**MODULE I**

1. Explain the role of IoT in connected roadways.
2. Describe the functions of the various layers of simplified IoT Architecture Model.
3. Show the impact of IoT in at least 2 domains of normal human life.
4. Explain the Application and Analytics sublayer of IoT Architecture.
5. Recall the Standardized IoT architectures.
6. Explain the functions of Access Network Sublayer of IoT Architecture.
7. Write a short note on the impact of IoT in the real world.
8. List the challenges of IoT.
9. Compare OT and IT Technology.
10. Describe the elements of one M2M architecture of IoT.
11. Write a short note on the IOT data management and compute stack with Fog Computing.
12. With a neat block diagram illustrate the IOT World Forum(IoTWF) standardized architecture.
13. What is Iot? Explain the evolutionary phases of IoT?

**MODULE II**

1. Mention any four wireless technologies and its architectural characteristics.
2. Comment things in IoT.
3. Compare biosensors and biodegradable sensors used in IoT.
4. Explain the term NBIoT(Narrow Band IoT).
5. Explain the communication protocols employed in Wireless Sensor Networks.
6. What are the essential performance considerations of constrained-node networks?
7. Make use of the LoRaWAN technology as an IoT communication paradigm.
8. Describe various types of sensors.
9. Define actuators. Describe the roles of actuators in IoT systems.
10. Explain the IEEE 802.15.4 standard for wireless communication.
11. Identify the communication criteria in connecting smart objects in IOT.
12. Write on High-Level ZigBee.
13. List and explain the trends in smart objects impacting IOT.

**MODULE III**

1. Discuss the need for optimization.
2. Compare MQTT and COAP.
3. Explain different schedule management and packet forwarding models of 6TiSCH.
4. Explain the parameters to be considered while choosing between IP adaptation /

adoption for last mile communication.

1. With neat diagrams, compare the IoT protocol stacks using 6LoWPAN and IP.
2. Summarise on the business case for IP.
3. Explain the advantages of Internet Protocol.
4. Compare Bigdata and edge analytics
5. Compare structured and unstructured data
6. Describe the components of FNF
7. Explain Message Queuing Telemetry Transport framework and message  
   format.
8. Explain tunneling of legacy SCADA over IP Networks with a neat diagram.
9. Explain SCADA Transport over LLNs with MAP-T.
10. Explain RPL encryption and authentication on constrained nodes.

**MODULE IV**

1. What are the major challenges in IoT security?
2. Explain the impact of OT Network Characteristics on IoT Security.
3. Differentiate the types of IoT data analytics results.
4. How can the insecure operational protocols be characterized?
5. Explain the Hadoop ecosystem with a neat diagram.
6. Explain the Flexible Net Flow Architecture.
7. Explain the “The Purdue Model for Control Hierarchy” and OT network  
   characteristics.
8. Explain any two formal risk analysis structures

**MODULE V**

1. Implement LDR interfacing with Raspberry Pi.
2. Explain the development of a RESTful web API.
3. Write a program to interface an LED and a switch with Raspberry Pi.
4. List down the Raspberry Pi interfaces and explain.
5. Explain the working of WAMP protocol.
6. Describe how AWS supports IoT development
7. Demonstrate an example of Raspberry Pi applications for Industrial IoT.
8. Explain the Django Architecture.