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Reg. No. :

Final Assessment Test (FAT) - May 2024

Programme	B.Tech.	Semester	WINTER SEMESTER 2023 - 24
Course Title	IOT DOMAIN ANALYST	Course Code	BECE352E
Faculty Name	Prof. Sritama Roy	Slot	TC1
		Class Nbr	CH2023240500981
Time	3 Hours	Max. Marks	100

General Instructions:

- Write only Register Number in the Question Paper where space is provided (right-side at the top) & do not write any other details.

Section - I
Answer all questions (1 X 10 Marks = 10 Marks)

01. I. How does the Spiral model facilitate risk management in the development of the eKart application? [4 Mark] [10]

II. Discuss the iterative nature of the Spiral model and how it allows for early identification and mitigation of risks specific to eKart's requirements, such as scalability, security, and user experience. Provide examples of potential risks and explain how each iteration in the Spiral model addresses them. [6 Mark]

Section - II
Answer all questions (6 X 15 Marks = 90 Marks)

02. I. Discuss three common techniques for handling missing data. [4 Mark] [15]

II. Provide examples to illustrate each technique. [5 Mark]

III. Explain the importance of domain knowledge in feature engineering. Provide a scenario where domain knowledge significantly influences the choice of features. [6 Mark]

03. Compute PCA for the following two-dimensional patterns [15]
(2, 1), (3, 5), (4, 3), (5, 6), (6, 7), (7, 8).

04. I. Explain the concept of transfer learning in a Convolutional Neural Network. [4 mark] [15]

II Discuss how smart Computing over IoT-Cloud using deep learning techniques deep learning could solve smart city problems like predictive maintenance, traffic optimization, energy management, healthcare monitoring, and anomaly detection. Explain with a neat sketch [8 Mark]

III Discuss the role of activation functions in Convolutional Neural Networks. Provide examples of commonly used activation functions in CNNs [3 mark]

05. I. Explain the architecture of a user-centric IoT system for an MNC with a neat sketch. [6 Mark] [15]

II Discuss strategies to redesign the data layer architecture to optimize data processing speed that helps Mnc to redesign the data layer architecture to optimize the data processing speed. [9 Mark]

06. A manufacturing company seeks to leverage IoT devices to monitor equipment health and optimize production processes in real time. They plan to utilize cloud-based solutions for data processing and analysis. How can the manufacturing company architect a scalable and resilient IoT-cloud convergence solution to monitor equipment health, optimize production processes, and minimize downtime, ensuring seamless integration with existing infrastructure and compliance with industry standards for data security and privacy? [15]

07. I. Explain different architectures of coupled computing. Discuss the role of cloud computing and its challenges in IoT with a suitable real-time use case scenario. [9 Mark] [15]

II. How does the convergence of IoT and cloud technologies address security concerns, particularly in real-time applications such as smart homes or industrial automation? [6 Mark]