

--	--	--	--	--	--	--	--	--	--

**INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech VII SEMESTER END EXAMINATIONS (REGULAR) - DECEMBER 2022

Regulation: R18

IoT & APPLICATIONS

Time: 3 Hours (ELECTRONICS AND COMMUNICATION ENGINEERING)

Max Marks: 70

Answer FIVE Questions choosing ONE question from each module

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

MODULE – I

1. (a) Explain the push-pull communication model of IoT, the role of cloud computing and big data analytics in IoT enabling technologies. [BL: Understand| CO: 1|Marks: 7]
(b) Illustrate IoT level 1 and IoT level 2 with neat diagram. Design an IoT application compatible with IoT level-3. [BL: Understand| CO: 1|Marks: 7]
2. (a) Outline the web socket-based communication API's and the functions of communicational functional block in an IoT system. [BL: Understand| CO: 1|Marks: 7]
(b) Consider a smart agriculture system with cloud storage and processing, Design a suitable IoT system and illustrate with a suitable diagram. [BL: Apply| CO: 1|Marks: 7]

MODULE – II

3. (a) Identify the role of IoT NETCONF-YANG management and explain with a suitable diagram. [BL: Understand| CO: 2|Marks: 7]
(b) Summarize the working of Machine-to-Machine (M2M) system architecture. List any five differences between IoT and M2M. [BL: Understand| CO: 2|Marks: 7]
4. (a) How SDN is related to IoT? Describe the roles of YANG and TransAPI module in device management. [BL: Understand| CO: 2|Marks: 7]
(b) Write a note on is network function virtualization (NFV). How is this related to the IoT? Illustrate the architecture of NFV. [BL: Understand| CO: 2|Marks: 7]

MODULE – III

5. (a) Construct the syntax for declaring the functions. Demonstrate the use of functions with pass-by-value and pass-by-reference. [BL: Understand| CO: 3|Marks: 7]
(b) Build a program to demonstrate the declaration, insertion, and traversal of the List and Tuple data structure of Python. [BL: Apply| CO: 3|Marks: 7]
6. (a) Demonstrate the use of a dictionary and list data structures with an example program for each. [BL: Understand| CO: 4|Marks: 7]

- (b) An architectural reference model (ARM) can be visualized as the matrix that eventually derives into a large set of concrete IoT architectures. Justify your answer with neat diagram

[BL: Apply| CO: 4|Marks: 7]

MODULE – IV

7. (a) Interpret briefly inter integrated circuit communication protocol with necessary diagrams.

[BL: Understand| CO: 5|Marks: 7]

- (b) Design an automatic refrigerator light system with LED, switch & raspberry pi and write a python program to support the working of that design

[BL: Apply| CO: 5|Marks: 7]

8. (a) Describe the working of any 4 sensors. Classify serial peripheral interface communication protocols with necessary diagrams.

[BL: Understand| CO: 5|Marks: 7]

- (b) Develop a program to read the distance using an ultrasonic sensor and, on the buzzer, if the distance is less than 10cm.

[BL: Apply| CO: 5|Marks: 7]

MODULE – V

9. (a) Infer the role of the services available in the cloud that are usable in the IoT domain. Illustrate one example to show cloud usage.

[BL: Understand| CO: 6|Marks: 7]

- (b) With suitable diagrams and illustrations, apply the IoT concept to develop applications that can be used in smart cities.

[BL: Understand| CO: 6|Marks: 7]

10. (a) Identify the purpose of an Amazon auto scaling group and steps involved in creating an auto scaling group.

[BL: Understand| CO: 6|Marks: 7]

- (b) With suitable diagrams and illustrations, apply the IoT concept to develop applications that can be used in smart homes.

[BL: Apply| CO: 6|Marks: 7]

