GIET UNIVERSITY, GUNUPUR – 765022
B. Tech (Fourth Semester Regular) Examinations, May – 2024
22BBTPC24002 – Biostatistics
(Biotechnology)

Time: 3 hrs   Maximum: 70 Marks

(The figures in the right hand margin indicate marks)

PART – A		**(2 x 5 = 10 Marks)**

Q.1. Answer **ALL** questions

		CO #	Blooms Level
a.	What is pie chart?	CO1	K1
b.	What is independent event? Give one example.	CO2	K1
c.	Differentiate between population and sample.	CO3	K2
d.	What is Duncan's multiple range test?	CO4	K1
e.	Differentiate between t test and z test.	CO4	K2

PART – B		**(15 x 4 = 60 Marks)**

Answer **ALL** questions

		Marks	CO #	Blooms Level
2. a.	What is the dispersion of data? What are the different types and uses of measure of dispersion?	7	CO1	K2
b.	The blood glucose level of a patient after one hour of intervals is given below. Find the standard deviation of the sample data. 80, 85, 86, 90, 100, 120, 110, 98, 92, 87.	8	CO1	K3
	(OR)			
c.	What is kurtosis? What is the significance of finding the kurtosis of the data? Write the formula to evaluate kurtosis and mention how to interpret the value.	7	CO1	K2
d.	The marks secured by 25 students in a test out of 50 marks are given below. Find the kurtosis of the data. 21, 38, 30, 22, 15, 42, 33, 28, 35, 37, 18, 36, 38, 48, 32, 46, 12, 36, 44, 40, 25, 32, 39, 31, 31.	8	CO1	K3
3.a.	What is the probability density functions? Write the properties of probability density functions.	7	CO2	K2
b.	Find the expected value of X if the probability density function is defined as: $f(x) = \begin{cases} x(x-1) & 0 \le x < 3 \\ x & x \ge 3 \end{cases}$ Find $P(1<X<2)$.	8	CO2	K3
	(OR)			
c.	What is normal probability distribution? What are its properties? Mention the empirical rule of standard deviation. What is the formula for the normal probability distribution function if the mean and standard deviation are given?	8	CO2	K2
d.	What will be the probability density function of normal distribution for the data; $x = 3$, $\mu = 4$, and $\sigma = 2$?	7	CO2	K3
4.a.	What is population and sample in statistics? What is random sampling and why is it important in statistics?	7	CO3	K2
b.	Describe the process and application of split plot design (SPD) in experiment.	8	CO3	K2
	(OR)			

c.	What is correlation in statistics? What are different types of correlation? Write the formulae to estimate Pearson correlation coefficient of population and sample. Make the correlation coefficient scale to interpret the value.	8	CO3	K2
d.	Systolic blood pressure in mmHg of 7 persons with their respective weight in kg is given. Find out the correlation between weight and blood pressure. 65kg-100mmHg, 60kg-105mmHg, 76kg-109mmHg, 80kg-125mmHg, 95kg-126mmHg, 98kg-129mmHg, 110kg-132mmHg.	7	CO3	K3
5.a.	What do you mean by the hypothesis and test of the hypothesis? What are the steps for the test of significance for a hypothesis?	7	CO4	K2
b.	The average life span of fruit flies is 45 days. You make culture in the laboratory and get the life span of 11 flies. Make a hypothesis test to check whether there is any change in life span in the laboratory or not. 41, 45, 49, 46, 43, 42, 38, 35, 39, 40, 42. [t (α=0.025, df=10) =2.228]	8	CO4	K3

(OR)

c.	What is F test? What are its properties and applications?	7	CO4	K2
d.	A research team wants to study the effects of a new drug on insomnia. 8 tests were conducted with a variance of 600 initially. After 7 months 6 tests were conducted with a variance of 400. At a significance level of 0.05, was there any improvement in the result after 7 months? [F(α=0.05, df=7,5) = 4.88]	8	CO4	K3

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