Question Paper

MANIPAL UNIVERSITY

SCHOOL OF INFORMATION SCIENCES (SOIS)
FIRST SEMESTER MASTER OF ENGINEERING- ME(Big Data and Data Analytics)
DEGREE EXAMINATION- APRIL 2017
Monday, 24,2017
Time :10:00AM- 1:00PM

Probability and Statistical Inferences [BDA 605]

Marks: 100 **Duration: 180 mins.**

Answer all the questions.

1) A. Define the following for two events A and B (10)
   I. Mutually exclusive events
   II. Dependent events
   III. Equally likely events
   IV. Complementary events

   B. A coin is tossed twice. What is the probability that at least one head appears?

   8+2 =10 marks

2) A. Define a variable and its types with an example each. (10)
   B. Write a short note on Poisson distribution. **5+5 = 10 marks**

3) Define (10)
   A. Sampling distribution
   B. Standard error
   C. Estimation
   D. Sample
   E. Population **5x2 =10 marks**

4) A. List four properties of normal distribution curve. (10)
   B. Given that the height of males is approximately normally distributed with a mean of 72 inches and SD of 3 inches. What percent of males are taller than or equal to 75 inches? **5+5=10 marks**

5) A. What is the mean and variance of binomial distribution with parameters n = 3 and p = 0.8? (13)

   B. A study of diet and cancer, was performed to assess the relationship between dietary intake of vitamin C, plasma levels of vitamin C (in blood), and other predictors. One hypothesis is that smokers might have different vitamin C intake than non-smokers. Dietary intake of vitamin C was obtained using 7 - day diet records in which a subject recorded what he or she ate in real time and a computer program was used to estimate nutrient intake based on the diet record data. The data given below were obtained for current smokers and non-smokers. Name the appropriate test to compare the mean diet record vitamin C intake between the two groups? Perform the test at 5% level of significance. [critical value = 1.96]

Groups	**mean**	**SD (mg/day)**	**N**
Non smokers	**92.5**	**14.2**	**306**
Smokers	**57**	**13.7**	**243**

6+7 =13 marks

6) Write short notes on: (28)

   A. Chi-square test
   B. Mann Whitney U test
   C. ANOVA
   D. Binomial Distribution **7X4=28 marks**

7) Distinguish between the following: (9)

   A. Parametric and non parametric tests of significance
   B. Type I error and type II error
   C. Parameter and Statistic

   3x3=9 marks

8) Briefly explain expectation of a random variable and its properties (10)