USN [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ] **21CS735**

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Internet of Things

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1. a. In the context of Evolution of IoT, with neat diagram, illustrate the sequence of technological developments leading to the shaping of the modern day IoT. **(06 Marks)**
   b. With diagram, explain enabling IoT and the complex Interdependence of technologies. **(08 Marks)**
   c. Differentiate between the following :
      (i) IoT versus M_2M.
      (ii) IoT versus CPS.
      (iii) IoT versus WoT. **(06 Marks)**

OR

2. a. With respect to the IoT networking components, define the following :
      (i) IoT NODE.
      (ii) IoT Router.
      (iii) IoT LAN
      (iv) IoT Gateway
      (v) IoT Proxy **(10 Marks)**
   b. Discuss the following addressing strategies in IoT:
      (i) Address Management Classes.
      (ii) Adressing during node Mobility. **(10 Marks)**

Module-2

3. a. Define sensors and with diagram, outline the simple sensing operation. **(04 Marks)**
   b. Discuss Scalar and Vector sensors and draw the functional blocks of a typical sensor node in IoT. **(06 Marks)**
   c. With neat diagram, explain the different sensing types commonly encountered in IoT. **(10 Marks)**

OR

4. a. Define Actuator and with diagram, discuss the outline of a simple actuation mechanism. **(04 Marks)**
   b. Explain the various actuators classes any 5 in IoT. **(10 Marks)**
   c. Discuss actuator characteristics that define all actuators. **(06 Marks)**

Module-3

5. a. List and discuss common data types used in IoT applications. **(06 Marks)**
   b. Explain the various processing topologies in IoT with necessary diagrams. **(08 Marks)**
   c. Illustrate the importance of processing in IoT. **(06 Marks)**

OR

6 a. With neat diagram, explain the processing offloading paradigm for the development of IoT-based solutions. (10 Marks)

b. Determine the importance of choosing the right processing topologies and associated considerations while designing IoT applications. (10 Marks)

Module-4

7 a. List common connectivity protocols in IoT. (04 Marks)

b. Explain the salient features and application scope of any 5 connectivity protocols. (10 Marks)

c. Differentiate between Wi-Fi and Bluetooth connectivity protocols in IoT. (06 Marks)

OR

8 a. With necessary diagrams, explain in detail any four connectivity protocols in IoT. (10 Marks)

b. Determine the requirements associated with any of IoT connectivity protocols in real-world solutions. (10 Marks)

Module-5

9 a. Describe in detail, the various Infrastructure protocols in IoT-based communication technologies. (10 Marks)

b. Explain the following discovery protocols :
   (i) Physical Web
   (ii) mDNS
   (iii) Universal plug and play (UPnP). (10 Marks)

OR

10 a. With neat diagram, discuss the illustration of the various facets of the Interoperability in IoT. (10 Marks)

b. Discuss any four IoT Interoperability standards. (10 Marks)

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