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1B1N25275

(Pages : 3)

Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2025

STA1CJ101- Univariate Data Analysis and Official Statistics

(FYUGP 2024 Admission onwards)

Time: 2 hours

ax. Marks : 70

*(Use of scientific calculator is permitted)***PART – A**

All questions can be attended.
Each question carries Three mark.
Ceiling -24 Marks

		COs	Knowledge Level(KL)	Marks
1	Distinguish between qualitative and quantitative data. Provide examples	CO1	C	3
2	Distinguish between primary and secondary data. Mention two sources for each.	CO1	C	3
3	Define mean deviation. About which central value is it minimum? Justify briefly.	CO2	F	3
4	State and prove (for two positive numbers) that $AM \geq GM \geq HM$.	CO2	F	3
5	What is coefficient of variation? When is it preferable to use CV instead of SD?	CO3	C	3
6	Distinguish between Time series data and Cross-sectional data.	CO1	C	3
7	Define raw moments and central moments. State the relation between them.	CO4	C	3
8	What is an ogive? How do you locate median and quartiles from an ogive?	CO3	C	3
9	Write a short note on NSSO and MOSPI	CO5	P	3
10	What do you understand by partition values? Also define Decile.	CO5	P	3

PART – B
All questions can be attended.
Each question carries six marks.
Ceiling -36 Marks

		COs	Knowledge Level(KL)	Marks														
11	For the dataset (marks): 12, 14, 18, 19, 20, 22, 22, 23, 24, 24, 24, 26, 28, 28, 30, 30, 31, 32, 35 and 36 compute mean, median, and mode.	CO2	F	6														
12	Two sections have the following summaries: Section A (n=40, mean=72, SD=5); Section B (n=35, mean=68, SD=7). Find the combined mean and combined standard deviation for the whole class.	CO3	C	6														
13	The grouped distribution (wages in ₹) is given below. The mean is 26. Find the missing frequency x. <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>8</td><td>12</td><td>x</td><td>15</td><td>5</td></tr></table>	Class	0–10	10–20	20–30	30–40	40–50	Frequency	8	12	x	15	5	CO2	F	6		
Class	0–10	10–20	20–30	30–40	40–50													
Frequency	8	12	x	15	5													
14	Using the following distribution, compute the mode (by interpolation) and then Pearson's coefficient of skewness given that the mean = 37.0 and SD = 9.0. <table><tr><td>Class</td><td>10–20</td><td>20–30</td><td>30–40</td><td>40–50</td><td>50–60</td></tr><tr><td>Frequency</td><td>6</td><td>14</td><td>22</td><td>10</td><td>8</td></tr></table>	Class	10–20	20–30	30–40	40–50	50–60	Frequency	6	14	22	10	8	CO4	C	6		
Class	10–20	20–30	30–40	40–50	50–60													
Frequency	6	14	22	10	8													
15	For the data below, obtain Q1, Q3, the quartile deviation (QD), and the coefficient of QD. <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><td>50–60</td></tr><tr><td>Frequency</td><td>5</td><td>9</td><td>12</td><td>20</td><td>10</td><td>4</td></tr></table>	Class	0–10	10–20	20–30	30–40	40–50	50–60	Frequency	5	9	12	20	10	4	CO3	C	6
Class	0–10	10–20	20–30	30–40	40–50	50–60												
Frequency	5	9	12	20	10	4												
16	A cyclist pedals from his house to his college at a speed of 10 km.p.h. and back from the college to his house at 15km.p.h. Compute the average speed.	CO2	F	6														
17	Construct a box plot for the dataset: 12, 15, 20, 22, 25, 20, 28, 20, 30.	CO3	C	6														
18	Write down the steps to prepare a questionnaire.	CO5	P	6														

PART - C

Answer any *one* questions.
Each question carries **Ten** marks.

		COs	Knowledge Level(KL)	Marks														
19	Using the data below, compute Q1, Q3, D4, D7, P20, and P80 by interpolation. Then compute Bowley's coefficient of skewness and comment briefly on the shape.	CO3	C	10														
	<table><tr><td>Class</td><td>5-15</td><td>15-25</td><td>25-35</td><td>35-45</td><td>45-55</td><td>55-65</td></tr><tr><td>Frequency</td><td>6</td><td>14</td><td>23</td><td>20</td><td>12</td><td>5</td></tr></table>				Class	5-15	15-25	25-35	35-45	45-55	55-65	Frequency	6	14	23	20	12	5
Class	5-15				15-25	25-35	35-45	45-55	55-65									
Frequency	6	14	23	20	12	5												
20	For the distribution below, compute the mean by taking 30 as the assumed mean. Then obtain the first four central moments about the mean (μ_1 to μ_4) and state whether the distribution is positively/negatively skewed and whether it is leptokurtic/mesokurtic/platikurtic.	CO4	C	10														
	<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>4</td><td>10</td><td>21</td><td>28</td><td>17</td></tr></table>				Class	0-10	10-20	20-30	30-40	40-50	Frequency	4	10	21	28	17		
Class	0-10				10-20	20-30	30-40	40-50										
Frequency	4	10	21	28	17													

1 x 10 = 10 Marks

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2025

ACT1MN101(P)- Actuarial Mathematics I

(FYUGP 2024 Admission onwards)

Time: 2 hours

Max. Marks : 70

*(Use of scientific calculator is permitted)***PART – A**

All questions can be attended.

Each question carries **Three** mark.**Ceiling -24 Marks**

		COs	Knowledge Level(KL)	Marks
1	Define fixed-interest security.	CO1	2	3
2	What do you mean by repayment loan?	CO1	2	3
3	What is meant by a fixed interest security?	CO1	2	3
4	An investor deposits £10,000 in a bank account that pays compound interest at a rate of 5% pa. Calculate the accumulated value of the deposit after 3 years.	CO2	2	3
5	An investment of £1,000 accumulates to £2,500 after 5 years. Calculate the accumulation factor $A(0,5)$.	CO2	2	3
6	Calculate the effective annual interest rate that is equivalent to a simple interest rate of 3% pa over 4 years.	CO2	2	3
7	Calculate the annual effective interest rate that is equivalent to a nominal interest rate of 12% pa convertible four-monthly.	CO3	2	3
8	Calculate the effective annual discount rate that is equivalent to a nominal discount rate of 3% pa convertible two-monthly.	CO3	2	3
9	Define an annuity.	CO4	2	3
10	What is meant by the term "equation of value" ?	CO5	2	3

PART – B

All questions can be attended.
Each question carries six marks.

Ceiling -36 Marks

		COs	Knowledge Level(KL)	Marks
11	Given that $P = 78.92$, $D = 5$, $R = 125$ and $i = 10\%$, calculate the value of n .	CO5	2	6
12	Calculate the present value as at 1 March 2025 of a series of payments of 5,000 payable on the first day of each month from April 2025 to December 2025 inclusive, assuming a rate of interest of 8% pa convertible monthly.	CO4	2	6
13	Describe the characteristics of: (a) An interest-only loan (b) A repayment loan.	CO1	2	6
14	Explain the concept of index – linked securities and discuss the significance of real and nominal interest rates in relation to payments received by investors.	CO1	2	6
15	Given an investment of 20,000, calculate the accumulation after 5 years using: (a) simple discount of 6% pa (b) compound discount of 6% pa (c) compound interest of 6% pa.	CO2	2	6
16	Calculate the annual effective rate of discount that is equivalent to a rate of interest of 4% pa convertible monthly.	CO3	2	6
17	Calculate the accumulated value as at 1 January 2020 of payments of £100 paid every two years from 1 January 1980 to 1 January 2018 inclusive, using an interest rate of 12% pa effective.	CO5	2	6
18	Explain the following: a) simple and compound interest b) Effective rate of interest and discount. c) Principle of consistency.	CO2	2	6

PART - C

Answer any *one* questions.
Each question carries **Ten** marks.

		COs	Knowledge Level(KL)	Marks
19	(i) Calculate the effective annual rate of interest corresponding to: (a) a nominal rate of interest of 10% pa convertible half-yearly (b) a nominal rate of interest of 15% pa convertible monthly. (ii) Calculate the rate of interest convertible monthly corresponding to: (a) an effective rate of interest of 14.2% pa (b) a nominal rate of interest of 11% pa convertible three times a year.	CO3	2	10
20	Calculate the following function at $i = 10\%$ a) $a_{\overline{4} }$ b) $\ddot{a}_{\overline{5} }$ c) $a_{\overline{4} }^{(12)}$ d) $\ddot{a}_{\overline{3} }^{(2)}$ b) Calculate the following functions at $i = 26\%$ a) $a_{\overline{2} }^{(12)}$ b) $S_{\overline{10} }$ c) $a_{\overline{5} }^{(4)}$ d) $8 a_{\overline{12} }$	CO4	2	10

1 x 10 = 10 Marks

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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2025

STA1MN101(P) - Descriptive Statistics for Data Science

(FYUGP 2024 Admission onwards)

Time: 2 hours

Max. Marks : 70

*(Use of scientific calculator is permitted)***PART - A**

All questions can be attended.

Each question carries **Three** mark.**Ceiling -24 Marks**

Sl. No.	Question	COs	Knowledge Level(KL)	Marks
1	Explain the difference between qualitative and quantitative data.	CO1	F	3
2	What is the difference between a Diagram and Graph?	CO2	C	3
3	Why Graphical representation is a powerful tool than Tabular representation?	CO2	C	3
4	Which averages are possible with nominal and ordinal scales of data?	CO4	C	3
5	What is meant by outliers in a dataset	CO4	C	3
6	What is the formula for finding weighted arithmetic mean for a set of data?	CO4	C	3
7	Define Standard deviation. When it will be zero?	CO4	C	3
8	Define the concept of probability with classical definition and what is its range of values?	CO5	F	3
9	Define Sample space. What happens if we have no sample space in calculating probability? Write the sample space of tossing 3 coins.	CO5	F	3
10	State Baye's Theorem in Probability	CO5	F	3

PART – B

All questions can be attended.
Each question carries six marks.

Ceiling -36 Marks

Ceiling -36 Marks

Sl. No.	Question	COs	Knowledge Level(KL)	Marks																						
11	What are the methods of collecting primary data and secondary data?	CO1	F	6																						
12	Explain Coefficient of variation. What is its use in Statistics?	CO1	F	6																						
13	Represent the below data with a histogram	CO3	P	6																						
	<table><tr><th>Interval of number of grains</th><th>Number of plants</th></tr><tr><td>17-19</td><td>8</td></tr><tr><td>20-22</td><td>15</td></tr><tr><td>23-25</td><td>18</td></tr><tr><td>26-28</td><td>21</td></tr><tr><td>29-31</td><td>26</td></tr><tr><td>32-34</td><td>19</td></tr><tr><td>35-37</td><td>12</td></tr><tr><td>38-40</td><td>7</td></tr><tr><td>41-43</td><td>4</td></tr><tr><td>Total</td><td>130</td></tr></table>	Interval of number of grains	Number of plants	17-19	8	20-22	15	23-25	18	26-28	21	29-31	26	32-34	19	35-37	12	38-40	7	41-43	4	Total	130			
Interval of number of grains	Number of plants																									
17-19	8																									
20-22	15																									
23-25	18																									
26-28	21																									
29-31	26																									
32-34	19																									
35-37	12																									
38-40	7																									
41-43	4																									
Total	130																									
14	Represent the following data on seasonal rainfall in India using Pie diagram	CO3	P	6																						
	<table><tr><th>Season</th><th>Rainfall in mm</th></tr><tr><td>South West Monsoon</td><td>870</td></tr><tr><td>North East Monsoon</td><td>124</td></tr><tr><td>Winter Season</td><td>41</td></tr><tr><td>Summer Season</td><td>115</td></tr><tr><td>Total</td><td>1150</td></tr></table>	Season	Rainfall in mm	South West Monsoon	870	North East Monsoon	124	Winter Season	41	Summer Season	115	Total	1150													
Season	Rainfall in mm																									
South West Monsoon	870																									
North East Monsoon	124																									
Winter Season	41																									
Summer Season	115																									
Total	1150																									
15	Find out the geometric mean of number of pest attacks from the following data : 1, 7, 18, 65, 91, 103	CO4	C	6																						

16	Data recorded on the number of seeds per fruit were 6,7,9,11,12,14,17,20,25,30. Calculate the standard deviation	CO4	C	6
17	State and prove addition theorem for two events.	CO5	F	6
18	a) Find the probability that a leap year selected at random will contain 53 Mondays. b) A coin and a dice are tossed together. Write the sample space and find the probability of getting head and face 5 together.	CO5	F	6

PART - C

Answer any *one* questions.
Each question carries **Ten** marks.

Sl. No.	Question	COs	Knowledge Level(KL)	Marks														
19	A purse contains 2 silver coins and 4 copper coins. Another purse contains 4 silver coins and 3 copper coins. If a coin is selected at random from one of the purses, what is the probability that it is a silver coin?	CO5	F	10														
20	Calculate Arithmetic mean, Median and Mode for the following data: <table><tr><td>Marks</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td></tr><tr><td>Frequency</td><td>5</td><td>15</td><td>40</td><td>32</td><td>20</td><td>8</td></tr></table>	Marks	0-10	10-20	20-30	30-40	40-50	50-60	Frequency	5	15	40	32	20	8	CO4	C	10
Marks	0-10	10-20	20-30	30-40	40-50	50-60												
Frequency	5	15	40	32	20	8												

1 x 10 = 10 Marks

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2025

STA1MN105(P) - Descriptive Statistics

(FYUGP 2024 Admission onwards)

Time: 2 hours

Max. Marks : 70

*(Use of scientific Calculator is Permitted)***Course Outcome Mapping Scheme**

Q.NO	1	2	3	4	5	6	7	8	9	10
COS	CO3	CO4	CO1	CO1	CO3	CO2	CO3	CO3	CO3	CO1
Q.NO	11	12	13	14	15	16	17	18	19	20
COS	CO2	CO3	CO1	CO3	CO3	CO4	CO2	CO4	CO4	CO2

PART-A**[All questions can be attended. Each question carries 3 marks]**

- Point out the desirable properties of a good average.
- Find the quartile deviation from the following observations
12, 20, 10, 16, 24, 11, 18
- Distinguish between population and sample.
- Define cumulative frequency distribution.
- Out of eleven births in a hospital, five babies weighted over 2.5 kg and five babies weighted less than 2.5 kg. What is the median weight of the babies?
- What is pie diagram ?
- How will you calculate AM for grouped and ungrouped frequency distribution?
- What do you mean by the term "measures of central tendency"?
- What is the geometric mean of 2 and 32 ?
- Distinguish between discrete and continuous frequency tables.

(Ceiling: 24 Marks)

PART-B

[All questions can be attended. Each question carries 6 marks]

11. Write the importance of diagrams and graphs for data analysis.
12. Draw less than ogive and greater than ogive for the following data and hence find the value of median

Income	500-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500
No of workers	20	24	26	12	8	10

13. Define primary data. What are the important methods of data collection for primary data?
14. Calculate mode for the following frequency distribution

Marks	0-20	20-40	40-60	60-80	80-100
No of students	7	12	21	10	15

15. The arithmetic mean of two observations is 127.5 and their GM is 60. Find (i) Harmonic mean and (ii) the two observations.
16. What are the advantages and disadvantages of quartile deviation as a measure of dispersion ?
17. Write a short note on Pictograms.
18. What is dispersion? State its desirable properties.

(Ceiling: 36 Marks)

PART-C

[Answer any one. Each question carries 10 marks]

19. (a) Define standard deviation.
- (b) Calculate the coefficient of variation of the following two series and find which series is more consistent.

Variable	10-20	20-30	30-40	40-50	50-60	60-70
Series A	10	18	32	40	22	18
Series B	18	22	40	32	18	10

20. Draw the Histogram and frequency polygon to the following data.

Variable	0-10	10-20	20-30	30-40	40-50	50-60	60-70
frequency	4	12	20	28	24	16	6

(1x10= 10 Marks)

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

First Semester B.Sc Degree Examination, November 2025

STA1FM102 - Fundamentals of Statistics

(FYUGP 2024 Admission onwards)

Time: 1 ½ hours

Max. Marks : 50

PART – A

All questions can be attended.
Each question carries Two marks.
Ceiling -16 Marks

		Cos	Knowledge Level(KL)	Marks
1	Define Statistics.	CO1	Remembering	2
2	Give any two limitations of Statistics	CO1	Remembering	2
3	Differentiate between continuous and discrete data.	CO2	Understanding	2
4	Point out any four methods of collecting primary data.	CO2	Remembering	2
5	Define coefficient of dispersion	CO4	Remembering	2
6	The Arithmetic mean of a set of 40 observations was calculated as 30. But one of the observations 35 was misread as 55. Calculate the corrected AM.	CO4	Applying	2
7	Give any two mathematical properties of Arithmetic mean	CO4	Remembering	2
8	Calculate median for the following data 20,25,30,15,17,35,26,18,40,45,50	CO4	Applying	2
9	What is the difference between platy kurtic and leptokurtic curve	CO5	Understanding	2
10	Define percentiles	CO5	Remembering	2

PART – B

All questions can be attended.
Each question carries six marks.

Ceiling -24 Marks

		Cos	Knowledge Level(KL)	Marks
11	Discuss the Scope of Statistics	CO1	Understanding	6
12	What is Histogram. Explain the steps in the construction of a histogram. Give an example	CO3	Understanding	6
13	Find the mean and variance of first n natural numbers. Hence deduce the mean and variance of first 10 natural numbers	CO4	Applying	6
14	Find out the Quartile deviation for the following Data Marks : 10-20 20-30 30-40 40-50 50-60 60-70 Students : 3 5 10 15 8 3	CO4	Applying	6
15	For a frequency distribution coefficient of variation is 5, variance is 4 and Karl Pearsons coefficient of skewness is 0.5. Find the mean and mode of the distribution	CO5	Applying	6

PART - C

Answer any *one* questions.
Each question carries Ten marks.

		Cos	Knowledge Level(KL)	Marks
16	Explain various types of bardiagrams. Illustrate each with examples	CO3	Understanding	10
17	Calculate mean, median and mode for the following data Class: 4-8 8-12 12-16 16-20 20-24 Freq: 3 7 16 8 2	CO4	Applying	10

1 x 10 = 10 Marks