

**MGM University**  
**Jawaharlal Nehru Engineering College, Chh Sambhajinagar**  
**Mid Semester Examination – August 2023**

Program : **B. Tech in Computer Science & Engineering**

Sem: VII

Course Name: **Data Science**

Subject Code: 20UCS701D

Max Marks: 20

Date:- 21<sup>st</sup> August 2023

Duration:- 1 Hr

Instructions to the students

1. All questions are compulsory

Q No		CO	B.L	Marks
<b>Q 1</b>	<b>Solve the following questions.(6M)</b>			
1.	State different types of statistical data with one example.	CO2	1	1
2.	What are the measures of central tendency?	CO2	1	1
3.	Define measures of dispersion.	CO2	1	1
4.	Define Interquartile range?	CO2	1	1
5.	State positive & negative skewness.	CO2	1	1
6.	Mention the importance of data visualization techniques.	CO2	1	1
<b>Q 2</b>	<b>Solve any two of the following.(6M)</b>			
(A)	In the population, the average IQ is 100 with a standard deviation of 15. A team of scientists wants to test a new medication to see if it has either a positive or negative effect on intelligence, or no effect at all. a sample of 30 participants who have taken the medication has a mean of 140. Did the medication affect intelligence? ( $\alpha = 0.05$ , critical value = 1.6)	CO3	3	3
(B)	Define Confusion matrix and explain 4 other evaluation metrics based on that.	CO3	2	3
(C)	Differentiate between Linear & Logistic Regression.	CO3	2	3
<b>Q 3</b>	<b>Solve any one of the following.(8M)</b>			
(A)	What is Data Science? Specify the life cycle of Data Science in detail.	CO1	3	8
<b>OR</b>				
(B)	Differentiate BI Vs Data Science?	CO1	2	4
(C)	Suppose there are twelve multiple choice questions in an English class quiz. Each question has five possible answers, and only one of them is correct. Find the probability of having four or less correct answers if a student attempts to answer every question at random.	CO1	3	4

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19/8/23



**MGM University**  
**Aurangabad-431003**

**First Term Exam A.Y. 2023-24**

**Program:** Computer Science & Engineering

**Course:** Data Science

**Course Code:** 20UCS701D

**Semester:** VII

**Marks:** 60

**Duration:** 3 Hrs.

**Instructions to the students:**

1. Each question carries 10 marks.
2. All questions are compulsory.
3. Illustrate your answers with neat sketches, diagram, flowcharts etc wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

**Q.1. Solve any two**

**Marks**

- a) What is Data Science? Specify the life cycle of Data Science in detail. [05]
- b) Define measures of central tendency and calculate the same for the given data. [05]

Staff	1	2	3	4	5	6	7	8	9	10
Salary	15k	18k	16k	14k	15k	15k	12k	17k	90k	95k

- c) Explain any five data visualization techniques with suitable example. [05]

**Q.2. Solve any two**

- a) Explain Type-I & Type-II errors with suitable example. [05]
- b) Define Inferential statistics. Discuss the role of sampling in inferential statistics with it's types? [05]
- c) What do you mean by parametric and non-parametric Test. Explain any one non-parametric test with suitable example. [05]

**Q.3. Solve any two**

- a) Exam score of 5 students given below, apply one way ANOVA on this data and calculate F-ratio? [05]

X1	X2	X3	X4
8	12	18	13
10	11	12	9
12	9	16	12
8	14	6	16
7	4	8	15

- b) Explain Linear Regression with suitable example. [05]
- c) Differentiate between regression and classification. [05]

**Q.4.** Solve any two

- a) Explain Ridge & Lasso Regression. [05]
- b) Discuss about algorithm and machine learning models. [05]
- c) Explain KNN algorithm with an example. [05]

**Q.5.** Solve any two

- a) What is a perceptron and artificial neurons? Give Perceptron Mathematical Model and explain ANN in detail. [05]
- b) Explain Decision Tree with suitable example. [05]
- c) Define kernel function. Explain the kernel trick to construct a classifier for a dataset that is not linearly separable. [05]

**Q.6.** Solve any two

- a) Explain K-Means algorithm with an example. [05]
- b) Why is data normalization important? Explain methods of Data Normalization. [05]
- c) compare and contrast supervised and unsupervised learning. [05]