GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

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

Total Number of Pages :2 **B.TECH**

4th Semester Regular Examination-April-May 2019

BBTPC4020 BIOSTATISTICS

(Regulations 2017) Common to Biotech Branches

Time : 3 Hours Maximum : 100 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) 10 x 2=20 Mark

Q.1. Answer *All* Questions.

a. If the Σdx^2 in a sample data is 288 and the sample size is 9; the standard deviation will be CO1 PO1
a) 5.6, b) 6.0 c) 5.2 d) 6.2

b. Coefficient of skewness is measured by which of the following formula CO1 PO1
a) $\frac{Mean-Mode}{\sigma}$ b) $\frac{Mean-Median}{\sigma}$ c) $\frac{Median-Mode}{\sigma}$ d) All of the above

c. SEM is calculated as CO1 PO1
a) σ b) σ^2 c) $\frac{\sigma}{\sqrt{N}}$ d) $\frac{\sigma 2}{\sqrt{N}}$

d. Rejection of null hypothesis when it is true is known as CO4 PO1
a) Type I error b) Type II error c) β error d) δ error

e. When the value of β_2 (symbol of kurtosis) is less than 3; the frequency distribution curve is CO1 PO1
a) Mesocurtic b) Leptocurtic c) Platicurtic d) None of the above

f. Which one of the following decision is called β error CO2 PO1
a) Reject H_0 when it is true b) Accept H_0 when it is false c) Accept H_0 when it is true
d) Reject H_0 when it is false

g. The length of 4 larvae of an insect was 2, 3, 4 and 5. What is the value of arithmetic mean? CO3 PO1
a)3.4 b) 3.6 c) 3.5 d) 3.3

h. The value of a variable for which the frequency is maximum in a frequency distribution is known as CO1 PO1
a) Arithmetic mean b) Geometric mean c) Median d) Mode

i. The pH of eight types of solutions is 8, 7, 4, 5, 9, 6, 5, and 6. The range of the data is CO1 PO1
a) 4 b) 6 c) 5 d) 7

j. 't' test was applied first time in 1908 by CO4 PO1
a) R. A. Fisher b) W.S. Gusset c) Jinks d) Karl Pearson

PART – B: (Short Answer Questions) 10x2=20 Marks

Q.2. Answer *ALL* questions

a. Write a note on SEM. CO1 PO2

b. Give various definitions of probability. CO2 PO1

c. Define simple random sample. CO2 PO1

d. Compare perfect positive and perfect negative correlation CO3 PO1

e. What do you mean by Duncan's multiple range tests and why the test is needed? CO4 PO2

f. Differentiate between paired and unpaired 't' test. CO4 PO2

g. Define median with one example. CO1 PO2

h. Define 2 × 2 contingency test. CO4 PO1

i. Elaborate multiplication law of probability. CO3 PO2

j. Compare Type I and Type II error in test of significance. CO4 PO2

PART – C: (Long Answer Questions) 15x4=60 Marks

Answer *ALL* questions

Q.3

a What do you mean by frequency distribution? Briefly descibe different ways of presenting data. Construct a frequency polygon from the following data. CO1 PO2

In a batch of 400 students, the height of students is given in the following table. Represent it through a frequency polygon. 15

Height in cm	**Number of students (Frequency)**
140-150	**74**
150-160	**163**
160-170	**135**
170-180	**28**
Total	**400**

OR

b Explain the terms 'Skewness' and 'Kurtosis' used in connection with the frequency distribution of a continuous variable. State the measures of Skewness and Kurtosis. Calculate the Coefficient of skewness following the Pearson's first measure of skewness. CO1 PO2 15

Marks	55-58	58-61	61-64	64-67	67-70
Frequency	12	17	23	18	11

Q.4

a Explain the difference between additive rule and multiplicative rule of probability. An experimenter obtained 52 plants of 1 to 52 cm and one plant was selected at random. What is the probability that it is either 12 cm or 40 cm of height (here 4 plants are kept of equal size of each denominator)? CO2 PO2 15

OR

b Discuss the Poisson distribution and its application. Solve the following problem appling appropriate formula. CO2 PO2

In one trial experiment on the application of a pesticide, *Nuvan* with certain concentration on the germination of *phaseolus* seeds, it was found that only 3% of the seed germinated. Find the probability that in a sample of 400 seeds exactly 9 should germinate. 15

Q.5

a Compute the correlation coefficient from the following data. Determine the regression line X on Y, and then make an estimate of the value X when Y = 6. CO3 PO2 15

X	1	3	4	6	8	9	11	14
Y	1	2	4	4	5	7	8	9

OR

b What is the difference between sample and population? Explain different methods of sampling procedure. Give a suitable example of simple random sampling without replacement. CO3 PO2 15

Q.6

a Differentiate between parametric and non-parametric test. Mention different types of Chi-Square tests applied in biological studies. The following table gives the classification of 200 fish according to the sex and helminth infection. With appropriate Chi-Square test give your conclusion. CO4 PO2 15

Sex	Infected	Uninfected
Males	65	45
Females	35	55

OR

b The following figures relate to the body weight (g) of each fish randomly collected from four different ponds of a town. Critically comment on the result. CO4 PO2 15

Ponds			
A	B	C	D
8	12	18	13
10	11	12	9
12	9	16	12

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