CBCS SCHEME

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BAI515E

Fifth Semester B.E/B.Tech. Degree Examination, Dec.2025/Jan.2026
Exploratory Data Analysis

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
1	a.	What is Exploratory Data Analysis? Explain different NumPy array attributes with an example.	5	L1	CO1
	b.	Illustrate NumPy array indexing and slicing operations.	10	L1	CO1
	c.	Explain np.sort( ), np.argsort( ), and sorting long rows and columns with an example.	5	L1	CO1
		OR			
2	a.	Describe partitioning with an example.	5	L2	CO1
	b.	Illustrate different approaches for structured array creation.	10	L2	CO1
	c.	Give character representation and description of NumPy datatypes.	5	L2	CO1
		Module – 2			
3	a.	What is a Series? Explain the different ways of constructing series objects.	5	L2	CO2
	b.	What is a DataFrame? Explain the different ways of constructing DataFrame objects.	10	L2	CO2
	c.	With an example, explain fillna( ).	5	L2	CO2
		OR			
4	a.	Explain operating on null values.	5	L1	CO2
	b.	Explain different methods for multiindex creation, with an example.	10	L2	CO2
	c.	Explain the concept of Indexing and Slicing a MultiIndex.	5	L2	CO2
		Module – 3			
5	a.	Explain shifting and windowing.	5	L2	CO3
	b.	Explain lower( ), len( ), startswith( ), split( ) and capitalize( ) string functions with an appropriate example.	10	L2	CO3
	c.	Explain any 3 methods that uses regular expressions, with an example.	5	L2	CO3

		OR			
6	a.	Explain eval function for column-wise operations.	**5**	**L3**	**CO3**
	b.	Describe fundamental Pandas data structures for working with time series data.	**10**	**L3**	**CO3**
	c.	Describe the following with an example : i) extract ii) findall.	**5**	**L3**	**CO3**
		Module – 4			
7	a.	Illustrate the following : i. Labeling plots ii. Adjusting plot axis limit.	**10**	**L3**	**CO4**
	b.	What do you mean by scatter plot? Describe 2 approaches for plotting scatter plot.	**10**	**L4**	**CO4**
		OR			
8	a.	Illustrate the following : i. Categorical plots ii. Bar plots.	**10**	**L3**	**CO4**
	b.	Describe how effectively uncertainties or errors visualized through plot.	**10**	**L4**	**CO4**
		Module – 5			
9	a.	What is Machine Learning? What are the different categories of ML? Explain.	**10**	**L4**	**CO5**
	b.	Explain the guidelines followed in designing Scikit-Learn API? And also describe the steps in using the Scikit-Learn Estimator API.	**10**	**L5**	**CO5**
		OR			
10	a.	Explain the following supervised/unsupervised learning example by using Scikit-Lean. i. Iris classification ii. Iris dimensionality.	**10**	**L4**	**CO5**
	b.	Explain how cross-validation is used to validate the model.	**10**	**L5**	**CO5**

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