Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

HSSM 3304

Fifth Semester Back Examination – 2014

BIOSTATISTICS

BRANCH : BIOTECH

QUESTION CODE : L 212

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2 ×10

   (a) Define mean, median, mode.

   (b) Define probability.

   (c) Define range, quartile and quartile deviation.

   (d) Define mutually exclusive and exhaustive events.

   (e) What is sampling ?

   (f) Describe Null hypothesis, alternate hypothesis.

   (g) Describe properties of coefficient of correlation.

   (h) Define theoretical distribution.

   (i) Define regression analysis.

   (j) Describe the properties of normal curve.

2. (a) Find the mean deviation from mean, median and mode from the following data : 5

Marks	10	18	16	14	12	10	8	6
No of students	2	4	9	18	27	25	14	1

   (b) Find the mean, median and mode from the following data. 5

Ranges	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No of patients	20	44	60	101	109	84	66	10

P.T.O.

3. (a) Find the coefficient of correlation. 5

X	65	66	67	68	69	70	71
Y	67	68	66	69	72	72	69

(b) Find the lines of regression X on Y and Y on X for the following data : 5

X	3	5	6	6	9
Y	2	3	4	6	5

4. (a) Two students X and Y work independently on a problem. The probability that X will solve it is 3/4 and the probability that Y will solve is 2/3. What is the probability that the problem will be solved ? 5

(b) The probability of X, Y and Z becoming managers are 4/9, 2/9 and 1/9 respectively. The probability that bonus will be introduced if X, Y and Z becoming managers are 3/10, 1/2 and 4/5 respectively.
What is the probability that bonus scheme will be introduced ?
If the bonus scheme has been introduced. What is the probability that the manager appointed is X ? 5

5. (a) It is given that 3% of the electric bulbs manufactured by a company are defective. Using poison distribution, find the probability that the sample of 100 bulbs will contain no defective bulb. $e^{-3} = 0.05$ 5

(b) A manufacturing process turns out articles that on the average are 10% defective. compare the probability of 0,1,2 and 3 defective which that might occur in a sample of 3 articles. 5

6. (a) The scores made by candidates in a certain case are normally distributed with mean 500 and standard deviation 100. What percentage of candidate receive the score between 400 and 600 ? 5

(b) A certain type wooden beam has a mean breaking strength of 1500 kg and a standard deviation of 100 kg. Find the relative frequency of the item whose breaking strength lies between 1450 and 1600 kg. 5

7. (a) A random sample of 100 students gave a mean weight of 58 kg with standard deviation 4kg. test the hypothesis that the mean weight in the population is 60 kg. 5

(b) On a certain day, 74 trains were arriving on time at Delhi station during the rush hour and 83 were late. At New Delhi there were 65 on time and 107 late. Is there any difference in proportions arriving on time at two stations ? 5

8. (a) A machine is designed to produce insulating washers for electrical devices on average thickness of 0.025 cm. a random sample of 10 washers was found to have an average thickness on 0.024 cm with standard deviation of 0.002 cm. test the significance of the deviation of mean. $t_{0.05}$ 9 dof = 2.262 5

(b) Describe point estimation, interval estimation criteria for good estimation. 5