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

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B.TECH
PBT3I103

3rd Semester Regular Examination 2016-17
BIOSTATISTICS
BRANCH: BIOTECHN
Time: 3 Hours
Max Marks: 100
Q.CODE: Y633

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

Q1 **Answer the following questions: *multiple type*** **(2 x 10)**

a) Median, mode, deciles and percentiles are all considered as measures of

a) mathematical averages b) sample averages

c) population averages d) averages of position

b) What is the probability of getting a sum 9 from two throws of dice?

(a) 1/3 (b) 1/9 (c) 1/12 (d) 2/9

c) If the arithmetic mean of 20 values is 10, then sum of these 20 values is:

(a) 10 (b) 20 (c) 200 (d) 20 + 10

d) Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?

(a) 1/2 (b) 2/5 (c) 8/15 (d) 9/20

e) The lower and upper quartiles of a symmetrical distribution are 40 and 60 respectively. The value of median is:

(a) 40 (b) 50 (c) 60 (d) (60 – 40) / 2

f) In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?

(a) 1/10 (b) 2/5 (c) 2/7 (d) 5/7

g) In probability theories, events which can never occur together are classified as

(a) collectively exclusive events (b) mutually exhaustive events

(c) mutually exclusive events (d) collectively exhaustive events

h) If the values of mean, median and mode coincide in a unimodel distribution, then the distribution will be:

(a) Skewed to the left (b) Skewed to the right

(c) Multimodal (d) Symmetrical

i) Any measure indicating the centre of a set of data, arranged in an increasing or decreasing order of magnitude, is called a measure of:

a) Skewness b) Symmetry c) Central tendency d) Dispersion

j) The model letter of the word "STATISTICS" is:

(a) S (b) T (c) Both S and I (d) Both S and T

Q2 **Answer the following questions: *Short answer type*** **(2 x 10)**

a) Define hypothesis testing.

b) Write three types of probability distribution.

c) Explain properties of normal curve.

d) What is quartile deviation?

e) What is co-efficient of variation?

f) What is tabulation?

g) Define mutually exclusive events.

h) What is a dependent event?

i) What is continuous random variable?

j) Define skewness.

Part – B (Answer any four questions)

Q3 **a)** Differentiate between correlation and regression. In a partially destroyed lab record, only the lines of regression of y an x and x on y are available as 4x-5y+33=0 and 20x-9y=107 respectively. Calculate $\bar{x}$, $\bar{y}$ and coefficient of correlation between x and y. **(10)**

b) What are the four measures of dispersion? Which is the most widely used measure of dispersion and why? **(5)**

Q4 **a)** To evaluate the effectiveness of antibiotics in killing bacteria, a research institute compiled the following information **(10)**

Antibiotics in (mg) (X)	12	15	14	16	17	10
Bacteria (lakhs) (Y)	5	7	5.6	7.2	8.6	6.2

Calculate the correlation coefficient.

b) Describe about the concept of variables in biological system. **(5)**

Q5 **a)** Calculate the Karl Pearson's coefficient for following data using 20 as working mean for price and 70 as working mean for demand. **(10)**

Price	14	16	17	18	19	20	21	22	23
Demand	84	78	70	73	66	67	62	58	60

b) Define simple random sample. Explain simple random sampling without replacement with suitable example. **(5)**

Q6 **a)** Define Mean, Median and Mode and give their relationship. Give suitable examples. **(10)**
The following figures represent the height of a group of student in inches.
64,66,65,64,63,65,60,64,63,61,63,62,61
Find out the mean median and mode.

b) Explain the addition and multiplication theorems of probability with appropriate examples. **(5)**

Q7 **a)** What do you understand by probability? Describe briefly with an example. **(10)**
A factory has two machines A and B. Past records show that machine A produces 40% of the total output and machine B the remaining 60%. Machine A produces 3% defective articles and Machine B produces 2% defective item. A item is drawn at random and found to be defective. What is the probability that it was produced by Machine A?

b) Explain the method of preparing histogram and frequency polygon. **(5)**

Q8 **a)** Define standard deviation and give it's formulae. Calculate the standard deviation for the following frequency distribution of of workers in a factory. **(10)**

Wages	15	20	24	28	30	32	34	38
No. of workers	25	47	53	90	75	95	30	25

b) In a shipment of 20 computers 3 are defective. Three computers are randomly selected and tested. What is the probability that all three are defective, if the first and second are not replaced after being tested? **(5)**

Q9 **a)** What is classification? Explain different basis of classification with suitable examples. **(10)**

b) Explain random block design and split plot design. **(5)**

----------ALL THE BEST----------