

Total No. of Question : [4]

Registration No. :

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Programme Name : Computer Science & Engineering(DS)

Regular S.Y.B.Tech.Sem.IV ESE May / June 2023

IV SEMESTER (2021 BATCH)

201DSL210-Probability and Statistics

Duration : 2 Hours

Marks : 50

Instructions :

(Q1) Attempt the following questions

[20.0]

(1.1)

Calculate mean deviation about median from the following table

[6.0]

Class Intervals	15-25	25-35	35-45	45-55	55-65
Frequency	12	6	9	4	2

CO :- 210.1

Blooms Taxonomy :- Apply

(1.2)

The following information is collected on two characters

[7.0]

	Cinegoers	Non Cinegoers
Literate	83	57
Illiterate	45	65

Use 5 % level of significance to check null hypothesis "there is no association between habit of cinema going and literacy

CO :- 210.2

Blooms Taxonomy :- Apply

(1.3)

Compute line of regression of x on y from the following table

[7.0]

x	1	2	3	4	5	6	7
y	9	8	10	12	11	13	14

CO :- 210.3

Blooms Taxonomy :- Apply

(Q2) Attempt the following questions

[10.0]

(2.1)

The probability distribution of random variable x is

[4.0]

x	0	1	2	3	4	5	6
p(x)	k	3k	5k	7k	9k	11k	13k

Find i) k ii) $P(x < 4)$ iii) $P(3 < x \leq 6)$

CO :- 210.4

Blooms Taxonomy :- Apply

- (2.2) [6.0]
The probability that a patient recovers from a disease is 0.3. If 18 people are affected from this disease.
What is the probability that
i) at least 10 survive ii) exactly 6 survive iii) 4 to 7 survive?

CO :- 210.4

Blooms Taxonomy :- Apply

OR [2.2 / 2.3]

- (2.3) [6.0]
In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal, find the number of students getting marks i) between 12 to 15 ii) above 18 iii) below 8. (Given: for S.N.V Z area from $z=0$ to $z=0.4$ is 0.1554, from $z=0$ to $z=0.8$ is 0.2881, from $z=0$ to $z=1.6$ is 0.4452 and $z=0$ to $z=2.4$ is 0.4918).

CO :- 210.4

Blooms Taxonomy :- Apply

(Q3) Attempt the following questions [10.0]

- (3.1) [4.0]
Fit a straight line to the following data

x	1	2	3	4	5
y	6	4	3	5	4

CO :- 210.3

Blooms Taxonomy :- Apply

- (3.2) [6.0]
Fit a second degree parabolic curve to the following data

x	0	1	2	3	4
y	1	3	4	5	6

CO :- 210.3

Blooms Taxonomy :- Apply

OR [3.2 / 3.3]

- (3.3) [6.0]
Fit a curve of the form $y = a \cdot x^b$ to the following data

x	1	2	3	4	5
y	2	5	3	8	7

CO :- 210.3

Blooms Taxonomy :- Apply

(Q4) Attempt any two of the following questions

[10.0]

(4.1)

[5.0]

Solve the following recurrence relation

$$a_r - 3a_{r-1} - 10a_{r-2} = 0 \text{ with } a_0 = 4, a_1 = 3$$

CO :- 210.5

Blooms Taxonomy :- Apply

(4.2)

[5.0]

Solve the following recurrence relation

$$a_r - a_{r-1} + 3a_{r-2} + 5a_{r-3} = 0$$

CO :- 210.5

Blooms Taxonomy :- Apply

(4.3)

[5.0]

Find particular solution of the following recurrence relation

$$a_r - 5a_{r-1} + 6a_{r-2} = 2 + r$$

CO :- 210.5

Blooms Taxonomy :- Apply
