

6th Sem. / Information Technology /CS&E / 2022(S)

Th2 Internet of Things

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. What is the concept behind Internet of Things?
 - b. List down the name of the fundamental components of IOT.
 - c. What are the different types of actuators are there in IOT?
 - d. Mention the name of various connectivity technologies that are used in IoT.
 - e. What does M2M stand for? Write down the three applications of M2M.
 - f. What is the importance of Raspberry Pi in IoT? Name the various versions of Raspberry Pi.(any two)
 - g. What does HAN stand for? Mention the name of the elements present in HAN.
 - h. What does SDN stand for? What is the goal of SDN?
 - i. Sum up the basic requirement to perform a case study on Traffic control system using Arduino Board.
 - j. Write down the applications of IIoT.
2. Answer **Any Six** Questions 6 x 5
 - a. Outline the characteristics of IoT.
 - b. Differentiate between Consumer IoT and Industrial IoT.(any five)
 - c. Define multihoming. Classify between classical multihoming and multihoming with multiple addresses.
 - d. Portray the architecture of IEEE 802.15.4.
 - e. Illustrate the four modes by which sensors detect the objects.
 - f. What do you mean by smart home? Give four examples of smart homes in brief.
 - g. Outline the benefits and challenges of IIoT.

- 3 What is the role of sensor in IoT? Write any 2 differences between static sensor and dynamic sensor. Explain about the various types of sensors in IoT. 10
- 4 What does MQTT stand for? Write down the components of MQTT with proper figure. Describe the working principle of MQTT. 10
- 5 Define WSN. Explain about Under Water Acoustic Sensor Networks. 10
- 6 Name any two types of Arduino board. Illustrate the various components of Arduino with proper diagram. 10
- 7 What do you mean by smart cities? Briefly explain about the functional layers in smart parking. 10

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1. Answer **All** questions 2 x 10
 - a. Define RFID?
 - b. Name the different connectivity layers of IoT.
 - c. What is 6LoWPAN?
 - d. What is a sensor? Name its types.
 - e. Name the challenges involved in IoT.
 - f. What is Open Flow Protocol?
 - g. List the various versions of Raspberry Pi.
 - h. Write down any two differences between IoT LAN and IoT WAN..
 - i. Define interoperability.
 - j. What is sensor web enablement?
2. Answer **Any Six** Questions 6 x 5
 - a. Discuss about different components of IoT.
 - b. Define multi-homing. Discuss briefly about multi-homing.
 - c. Portray the architecture of ZigBee.
 - d. Define HAN. Write the advantages & disadvantages of HAN.
 - e. What is IDE? Explain the various basic components of Arduino Board.
 - f. Explain the different types of sensor detection modes with suitable diagram.
 - g. Explain the components of sensor node used in WSN.
3. What is the role of actuator in IoT? Explain about the various types of actuator in IoT. 10
4. Define IIoT. How does IIoT work? Outline the benefits of IIoT. 10
5. Define smart parking. Why we need smart parking system? Discuss the technologies used in smart parking. 10
6. Define SDN. Portray the architecture of SDN. 10
7. Explain the pin configuration of Raspberry Pi. 10

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**Answer any five Questions including Q No.1& 2
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1. Answer **All** questions 2 x 10
 - a. Name the various IOT components.
 - b. Write down any four characteristics of Sensors.
 - c. Classify various types of Actuators in IoT.
 - d. What do you mean by Industry 4.0?
 - e. Write down any four applications of M2M in IoT.
 - f. Differentiate between IoT and Web Stack.(any two)
 - g. In which layers IEEE 802.15.4 is used?
 - h. What are the types of Nodes in M2M?
 - i. Classify nodes based on its behaviour in WSN.
 - j. Define Data Fusion.
2. Answer **Any Six** Questions 6 x 5
 - a. Compare between Piconet and Scatternet in Bluetooth.(any five)
 - b. Explain the architecture of CoAP with a neat diagram.
 - c. Illustrate the working principle of Zigbee with proper diagram.
 - d. Define Software defined Network. Explain the modes of by which sensors detect the object.
 - e. Explain about M2M Ecosystem.
 - f. Differentiate between Software Defined Network and Traditional Network.
 - g. Explain the various components of Arduino UNO Board.
3. Explain the architecture of 6LoWPAN. 10
4. Describe the Pin configuration of Raspberry Pi with a neat diagram. 10
5. Summarise the challenges in Smart Cities. How Smart Parking ecosystem works? 10
6. Differentiate between Consumer IoT and IIoT. Briefly explain about the challenges in IIoT. 10
7. Write a short notes on- 5+5
 - i. MQTT
 - ii. WSN in Healthcare