CBCS SCHEME

USN | | | | | | | | | | |

15CS81

Eighth Semester B.E. Degree Examination, July/August 2022
Internet of Things Technology

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Explain in detail the Genesis of IoT. **(08 Marks)**

b. Explain the different challenges of IoT. **(06 Marks)**

c. Define IT and OT. **(02 Marks)**

OR

2 a. Explain the expanded view of the simplified IoT architecture with a neat diagram. **(08 Marks)**

b. Explain IoT architectural drivers. **(08 Marks)**

Module-2

3 a. Define Sensors and Actuators. **(02 Marks)**

b. Explain various types of sensors with description and examples. **(06 Marks)**

c. Define WSNs. List the limitations of smart objects in WSNs and mention the need of communication protocols for WSNs. **(08 Marks)**

OR

4 a. Explain IEEE 802.15.4 (i) Physical layer and (ii) MAC layer, with diagrams. **(08 Marks)**

b. Explain LoRaWAN architecture and its MAC frame format. **(08 Marks)**

Module-3

5 a. Explain the key advantages of Internet Protocol. **(06 Marks)**

b. Explain 6LOWPAN header stacks, protocol header compression and fragmentation. **(10 Marks)**

OR

6 a. Design an IoT application involving IoT Data Broker for providing interoperability. **(08 Marks)**

b. Develop an IoT application framework which uses the temperature and pressure sensors in publish/subscribe module using MQTT. **(08 Marks)**

Module-4

7 a. Define:

(i) Structured versus unstructured data **(02 Marks)**

(ii) Data in motion versus data at rest **(02 Marks)**

(iii) IoT data analytics overview. **(04 Marks)**

b. Explain the Hadoop distributed file system with a neat diagram. **(08 Marks)**

OR

8 a. Explain the Purdue Model for control hierarchy. **(08 Marks)**

b. Explain the risk assessment framework for OCTAVE. **(08 Marks)**

Module-5

9 a. Explain the details of Arduino programming. List the advantages and its applications. **(10 Marks)**

b. Write a python program on Raspberry Pi to blink an LED. **(06 Marks)**

OR

10 a. Explain the smart city layered architecture with a neat diagram. **(08 Marks)**

b. Explain connected street lightning solution with architecture. **(08 Marks)**

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