#### Model Question Paper with effect from 2021(CBCS Scheme)

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## Sixth Semester B.E. Degree Examination

**Data Science and Visualization** 

TIME: 03 Hours Max. Marks: 100

Note:

01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Marks			MODULE.	<b>*</b> ~.	COs	
Description			Module -1		COS	Marks
Q.02   a   Explain statistical Inference   1.2   CO 1   10	Q.01	a	What is Data Science? Explain.	L2	CO 1	10
Q.02   a   Explain statistical Inference   1.2   CO 1   10		b	Explain Datafication.	L2	CO 1	10
Barbain the terms with example: 1) Population 2) Sample						
Notation   Comparison   Compa	Q.02	a	Explain statistical Inference	L2	CO 1	10
1) Population 2) Sample		h	Explain the terms with example:	1.2	CO 1	10
Q. 03		D	1) Population 2) Sample	L2	COT	10
b   Which Machine Learning algorithm to be used when you want to express the mathematical relationship between two variables?   L3			Module-2			
Explain.	Q. 03	a	Explain the Data science Process with a neat diagram.	L2	CO 2	10
Explain.		b	Which Machine Learning algorithm to be used when you want to			
Q.04   a   Explain Exploratory Data Analysis   L2   CO 2   10			express the mathematical relationship between two variables?	L3	CO 2	10
Q.04   a   Explain Exploratory Data Analysis   L2   CO 2   10			Explain.			
b Which Machine Learning algorithm to be used when you have bunch of objects that are already classified and based on which other similar objects that haven't got classified to be automatically labelled? Explain.  Q. 05 a Explain feature selection algorithms and selection criterion.  Define Feature Extraction. Explain different categories of information.  OR  Q. 06 a Explain Random Forest Classifier.  Define Feature Extraction. Explain different categories of information.  DoR  Q. 07 a What is the need of Data Visualization? Explain its importance.  DoR  Q. 08 a Explain Data Wrangling with a neat diagram.  OR  Q. 08 a Explain composition plots with diagram.  DoR  Q. 09 a Explain i) Tools and libraries used for visualization.  ii) Data Representation.  Dos and Information of Saving Figures in Matplotlib.  Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib.  Dor OR  Q. 10 a Explain formatting of strings and Plotting in Matplotlib.  Explain the following with respect to Matplotlib.  Explain the following with respect to Matplotlib.  2 CO 5 10  Explain the following with respect to Matplotlib.  2 Explain the following with respect to Matplotlib.  2 CO 5 10  Explain the following with respect to Matplotlib.  2 CO 5 10			OR			
bunch of objects that are already classified and based on which other similar objects that haven't got classified to be automatically labelled? Explain.    Variable   Variable	Q.04	a	Explain Exploratory Data Analysis	L2	CO 2	10
Other similar objects that haven't got classified to be automatically labelled? Explain.    Variable   Varia		b	Which Machine Learning algorithm to be used when you have			
other similar objects that haven't got classified to be automatically labelled? Explain.  Module-3  Q. 05 a Explain feature selection algorithms and selection criterion. L2 CO 3 10  Define Feature Extraction. Explain different categories of information. L2 CO 3 10  OR  Q. 06 a Explain Random Forest Classifier. L2 CO 3 10  b Explain Principal Component Analysis. L2 CO 3 10  Module-4  Q. 07 a What is the need of Data Visualization? Explain its importance. L2 CO 4 10  b Explain Data Wrangling with a neat diagram. L2 CO 4 10  OR  Q. 08 a Explain composition plots with diagram. L2 CO 4 10  b Explain i) Tools and libraries used for visualization. L2 CO 4 10  ii) Data Representation. L2 CO 4 10  Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib. L2 CO 5 10  DR  Explain formatting of strings and Plotting in Matplotlib. L2 CO 5 10  Explain the following with respect to Matplotlib. L2 CO 5 10  Explain the following with respect to Matplotlib. L2 CO 5 10  Explain the following with respect to Matplotlib. L2 CO 5 10  Explain the following with respect to Matplotlib. L2 CO 5 10			bunch of objects that are already classified and based on which	1.2	COA	10
Module-3			other similar objects that haven't got classified to be	L3	CO 2	10
Q. 05			automatically labelled? Explain.			
b   Define Feature Extraction. Explain different categories of information.   L2   CO 3   10			Module-3			
Q. 06   a   Explain Random Forest Classifier.   L2   CO 3   10	Q. 05	a	Explain feature selection algorithms and selection criterion.	L2	CO 3	10
Q. 06 a Explain Random Forest Classifier.  b Explain Principal Component Analysis.  CO 3 10  Module-4  Q. 07 a What is the need of Data Visualization? Explain its importance.  L2 CO 4 10  b Explain Data Wrangling with a neat diagram.  CR  Q. 08 a Explain composition plots with diagram.  L2 CO 4 10  Explain i) Tools and libraries used for visualization.  ii) Data Representation.  Module-5  Q. 09 a Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib.  Description of Saving Figures in Matplotlib.  Explain formatting of strings and Plotting in Matplotlib.  Description of Saving Figures in Matplotlib.  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends.  2) Subplots  L2 CO 5 10  L2 CO 5 10		b	Define Feature Extraction. Explain different categories of information.	L2	CO 3	10
b Explain Principal Component Analysis.    L2			<u> </u>			
Module-4  Q. 07 a What is the need of Data Visualization? Explain its importance.  Description Data Wrangling with a neat diagram.  OR  Q. 08 a Explain composition plots with diagram.  Description Data Representation.  Explain i) Tools and libraries used for visualization.  Explain i) Data Representation.  Description Data Representation.  Module-5  Q. 09 a Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib.  Description Descri	Q. 06	a	Explain Random Forest Classifier.	L2	CO 3	10
Q. 07 a What is the need of Data Visualization? Explain its importance.    L2		b	Explain Principal Component Analysis.	L2	CO 3	10
b Explain Data Wrangling with a neat diagram.  OR  Q. 08   a   Explain composition plots with diagram.  Explain i) Tools and libraries used for visualization.  ii) Data Representation.  Module-5  Q. 09   a   Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib.  b   Explain formatting of strings and Plotting in Matplotlib.  OR  Explain the following with respect to Matplotlib.  Q. 10   a   1) Labels, Titles, Text, Annotations, Legends.  2   CO 4   10    L2   CO 4   10    L2   CO 5   10    CO 5   10    L2   CO 5   10    L3   CO 5   10    L4   CO 5   10    L5   CO 5   10    L6   CO 5   10    L7   CO 5   10    L8   CO 5   10    L9   CO 5    L9   CO 5   10    L9   CO 5			Module-4			
OR  Q. 08 a Explain composition plots with diagram.  b Explain i) Tools and libraries used for visualization. ii) Data Representation.  L2 CO 4 10  L2 CO 4 10  L2 CO 5 10  Resplain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib. b Explain formatting of strings and Plotting in Matplotlib.  L2 CO 5 10  OR  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10  L2 CO 5 10	Q. 07					
Q. 08 a Explain composition plots with diagram.    L2		b	Explain Data Wrangling with a neat diagram.	L2	CO 4	10
b Explain i) Tools and libraries used for visualization. ii) Data Representation.  Module-5  Q. 09 a Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib. b Explain formatting of strings and Plotting in Matplotlib.  OR  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10  L2 CO 5 10  L2 CO 5 10		1	* <del>*</del>			
Data Representation.   L2	Q. 08	a		L2	CO 4	10
Q. 09 a Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib. b Explain formatting of strings and Plotting in Matplotlib. DR Explain the following with respect to Matplotlib. Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots L2 CO 5 10 L2 CO 5 10 L2 CO 5 10 CO 5 10		b	•	L2	CO 4	10
Q. 09     a     Explain Plotting Using pandas DataFrames, Displaying Figures and Saving Figures in Matplotlib.     L2     CO 5     10       b     Explain formatting of strings and Plotting in Matplotlib.     L2     CO 5     10       OR       Q. 10     Explain the following with respect to Matplotlib.       Q. 10     1) Labels, Titles, Text, Annotations, Legends.     L2     CO 5     10       2) Subplots			, <u> </u>			
Q. 09 a Saving Figures in Matplotlib.  b Explain formatting of strings and Plotting in Matplotlib.  CO 5 10  OR  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10  L2 CO 5 10						
b Explain formatting of strings and Plotting in Matplotlib.  OR  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10  CO 5 10	Q. 09	a		L2	CO 5	10
OR  Explain the following with respect to Matplotlib.  Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10		h		1.2	CO 5	10
Q. 10 a Explain the following with respect to Matplotlib. a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots L2 CO 5 10		1.2		10		
Q. 10 a 1) Labels, Titles, Text, Annotations, Legends. 2) Subplots  L2 CO 5 10						
2) Subplots	O. 10	a		L2	CO 5	10
		b	*	L2	CO 5	10

<sup>\*</sup>Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.

### Model Question Paper-1/2 with effect from 2021(CBCS Scheme)

Sixth Semester R.F. Degree Examination											
USN											

# DATA SCIENCE AND VISUALIZATION

TIME: 03 Hours Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module -1	Bloom's Taxonomy Level	COs	Marks
Q.01	a	What is data science? List and explain skill set required in a data science profile.	L2	CO1	6
	b	Explain Probability Distribution with example.	L2	CO1	6
	c	Describe the process of fitting a model to a dataset in detail.	L2	CO1	8
		OR			
Q.02	a	Explain with neat diagram the current Landscape of data science process.	L2	CO1	6
	b	Explain population and sample with example.	L2	CO1	6
	С	What is big data? Explain in detail 5 elements of bigdata.	L2	CO1	8
	,	Module-2			
Q. 03	a	What is Machine Learning? Explain the linear regression algorithm.	L2	CO2	6
	b	Explain K-means algorithm with example.	L2	CO2	6
	С	Describe philosophy of EDA in detail.	L2	CO2	8
	,	OR			
Q.04	a	Explain the data science process with a neat diagram.	L2	CO2	6
	b	Explain KNN algorithm with example.	L2	CO2	6
	С	Develop a R script for EDA.	L3	CO2	8
		Module-3			
Q. 05	a	Explain the fundamental differences between linear regression and logistic regression.	L2	CO3	6
	b	Explain selecting an algorithm in wrapper method.	L2	CO3	6
	С	Explain decision tree for chasing dragon problem.	L3	CO3	8
		OR			
Q. 06	a	Briefly explain alternating Least squares methods.	L2	CO3	6
	b	Explain different selecting criterion in feature selection.	L2	CO3	6
	С	Explain dimensionality problem with SVD in detail.	L3	CO3	8
		Module-4			
Q. 07	a	Define data visualization and explain its importance in data analysis.	L2	CO4	6
	b	Describe different types of plots in comparison plots.	L2	CO4	6
	С	Plot the following	L3	CO4	8
		i) density plot ii) box plot iii) violin plot iv) bubble plot			
		OR			
Q. 08	a	Describe the process of data wrangling and its significance in data visualization.	L2	CO4	6
	b	Explain the variants of bar chart with example.	L2	CO4	6
	c	Explain different types of plots in relation plots.	L2	CO4	8
	<u>, -                                   </u>	Module-5			
Q. 09	a	Develop a code for labels, titles in matplotlib.	L3	CO5	6
	b	Apply code for basic pie chart.	L3	CO5	6

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	c	Explain with neat diagram Anatomy of a Matplotlib Figure and	L2	CO5	8
		Plotting data points with multiple markers.			
		OR			
Q. 10	a	Describe the process of creating a box plot in Matplotlib. with suitable	L2	CO5	6
		programming example.			
	b	Apply code for scatter plot on animal statistics using matplotlib.	L3	CO5	6
	С	Develop a code for bar chart, pie chart in matplotlib.	L3	CO5	8

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