U7789

Reg. No.: .....

Name:.....

U7789

University of Kerala

First Semester Degree Examination, November 2024
Four Year Under Graduate Programme
Discipline Specific Core Course
Statistics
UK1DSCSTA109 Descriptive Statistics And Probability
Academic Level: 100-199

Time:1½ Hours **Max.Marks:42**

Part A.
Answer All Questions Objective Type. 1 Mark Each.
6 Marks. Time: 6 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	The extent of variability in relation to the mean of the population is measured using…….	Remember	CO 3
2.	State whether TRUE or FALSE Axiomatic definition of probability is applicable to equally likely events only	Understand	CO 6
3.	Categorizing students based on gender is an example of ----------classification	Understand	CO 1
4.	Two events are said to be equally likely if their probabilities of occurrences are ……	Understand	CO 5
5.	If the events A and B are independent, $P(A \cap B) =$ ……	Remember	CO 7
6.	If X is a random variable and a and b are two constants, then E(aX+b) =	Understand	CO 10

Part B.
Answer All Questions , Short Answer. 2 Marks Each.
8 Marks. Time: 24 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
7.	Distinguish between ratio scale and interval scale?	Understand	CO 2
8.	If S={1,2,3,4}, find i) two events A and B which are Mutually Exclusive ii) Two events C and D that are exhaustive	Apply	CO 4
9.	Calculate the probability that letter so chosen is a vowel.	Apply	CO 5
10.	Given	Apply	CO 7

	$P(A)=\frac{1}{4}, P(B)=\frac{1}{3}$ and $P(A\cup B)=\frac{1}{2}$. Find $P(A/B^{-})$		

Part C.

Answer all 4 Questions, choosing among options within each question.

Long Answer. 7 marks each. 28 Marks. Time: 60 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
11.	A. From the following data calculate moment measure of skewness and comment on the same Class: 0-10 | 10-20 | 20-30 | 30-40 Frequency: 1 | 3 | 4 | 2	Analyse	CO 3
	B. The sales of two salesman A and B of a company over a sample of days were as follows (in thousands of rupees.) A: 5.5 2.5 6.0 3.5 4.5 5.0 5.0 4.0 B: 4.5 2.0 3.5 2.5 4.0 5.0 2.5 4.0 . Which sales man is more consistent?	Analyse	CO 3
12.	A. i) A four digit number is formed of the integer 0,1,2 and 3. Find the probability that number is divible by 5. ii) Given P(A)=P(B)=P(C)=0.4,P(A∩B=P)=P(B∩C=0.2 and P(A∩B∩C=0.1.Find the probabilities of a)At least one of the events, b)None of the events happen	Evaluate	CO 5
	B. i) Define statistical regularity iii) Three newspapers A,B and C are published in a certain city.It is estimated from a survey that of the adult population:20% read A,16% read B,14% read C,8% read both A and B,5% read both A nd C,4% read both B and C,2% read all three. Find what percentage read at least one of the papers?	Evaluate	CO 5
13.	A. The prior probabilities for events E_1 and E_2 are $P(E_1)=0.40, P(E_2)=0.60$. Suppose $P(E/E_1)=0.20$ and $P(E/E_2)=0.05$.Compute P(E1/E) using Baves theorem	**Evaluate**	CO 8
	B. i. Define the p.d.f. of a continuous random variable? What are its properties? ii. Obtain the probability function of total number of heads occurring in three tosses of an unbiased coin	Evaluate	CO 8
14.	A. A random variable X has the pdf $f(x)=\begin{cases}2x, 0<x<1\\0, Otherwise\end{cases}$ (i)P(X<1/2), (ii) P(1/4<X<1/2).	Apply	CO 9,10
	B. Consider the following probability density function $f(x)=\frac{k}{e^x}$.i. Find the value of k? ii. Find P(5<X<10) iii. Find P(X<2)	Apply	CO 9,10