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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)
