


VIT

Vellore Institute of Technology

Final Assessment Test – May 2024

Course: **BECE352E – IoT Domain Analyst**

Class NBR(s): **1225 / 1227 / 1228 / 1230 / 1232 / 1234 / 1237 / 1238 / 1250 / 1255 / 1256 / 1259 / 1262 / 1265 / 4399 / 4406 / 4431 / 6288**

Slot: **TAA2 / TBB2**
/ TCC1 / TCC2
/ TDD2 / TF1

Time: **Three Hours**

Max. Marks: **100**

- **KEEPING MOBILE PHONE/ELECTRONIC DEVICES EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE**
- **DON'T WRITE ANYTHING ON THE QUESTION PAPER**

Answer ALL Questions

(10 X 10 = 100 Marks)

1. List the different types of database models and discuss Object-Relational databases with a suitable example.
2. Which SDLC model would be appropriate for designing a mobile app for an IoT-based public transportation system that involves vehicle tracking through GPS and RFID technology and justify your selection.
3. Examine the provided sample dataset and address the following:
 - (i) Explain a graphical method to determine the correlation between the variables Units and Sale_amt. **[3]**
 - (ii) Describe a graphical method to explore the relationship between the total number of units sold per different types of items. How does this method differ from a histogram plot? **[3]**
 - (iii) Suppose there are missing or erroneous entries in the attributes 'Manager' and 'Units'. Compare the preprocessing steps required to correct errors in both types of data. **[4]**

Manager	Sales Man	Item	Units	Unit_price	Sale_amt
Martha	Alexander	Television	95	1,198.00	1,13,810.00
Hermann	Shellli	Home Theater	50	500.00	25,000.00
Hermann	Luis	Television	36	1,198.00	43,128.00
Timothy	David	Cell Phone	27	225.00	6,075.00
Timothy	Stephen	Television	56	1,198.00	67,088.00
Martha	Alexander	Home Theater	60	500.00	30,000.00

4. Describe the various steps of data cleaning, providing appropriate examples for each step.
- 5.(a) i) Explain the necessity of hyperparameter tuning in ML algorithms and provide an example. **[5]**
 ii) Compare and contrast hybrid and multi-cloud environments. **[5]**

OR

- 5.(b) Demonstrate the various types of IoT data analytics and outline the process involved, providing a suitable example.

6. Cloud data centers offer remote resources extensively employed for Internet-based applications. Categorize the different strategies for offloading data from the cloud to the edge. Create a classification chart and offer concise descriptions for each approach.
7. Explore the concept of resource provisioning and delineate its various types. Detail the prerequisites and operational mechanisms of dynamic resource provisioning.
- 8.(a) Provide an overview of the algorithms, methods, and techniques utilized in deep learning approaches, highlighting their applications, strengths and limitations.

OR

- 8.(b) Discuss the characteristics of cognitive computing, emphasizing the underlying technologies. Examine how cognitive computing is applied in real-world scenarios.
9. Design an IoT architecture tailored to user needs for a retail store, enhancing personalized shopping experiences with targeted promotions, product recommendations, and in-store navigation assistance.
10. Examine the cost function relationship in Value Engineering concerning an IoT product utilized in a specific industry for tracking human activities. Furthermore, demonstrate the development of an outcome-as-a-service model post-deployment of the Value Engineering framework for the mentioned use case.

⇔⇔⇔ **W/E/TX** ⇔⇔⇔