that the test is a reliable predicator of job performance. If the tests are poor predictors, they should be discontinued. Statistical analyses allow personnel managers to examine the link between the test results and job performance.

Although a large number of tasks in the computer industry are robotic, a number of operations require human workers. Some jobs require a great deal of dexterity to properly position components into place. A large North American computer maker routinely tests applicants for this job by giving a dexterity test involves a number of intricate finger and hand movements. The tests are scored on a 100-point scale. Only those who have scored above 70 are hired. To determine whether the tests are valid predicators of job performance, the personnel manager drew a random sample of 45 workers who were hired 2 months ago. He recorded their test scores and the percentage of nondefective computers they produce in the last week.

   a. Calculate the covariance, coefficient of correlation and coefficient of determination and briefly interpret the results?
   b. Determine the regression model?
   c. What do the statistics calculated above tell you about the relationship between test and non-defective?

Question 5 –

An investor has $600,000 to invest in the stock market. She is interested in developing a stock portfolio made up of HDFC, Axis and SBI. However, she does not know how much to invest in each one. She wants to maximize her return, but she would also like to minimize the risk. She has computed monthly returns for all four stocks during a 15-months period (Jan. 1990 to Dec. 2005). After some consideration, she narrowed her choices down to the following three. What should she do? (Refer excel data)
   a. Equal amount in each stock.
   b. HDFC: $200,000, Axis: $200,000 and SBI: 200,000.

--------------------------End of Paper--------------------------