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Total Number of Pages: 02

Course: B.Tech  
Sub\_Code: PCAC2012

4<sup>th</sup> Semester Regular Examination: 2024-25

SUBJECT: INTERNET OF THINGS AND CLOUD

BRANCH(S): AE, AEIE, AERO, AME, BIOTECH, C&EE, CIVIL, CSE, CSEAI, CSEDS, ECE, EEE, ELECTRICAL, ELECTRICAL & C.E, ETC, IT, MECH, METTA, MINING, MMEAM

Time: 3 Hours

Max Marks: 100

Q.Code: S279

Answer Question No.1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

**Part-I**

**Q1 Answer the following questions: (2 x 10)**

- Differentiate between circuit-switched and packet-switched networks.
- What is a peer-to-peer network? How does it differ from a broadcast network?
- List the major technological advancements that contributed to the rise of smartphones.
- What role does multimedia content play in the Internet of Things evolution?
- What is the purpose of version control in collaborative IoT projects?
- What is the function of an IDE in embedded software development?
- Define GPIO and its role in IoT projects.
- What is the role of a Linux environment in AWS IoT development?
- How does AWS CLI help in cloud-based IoT development?
- Why is MQTT commonly used in cloud-connected IoT applications?

**Part-II**

**Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**

- Discuss the evolution of telephony networks and their transformation toward supporting IoT.
- Describe the interplay between smartphones and IoT in reshaping user experiences.
- Compare the role of apps and cloud services in building intelligent IoT ecosystems.
- How does convergence across communication, computing, and content domains drive IoT growth? Explain.
- Compare the DragonBoard™ 410c with other single-board computers in terms of IoT capabilities.
- Explain the process of setting up a development environment for the DragonBoard™.
- Describe how Git and GitHub support collaborative and iterative IoT project development.
- What are the challenges and best practices in developing embedded IoT applications? Explain.

- i) Discuss how EC2 instances can be used to process sensor data in an IoT system.
- j) Describe how AWS IoT Core facilitates secure communication between IoT devices.
- k) How does project structuring vary when heavily using cloud services in IoT? Explain.
- l) Discuss the security challenges in integrating cloud services with embedded IoT systems.

**Part-III**

**Only Long Answer Type Questions (Answer Any Two out of Four)**

**(16 x 2)**

- Q3** Describe the technological evolution from traditional telephony to IoT-enabled smart environments. Mention the transitions in networks, devices, and services. **(16)**
- Q4** Discuss the evolution of DIY and maker culture in IoT development, focusing on community support, open hardware, and rapid prototyping tools. **(16)**
- Q5** Explain a theoretical model showing how cloud services can support real-time alerting, data storage, and decision-making in a smart agriculture scenario. **(16)**
- Q6** Describe in detail how you would design a cloud-native IoT system using AWS from sensor setup to dashboard creation, considering data formats, protocols, and APIs. **(16)**