Printed Page:- 04 Subject Code:- AMICSAI0713

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

SEM: VII - THEORY EXAMINATION (2024- 2025)

Subject: Programming for Data Analytics

Time: 3 Hours Max. Marks: 100

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A 20

1. Attempt all parts:-

1-a. Tick the correct choice is a data structure in Pandas?(CO1,K1) 1

  (a) Set

  (b) Tuple

  (c) Series

  (d) Dictionary

1-b. Select the correct choice for date series element in Pandas?(CO1,K2) 1

  (a) Using .iloc[] accessor function

  (b) Using indexing operator [] and passing in the name of the column

  (c) Using .loc[] accessor function

  (d) Using indexing operator [] and passing in the label or integer location of the element

1-c. Select the following is apply function in R?(CO2,K1) 1

  (a) apply

  (b) tapply

  (c) fapply

  (d) rapply

1-d. Tict right option for function is used th see the shape of a data set in R?(CO2,K1) 1

  (a) shape()

  (b) dim()

  (c) both

(d) none of these

1-e. SQLite dot commands are not terminated by -(CO3,K2) 1

(a) Colon (:)

(b) Semicolon (;)

(c) Both A and B

(d) None of the above

1-f. Name the .databases command do?(CO3,K2) 1

(a) It removes files of attached databases

(b) It adds files of attached databases

(c) It lists names and files of attached databases

(d) It alter names and files of attached database

1-g. Name Out Common programming languages are used by TensorFlow?(CO4,K1) 1

(a) Python only

(b) Java only

(c) C++ only

(d) Python, Java, and C++

1-h. Tick correct choice for the following is a type of TensorFlow API?(CO4,K1) 1

(a) Estimators

(b) Keras

(c) Layers

(d) All of the above

1-i. Tick the correct one among of the following is a popular deep learning framework?(CO5,K1) 1

(a) Scikit-learn

(b) TensorFlow

(c) Keras

(d) Java

1-j. Select right one of the following is a commonly used loss function in deep learning for binary classification tasks?(CO5,K2) 1

(a) Mean squared error

(b) Binary cross-entropy

(c) Categorical cross-entropy

(d) Noise error

2. Attempt all parts:-

2.a. Steps for creation of a DataFrame in Pandas?(CO1,K2) 2

2.b. Write down the chief differences between atomic vector and list.(CO2,K2) 2

2.c. ExPlain what is the use of SQLITE group by clause?(CO3,K2) 2

2.d. Briefly mention role of Session in TensorFlow .(CO4,K2) 2

2.e.	Give explanation about an activation function?(CO5,K2)	2

SECTION-B 30

3. Answer any <u>five</u> of the following:-

3-a.	Differentiate between Series and Array and briefly explain the concept of Series in Pandas.(CO1,K2)	6
3-b.	Write a Python program to create a Pandas DataFrame from a dictionary of lists, where the keys are the column names and the values are the data for each column.(CO1,K3)	6
3-c.	Explain the use of factor () with example.(CO2,K2)	6
3-d.	Differentiate between read_csv() and read_csv2(). (CO2,K2)	6
3.e.	Write down the advantages of MongoDB.(CO3,K2)	6
3.f.	Mention role of a tensor in TensorFlow, and how are tensors used in machine learning?(CO4,K2)	6
3.g.	Discuss the concept of deep neural network architectures and their applications in deep learning.(CO5,K2)	6

SECTION-C 50

4. Answer any <u>one</u> of the following:-

4-a.	Illustrate hypothesis testing, and how is it used in inferential statistics? Explain it with suitable example.(CO1,K2)	10
4-b.	Differentiate between a one-tailed and a two-tailed p-test? And also explain type I error and a type II error.(CO1,K2)	10

5. Answer any <u>one</u> of the following:-

5-a.	Illustrate concept of List in R? Explain creation, accessing and manipulation of List with example in R.(CO2,K2)	10
5-b.	Short note on RShiny. What are the several advantages of using it?(CO2,K2)	10

6. Answer any <u>one</u> of the following:-

6-a.	Step down the procedure to create a database in MongoDB and mention various common databases.(CO3,K2)	10
6-b.	Differentiate between Relational Data Base with NOSQL and mention popular NoSQL Databases.(CO3,K2)	10

7. Answer any <u>one</u> of the following:-

7-a.	Explain the concept of distributed Tensorflow and how it can be used to train deep learning models across multiple devices and machines.(CO4,K2)	10
7-b.	Explain procedure to train a CNN model on image data in Python?(CO4,K2)	10

8. Answer any <u>one</u> of the following:-

8-a.	Illustrate reason some ethical considerations associated with deep neural networks, such as biases, privacy concerns, and the impact on the job market, and how can they be addressed?(CO5,K2)	10
8-b.	Brief out the main applications of autoencoders, such as image compression,	10

.

anomaly detection, and data generation, and how are they used in practice?(CO5,K2)

.