U8397

Reg. No.: .....

Name:.....

University of Kerala

First Semester Degree Examination, November 2024

Four Year Under Graduate Programme

Discipline Specific Core Course

Statistics

UK1DSCSTA102 QUANTITATIVE DATA ANALYTICS-I

Academic Level: 100-199

Time:2 Hours **Max.Marks:56**

Part A.

Answer All Questions Objective Type. 1 Mark Each.

(Cognitive Level: Remember/Understand)

6 Marks. Time: 5 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	Name the Statistics Wing of Ministry of Statistics and Programme Implementation.	Remember	CO 1
2.	Data obtained by conducting a survey is called _____ data.	Remember	CO 2
3.	Give two examples of probability sampling.	Understand	CO 3
4.	Families classified according to their size is an example for _____ classification.	Understand	CO 4
5.	If the coefficient of kurtosis is greater than 3, the frequency curve is known as _____ curve.	Understand	CO 5
6.	What percentage of observations lie below first decile ?	Understand	CO 5

Part B.

Answer All Questions Two-Three sentences. 2 Marks Each.

(Cognitive Level: Understand/Apply)

10 Marks. Time: 20 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
7.	State any two limitations of Statistics.	Understand	CO 1
8.	Explain the difference between nominal and ordinal scale of measurement.	Understand	CO 2
9.	You want to evaluate the physical and mental health habits of students across a large campus. Given the large number of students, apply your knowledge of Direct Personal Interview and use of Questionnaire to decide which method would be more appropriate. Justify your choice by stating one of its merits.	Apply	CO 3

10.	Explain the difference between geographical classification and chronological classification.	Apply	CO 4
11.	The following data shows the annual bonuses (in Rs.) received by 15 employees: 20000, 30000, 15000, 25000, 35000, 50000, 45000, 60000, 70000, 80000, 10000, 12000, 40000, 90000, 110000. What bonus level separates the highest 25% of employees from the rest?	Apply	CO 5

Part C.
Answer all 4 questions, choosing among options within each question.
Short Answer. 4 Marks Each. (Cognitive Level: Apply/Analyse)
16 Marks. Time: 35 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
12.	**A)** Classify the following variables into nominal, ordinal, interval or ratio scales: 1. Levels of education 2. Distance traveled (in kilometers) 3. Birthdays of individuals (dates) 4. Ratings of a movie on a scale from 1 to 5 OR **B)** You are researching consumer preferences for online shopping versus in-store shopping. What are the relevant 5 questions you would include in a questionnaire to collect primary data on this topic?	Apply	CO 2
13.	A) Explain the importance of classifying data before visualization. OR B)A survey records the number of books read by students in a semester: No: of books read: 2-4 4-6 6-8 8-10 No: of students : 6 8 10 12 Apply your understanding to create a more than cumulative frequency table and determine how many students read more than 6 books.	Apply	CO 3
14.	A) A company has two teams that are selling products. Team A has 10 members who each sold an average of 50 units, Team B has 15 members who each sold an average of 40 units. What is the combined arithmetic mean of the units sold by all members across both teams? OR B) Analyze the average speed of a vehicle that travels different segments of a journey at speeds of 100 km/h, 200 km/h, 300 km/h and 400 km/h for equal distances.	Analyse	CO 5
15.	A)Break down the process of constructing a Lorenz curve from a raw data (about income) OR B)For a certain distribution, the Karl Pearson's coefficient of skewness is 0.32, standard deviation is 6.5 and mean is 29.6. Obtain the median and mode of the distribution.	Analyse	CO 5

Part D.
Answer all 4 questions, choosing among options within each
Long Answer. 6 Marks Each.question.
(Cognitive Level: Analyse/Evaluate/Create)
24 Marks. Time: 60 Minutes

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td>16.</td><td>A) Briefly explain the method of cluster sampling with an example.
OR
B)Explain the key points to be remembered while drafting a Questionnaire for collecting primary data..</td><td>Apply</td><td>CO 3</td></tr>
<tr><td>17.</td><td>A) Explain the steps in constructing a frequency curve from a given frequency distribution table.
OR
B)You are provided with the marks obtained by 40 students in an exam, distributed across different intervals. The frequency distribution is as follows: Apply your knowledge of ogives to construct the “less than ogive” and hence locate the median
<table>
<tr><td>Mark</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td></tr>
<tr><td>Freq.</td><td>3</td><td>7</td><td>10</td><td>6</td><td>4</td></tr>
</table></td><td>Apply</td><td>CO 4</td></tr>
<tr><td>18.</td><td>A)Break down the process of constructing a Lorenz curve from a raw data (about income)
OR
B)Over the last three years, the annual growth rates for three different sectors of an economy are recorded as follows:
Annual growth rate : 3% 5% 7%
No: of sectors : 5 7 10
Analyse the average growth rate across all the three sectors.</td><td>Analyse</td><td>CO 5</td></tr>
<tr><td>19.</td><td>A) Two students Rohith and Sharma have received the following marks in three subjects English, Science and Mathematics.
<table>
<tr><td></td><td>English</td><td>Science</td><td>Maths</td></tr>
<tr><td>Rohith:</td><td>75</td><td>90</td><td>85</td></tr>
<tr><td>Sharma :</td><td>80</td><td>95</td><td>78</td></tr>
</table>If the respective credits received for English, Science and Mathematics are 2, 3 and 4 respectively, compare their overall performance.
OR
B)Compare positive skewness and negative skewness.</td><td>Analyse</td><td>CO 5</td></tr>
</table>

U8398

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University of Kerala
First Semester Degree Examination, November 2024
Four Year Under Graduate Programme
Discipline Specific Core Course
Statistics
UK1DSCSTA102 QUANTITATIVE DATA ANALYTICS-I
Academic Level: 100-199

Time:2 Hours **Max.Marks:56**

Part A.
Answer All Questions Objective Type. 1 Mark Each.
(Cognitive Level: Remember/Understand)
6 Marks. Time: 5 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	Name the nodal agency for Official Statistics in Kerala..	Remember	CO 1
2.	_____ survey is also known as complete enumeration survey	Remember	CO 2
3.	Give two examples of non-probability sampling	Understand	CO 3
4.	Give an example for one-dimensional diagram	Understand	CO 4
5.	What percentage of observations lie above first quartile ?	Understand	CO 5
6.	Which is the suitable measure of central tendency to determine the ideal shoe size?	Understand	CO 5

Part B.
Answer All Questions Two-Three sentences. 2 Marks Each.
(Cognitive Level: Understand/Apply)
10 Marks. Time: 20 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
7.	State any two functions of NSO.	Understand	CO 1
8.	Explain the difference between nominal and ordinal scale of measurement.	Understand	CO 2
9.	Explain an instance where purposive sampling can be employed	Apply	CO 3

10.	Imagine you have a collection of vegetables including cucumber, garlic, carrots, spinach, beans, cabbage, pumpkin and cauliflower. Classify these vegetables into different groups by mentioning the type of classification	Apply	CO 4
11.	The following data shows the number of hours 10 employees worked last week. What number of hours worked separates the lowest 10% of employees from the rest? 38, 42, 36, 40, 45, 48, 39, 41, 37, 43	Apply	CO 5

Part C.

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

Short Answer. 4 Marks Each. (Cognitive Level: Apply/Analyse)

16 Marks. Time: 35 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
12.	**A)** Categorize the following variables as nominal, ordinal, interval or ratio scales: Frequency of exercise per week (measured in days) Social media platforms used Favorite sport Blood pressure (measured in mmHg) OR B)Prepare a list of two sources of primary data and two sources of secondary data.	Apply	CO 2
13.	A) Explain a scenario where you would use purposive sampling. OR B)Explain the difference between simple random sampling with replacement (SRSWR) and simple random sampling without replacement (SRSWOR)	Apply	CO 4
14.	A) Point out the advantages and limitations of arithmetic mean. OR B) If Karl Pearson's coefficient of skewness of a distribution is 0.32, its standard deviation is 6.5 and mean is 29.6, calculate the mode of the distribution.	Analyse	CO 5
15.	**A)** A man travels from one place to another at an average speed of 20 km per hour and returns at an average speed of 30 km per hour. Select a suitable average to find the average speed for the entire journey. OR B)Given the ages of participants in a study, calculate the percentile rank of an age of 30 years. Ages: 22, 25, 30, 27, 35, 40, 32, 28, 31, 29	Analyse	CO 5

Part D.
Answer all 4 questions, choosing among options within each question.
Long Answer. 6 Marks Each.
(Cognitive Level: Analyse/Evaluate/Create) 24 Marks. Time: 60 Minutes

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td>16.</td><td>A) Briefly explain the method of stratified random sampling with an example.
OR
B)Explain the key points to be remembered while drafting a Questionnaire for collecting primary data.</td><td>Apply</td><td>CO 3</td></tr>
<tr><td>17.</td><td>A) A family tracks their monthly expenditures over three months in three categories: Food, Rent and Utilities (in dollars).

Month Food Rent Utilities
January 400 1200 150
February 350 1200 130
March 450 1200 160

Create a percentage bar diagram to represent the monthly expenditures by category.

OR

B)Explain the steps in constructing a histogram from a given frequency distribution table.</td><td>Apply</td><td>CO 4</td></tr>
<tr><td>18.</td><td>A) In a health check-up camp, the blood pressure levels (in mm Hg) of participants are distributed as follows. Analyse the distribution of blood pressure levels using mean deviation about the mean to determine how much participants deviate from the average blood pressure level.
Blood Pressure
(mm Hg) : 110-120 120-130 130-140 140-150 150-160
Frequency: 3 5 7 4 1
OR
B)Analyze the following frequency distribution and calculate Karl Pearson’s coefficient of skewness. What does the value indicate about the shape of the distribution?

<table><tr><td>class</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td></tr><tr><td>Frequency</td><td>1</td><td>3</td><td>4</td><td>2</td></tr></table></td><td>Analyse</td><td>CO 5</td></tr>
</table>

<table>
<tr>
<td>19.</td>
<td>
A) The weights (in kg) of two sets of products from different factories are recorded, and the data is as follows:
<u>Factory A</u>
Weight: 10−15 15−20 20−25 25−30 30-35
Frequency: 5 12 8 10 5
<u>Factory B:</u>
Weight: 12−17 17−22 22−27 27−32
Frequency: 6 10 12 7
Calculate the Coefficient of Variation (CV) for both factories and compare the variability in the product weights.
OR
B) The table below provides income data and the corresponding number of individuals earning that income in two cities, X and Y. Construct a Lorenz curve to show inequality in income distribution.
<table>
<tr><th rowspan="2">Income (in Rs)</th><th colspan="2">No. of persons</th></tr>
<tr><th>City X</th><th>City Y</th></tr>
<tr><td>1000</td><td>600</td><td>1500</td></tr>
<tr><td>1200</td><td>800</td><td>1000</td></tr>
<tr><td>1400</td><td>1200</td><td>900</td></tr>
<tr><td>1600</td><td>900</td><td>1100</td></tr>
<tr><td>2000</td><td>1000</td><td>300</td></tr>
<tr><td>2800</td><td>500</td><td>200</td></tr>
</table>
</td>
<td>Analyse</td>
<td>CO 5</td>
</tr>
</table>

U7884

Reg. No.: ……..

Name:……...

University of Kerala

First Semester Degree Examination, November 2024

Four Year Under Graduate Programme

Discipline Specific Core Course

Statistics

UK1DSCSTA104 BEHAVIOURAL DATA ANALYTICS-I

Academic Level: 100-199

Time:2 Hours **Max.Marks:56**

Part A.

Answer All Questions Objective Type. 1 Mark Each.

(Cognitive Level: Remember/Understand)

6 Marks. Time: 5 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	Which of the following is a function of statistics? a) Summarizing data b) Decreasing data c) Altering data d) Ignoring data	Remember	CO1
2.	What type of data is referred to as first-hand data?	Remember	CO2
3.	Cumulative frequency tables are used to show the _____ frequencies of a data set.	Understand	CO3
4.	_____ classification arranges data based on attributes or characteristics.	Understand	CO3
5.	Which of the following is NOT a measure of central tendency? a) Median b) Mode c) Standard deviation d) Arithmetic mean	Understand	C04
6.	The range is the difference between the _____ and _____ values in a data set.	Understand	CO4

Part B.

Answer All Questions Two-Three sentences. 2 Marks Each. (Cognitive Level: Understand/Apply)

10 Marks. Time: 20 Minutes

Qn. No.	**Question**	**Cognitive Level**	**Course Outcome (CO)**
7.	What is quartile deviation?	Understand	CO4
8.	What are the types of classification?	Understand	CO3
9.	How statistics is misused in behavioral science ?	Apply	CO1
10.	What are the difference between census and sampling?	Apply	CO2
11.	Calculate range for the following data 211,325,405,478,501,641,752	Apply	CO4

Part C.

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

Short Answer. 4 Marks Each. (Cognitive Level: Apply/Analyse)

16 Marks. Time: 35 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
12.	A. What do you mean by the term Statistics? Explain its needs and importance in the fields of Psychology. OR B. Discuss the limitations of statistics	Apply	CO1
13.	A. What is meant by tabular presentation? What are its essentials? OR B. What are the important points to be born in mind when summerising data as a frequency table?	Apply	CO3
14.	A. Draw a pie diagram to represent the following data of Investments pattern in the third five year plan. Agriculture 15% Irrigation 17% Small and organised Industries 25% Transport 16% Social Service 15% others 12% OR B.How can the histogram of a frequency table with unequal class intervals constructed.	Analyse	CO3
15.	A. Obtain the mean and standard deviation of the 5 natural numbers. OR B.Find mean for the following data 2,5,7,12,14	Analyse	CO4

Part D.
Answer all 4 questions, choosing among options within each question.
Long Answer. 6 Marks Each. (Cognitive Level: Analyse/Evaluate/Create)
24 Marks. Time: 60 Minutes

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td>16.</td><td>A. Distinguish between census and sampling
OR
B. Explain any two probability sampling methods</td><td>Analyse</td><td>CO2</td></tr>
<tr><td>17.</td><td>A. Mean = 50
Median = 45
Standard Deviation = 10
Calculate Pearson's measure of skewness.

OR
B. Calculate Bowley’s measure of skewness for the following data
3,5,7,8,8,9,12,15,18,20</td><td>Evaluate</td><td>CO5</td></tr>
<tr><td>18.</td><td>A. 15,12,18,20,23,25,30,35,40
Calculate mean and median of the dataset.
OR
B. Calculate Standard deviation of the following data
5,7,18,22,27</td><td>Evaluate</td><td>CO4</td></tr>
<tr><td>19.</td><td>A. Construct a Histogram for the following data
class : 0-10 11-20 21-30 31-40 41-50 51-60
Frequency 2 4 8 5 2 1
OR
B. A city's budget is allocated as follows:
<table>
<tr><td>Category</td><td>Percentage</td></tr>
<tr><td>Eduction</td><td>40</td></tr>
<tr><td>Food</td><td>30</td></tr>
<tr><td>Rent</td><td>20</td></tr>
<tr><td>Miscellaneous</td><td>10</td></tr>
</table>
Draw Pie diagram for the data</td><td>Create</td><td>CO3</td></tr>
</table>

U7885

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University of Kerala

First Semester Degree Examination, November 2024

Four Year Under Graduate Programme

Discipline Specific Core Course

Statistics

UK1DSCSTA104 BEHAVIOURAL DATA ANALYTICS-I

Academic Level: 100-199

Time: 2Hours **Max.Marks:56**

Part A.

Answer All Questions Objective Type. 1 Mark Each.

(Cognitive Level: Remember/Understand)

6 Marks. Time: 5 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
1.	What do you call a list of questions designed to collect data from respondents?	Remember	CO2
2.	Which sampling method ensures equal representation of various subgroups within a population? a) Systematic sampling b) Simple random sampling c) Stratified sampling d) Convenient sampling	Remember	CO2
3.	A _____ frequency distribution groups data into intervals.	Understand	CO3
4.	The objective of classification is to _____ data for better understanding	Understand	CO3
5.	Which of the following is a partition value? a) Range b) Quartile c) Mean d) Mode	Understand	C04
6.	Kurtosis measures the _____ of a distribution.	Understand	CO5

Part B.
Answer All Questions Two-Three sentences. 2 Marks Each.
(Cognitive Level: Understand/Apply)
10 Marks. Time: 20 Minutes

Qn. No.	**Question**	**Cognitive Level**	**Course Outcome (CO)**
7.	List out any four random sampling methods.	Understand	CO2
8.	What are the limitations of statistics?	Understand	CO1
9.	Distinguish between deciles and percentiles.	Apply	CO4
10.	Distinguish between less than ogive and greater than ogive.	Apply	CO3
11.	Calculate range for the following data. 15.3, 16.5, 14.4, 15.5, 14.7, 16.7	Apply	CO4

Part C.
Answer all 4 questions, choosing among options within each question.
Short Answer. 4 Marks Each. (Cognitive Level: Apply/Analyse)
16 Marks. Time: 35 Minutes

Qn. No.	Question	Cognitive Level	Course Outcome (CO)
12.	12A.Explain multistage sampling method with an example. OR 12B. Describe simple random sampling.	Apply	CO2
13.	13A. Distinguish between qualitative and quantitative characteristics. Give an example of each. OR 13B. What are the important points to be born in mind when summarizing data as a frequency table?	Apply	CO3
14.	14A. Draw the ogives of the following distribution and find out the median. Class | 0-20 | 20-40 | 40-60 | 60-80 Frequency | 7 | 16 | 13 | 4 OR 14B. How can the histogram of a frequency table with unequal class intervals constructed.	Analyse	CO3
15.	15A. What are quartiles? Runs recorded by players of team are 40,32,15,1,75,21,25,5,0,9,10. Find lower quartile. OR 15B. Calculate the arithmetic mean of first 10 natural numbers	Analyse	CO4

Part D.
Answer all 4 questions, choosing among options within each question.
Long Answer. 6 Marks Each. (Cognitive Level: Analyse/Evaluate/Create)
24 Marks. Time: 60 Minutes

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td>16.</td><td>16A. Compare Census and Sampling Methods
OR
16B. Describe systematic and stratified sampling methods</td><td>Analyse</td><td>CO2</td></tr>
<tr><td>17.</td><td>17A. Find mean deviation about mean for the following data
27,31,42,35,42

OR

17B. Find standard deviation for the following data
7, 12,13,18, 16</td><td>Evaluate</td><td>CO4</td></tr>
<tr><td>18.</td><td>18A. Explain different types of kurtosis and give its measure based on partition values.
OR
18B. Compute Pearson’s measure of skewness for the following data
15,20,22,22,25,28,30</td><td>Evaluate</td><td>CO5</td></tr>
<tr><td>19.</td><td>19A. Construct a frequency polygon for the following data
class : 0-10 10-20 20-30 30-40 40-50 50-60
Frequency 2 5 8 4 2 1
OR
19B. Draw Histogram for the following data
<table>
<tr><td>Class</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td></tr>
<tr><td>Frequency</td><td>15</td><td>22</td><td>35</td><td>20</td><td>18</td></tr>
</table></td><td>Create</td><td>CO3</td></tr>
</table>

U7790

Reg. No.: .....

Name:.....

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 average of the absolute differences of observations from a constant is called	Remember	CO 2
2.	If mean >Median>Mode, then the skewness is ……..	Understand	CO 3
3.	Say TRUE or FALSE: Mutually exclusive events are always independent	Understand	CO 4
4.	If S is the sample space, P the probability measure and B, the sigma field of events, (S,P,B) is called ……	Understand	CO 6
5.	A random variable taking uncountable values is called	Understand	CO 5
6.	If X and Y are two independent variables, E (XY) is	Remember	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.	What are different sources of primary data	Understand	CO 1
8.	The mean and median of a frequency distribution are 23.2 and 25.5 respectively. Find the approximate value of its mode. Calculate Pearson's coefficient of skewness if the standard deviation is 4.5	Apply	CO 3
9.	If a person draws a card from a pack of 52 cards, what is the probability that card is either ace or a king	Apply	CO 5
10.	If X is a discrete random variable that takes values 1, 2, · · · , n with equal probabilities 1/n, find mean of X.	Apply	CO 10

Part C.

Answer all 4 Questions, choosing among options (A or B)within each question.

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

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td rowspan="2">11.</td><td>A. Calculate the quartile deviation for the following data of annual income of families in thousands of rupees.
Income : <499 500-999 1000-1999 2000-2999 >3000
No.of families: 5 25 40 20 10</td><td>Evaluate</td><td>CO 3</td></tr>
<tr><td>B. Calculate Pearson’s coefficient of skewness for the following distribution.
<table><tr><td>Variable</td><td>0-5</td><td>5-10</td><td>10-15</td><td>15-20</td><td>20-25</td><td>25-30</td><td>30-35</td></tr><tr><td>Frequency</td><td>3</td><td>5</td><td>9</td><td>15</td><td>21</td><td>10</td><td>7</td></tr></table>.</td><td>Evaluate</td><td>CO 3</td></tr>
<tr><td rowspan="2">12.</td><td>A.
i) A bag contains 3 red and 6 white and 7 blue balls. What is the probability that two balls drawn are white and blue.
ii) There is a group of 40 people of whom 20 are engineers under 30 years of age and 10 are engineers over 30.Of the remaining 10 non engineers 4 are under 30.If a person is selected at random from the group, what is the probability that the person is an engineer or a person over 30?.</td><td>Apply</td><td>CO 5</td></tr>
<tr><td>B. A letter of the english alphabet is chosen at random. calculate the probability that the letter so chosen is a) vowel b)precedes m and is a vowel c)follows m and is a vowel</td><td>Apply</td><td>CO 5</td></tr>
<tr><td rowspan="2">13.</td><td>A. A. For a random experiment, the sample space S= {1,2,3,4,5,6}, A={1,2,3}, and B={3,4,5,6}. Write down the events
(a) A^C (b) B^C (c) AUB (d) A∩B (e) (f) $\left(A^C UA\right)$</td><td>Evaluate</td><td>CO 4,5</td></tr>
<tr><td>B. From a city population , the probability of selecting (i). a male or a smoker is 7/10 , (ii). a male smoker is 2/5 and a male if a smoker is already selected is 2/3. Find the probability of selecting
(a) a non-smoker
(b). a male
(c). a smoker if a male is first selected</td><td>Evaluate</td><td>CO 4,5</td></tr>
<tr><td rowspan="2">14.</td><td>A. i) State Bayes theorem.
ii) The probabilities of X,Y and Z becoming managers are 4/9,2/9 and 1/3 respectively. The probabilities that the bonus scheme will be introduced if X,Y and Z becomes managers are 3/10,1/2 and 4/5 respectively. The Bonus scheme was introduced. What is the probability that X was the emanager?</td><td>Apply</td><td>CO 7, 8, 9</td></tr>
<tr><td>i) B. What are the properties of the pdf, f(x) of a random variable X?
ii) The probability density function of a random variable X is $f(x)=ae^{-ax}, x>0$. Find the moment generating function of X and hence the first two raw moments?</td><td>Apply</td><td>CO 7, 8, 9</td></tr>
</table>

U7995

Reg. No.: .....

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University of Kerala

First Semester Degree Examination, November 2024

Four Year Under Graduate Programme

Discipline Specific Core Course

STATISTICS

UK1DSCSTA110 STATISTICAL METHODS-I

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	Define the term "harmonic mean."	Remember	CO2
2	Range is a _____ measure of dispersion.	Remember	CO4
3	The β2 value for a mesokurtic curve is	Understand	CO4
4	The total number of partition values for percentiles is _____.	Remember	CO3
5	The sum of squares of the deviations is minimum when deviations are taken from _____.	Understand	CO4
6	Name any one source of secondary data	Understand	CO1

Part B.

Answer All Questions ,Short Answer. 2 Marks Each.

8 Marks. Time: 24 Minutes

Qn. No.	**Question**	**Cognitive Level**	**Course Outcome (CO)**
7	Define kurtosis and illustrate different measures of kurtosis.	**Apply**	CO4
8	Calculate the geometric mean for the following dataset: 10, 12, 15, 18, 20.	Apply	CO3
9	Explain different sources of secondary data.	Understand	CO2
10	Explain the difference between a census and a sample survey.	Apply	CO1

Part C.

Answer all 4 Questions, choosing among options within each question.
Long Answer. 7 marks each., 28 Marks. Time: 60 Minutes

<table>
<tr><th>Qn. No.</th><th>Question</th><th>Cognitive Level</th><th>Course Outcome (CO)</th></tr>
<tr><td>11.</td><td>A. Explain the concept about measures of dispersion.
OR
B. Find out the variance

<table><tr><th>Seed yield in gms (x)</th><th>No. of plants (f)</th></tr><tr><td>2.5-3.5</td><td>4</td></tr><tr><td>3.5-4.5</td><td>6</td></tr><tr><td>4.5-5.5</td><td>12</td></tr><tr><td>5.5-6.5</td><td>12</td></tr><tr><td>6.5-7.5</td><td>8</td></tr></table></td><td>Apply</td><td>CO4</td></tr>
<tr><td>12.</td><td>A. Describe how moments are useful in the calculation of moments
OR
B. Discuss about symmetry of the distribution.
<table><tr><td>15-25</td><td>17</td></tr><tr><td>25-35</td><td>21</td></tr><tr><td>35-45</td><td>25</td></tr><tr><td>45-55</td><td>12</td></tr><tr><td>55-65</td><td>9</td></tr><tr><td>65-75</td><td>17</td></tr></table></td><td>Apply</td><td>CO4</td></tr>
<tr><td>13.</td><td>A. Describe how diagrams are useful in representing statistical data.
OR
B. Describe the purpose of an Ogive graph in statistics.</td><td>Analyse</td><td>CO2</td></tr>
<tr><td>14.</td><td>A. Calculate the standard deviation for the dataset: 2, 4, 6, 8, 10, and interpret the results.
OR
B. Evaluate the usefulness of standard deviation compared to other measures of dispersion, providing examples.</td><td>Evaluate</td><td>CO3</td></tr>
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