Total number of printed pages – 3

Fifth Semester Regular Examination – 2014

BIOSTATISTICS

BRANCH : BIOTECH

QUESTION CODE : H 126

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)   Differentiate measure of central tendency and measure of dispersion.

(b)   Define Mean, Median and Mode

(c)   What is axiomatic probability ?

(d)   Define conditional probability.

(e)   What is correlation ? Types of correlation.

(f)   What is Binomial Distribution ?

(g)   Define Hypothesis testing.

(h)   Differentiate parameter and statistic.

(i)   Describe properties of normal curve.

(j)   Define Sampling.

2.   (a)   Calculate the s. d. for following frequency distribution of wage earners is a factory.   5

Wages/hr	9	12	15	18	21	24	27	30
No. of wage earner	20	60	150	250	200	120	50	40

(b) Calculate the mean, median, mode for the following data. 5

Range	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

3. (a) Find the coefficient of correlation between height of fathers and sons from the following data : 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) The probability that a student passes a physics test is 2/3 and the probability that he passes both Physics and English is 14/15. The probability that he passes at least one test is 4/5. What is the probability that the student passes the English test? 5

(b) A factory has two machines A and B. Past records show that machine A produces 30% of the total output and machine B the remaining 70 %. Machine A produces 5% defective articles and machine B produces 1% defective item. An item is drawn at random and found to be defective. What is the probability that it was produced by machine A ? 5

5. (a) Suppose a book of 285 pages contains 43 typographical errors. If these errors are randomly distributed throughout the book, what is the probability that 10 pages, selected at random , will be free from errors ? (Use $e^{-0.735}$ 0.4795) 5

(b) Six dice are thrown 729 times. How many times do you expect at least three dice to show a five or a six ? 5

6. (a) If a large no. of group of children 5% are under 60 cm in height and 40% are between 60 cm and 65 cm. Assuming a normal distribution find the mean height and s.d.. 5

(b) Assume the mean height of children to be 68.22 with a variance of 10.8 cm. How many children in a school of 1000 would you expect to be over 72 cm tall ? 5

7. (a) The mean I.Q. of a sample of 1600 children was 99. It is likely that this was a random sample from a population with mean I.Q. 100 and standard deviation 15?   5

(b) A machine produced 20 defective articles in a batch of 400. After overhauling, it produced 10 defectives in batch of 300. Has the machine improved?   5

8. (a) A machine is designed to produce insulating washers for electrical devices of average thickness of 0.025 cm. A random sample of 10 washers was found to have an average thickness of 0.024 cm with a standard deviation of 0.002 cm. test the significance of the deviation of means.   5

$(t_{0.05}$ 9d o.f. $= 2.262)$

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