USN : _____ Course Code : 18IS53

Fifth Semester B.E Semester End Examination, JANUARY_MARCH_2021

INTERNET OF THINGS

Time: 3 hrs Max.Marks :100

Instructions :1. Answer FIVE full Questions selecting at least ONE Question from Each Unit.

MODULE 1

	L	CO	PO	M
1a. Discuss Characteristics of embedded computing applications and also Challenges faced during embedded computing system design.	[1]	[1]	[1]	[10]
1b. What is an embedded computer system? Design example for BMW 850i Brake and Stability Control System.	[1]	[1]	[1]	[10]

OR

2a. Illustrate 4 IoT Communication Models.	[1]	[1]	[1]	[6]
2b. IoT level 6 deployment template with block diagram.	[1]	[1]	[1]	[6]
2c. Demonstrate an Arduino program along with circuit diagram for LED Blinks.	[3]	[1]	[3]	[8]

MODULE 2

3a. Explain IoT – Sensors and actuators.	[2]	[2]	[1]	[6]
3b. Explain IoT Hardware and software.	[2]	[2]	[1]	[6]
3c. Demonstrate an Arduino program with ciruit diagram that Reads an analog input (potentiometer) result to the serial monitor.	[3]	[2]	[3]	[8]

OR

4a. Discuss domain specific IoTs - Home automation.	[2]	[2]	[1]	[10]
4b. Discuss domain specific IoTs - Logistics	[2]	[2]	[1]	[10]

MODULE 3

5a. Discuss IoT Key Features, Advantages & Disadvantages.	[2]	[3]	[1]	[10]
5b. Explain IoT applications for Environmental monitoring, Manufacturing technology / applications.	[2]	[3]	[1]	[10]

OR

6a. Analyze IoT Design Methodology along with the Steps.	[2]	[3]	[1]	[6]
6b. Explain Device Discovery capabilities – Registering a device, De-register a device.	[2]	[3]	[1]	[6]
6c. Illustrate an Arduino program with circuit diagram for - Temperature Sensor.	[3]	[3]	[3]	[8]

MODULE 4

7a. Illustrate with block diagram IoT-A architectural reference model building blocks.	[2]	[4]	[1]	[6]
7b. "Reference architecture for IoT" - explain with block diagram.	[2]	[4]	[1]	[6]

7c. Illustrate an Arduino program with circuit diagram for Pitch follower – with piezo buzzer, with a delay of 2 seconds.

[3] [4] [3] [8]

OR

8a. Discuss the high-level representation of the IoT-Reference-Model and IoT- Reference-Architecture dependencies and model influences.

[2] [5] [1] [10]

8b. Explain the "IoT-A architectural reference model" building blocks.

[2] [5] [1] [10]

MODULE 5

9a. Explain the IOT-A Tree, showing the technology and applications.

[] [5] [] [6]

9b. Illustrate with diagram publish-subscribe messaging using Auto Bahn.

[2] [5] [1] [6]

9c. Demonstrate an Arduino program with a circuit for blinking 2 LEDs alternatively, with delay of 2 seconds.

[3] [5] [3] [8]

OR

10a. Explain with a block diagram the WAMP Protocol, and explain the architecture.

[2] [5] [1] [10]

10b. Discuss with a block diagram the DJango Architecture.

[2] [5] [1] [10]

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Fifth Semester B.E MAKEUP Examination, MARCH_MAY_2021

INTERNET OF THINGS

Time: 3 hrs Max. Marks :100

Instructions :1. Answer FIVE full Questions selecting at least ONE Question from Each Unit.

	L	CO	PO	M

MODULE 1

1a. Explain inferring information and knowledge from data. [1] [1] [1] [6]

1b. Discuss applications of IoT, with examples. [1] [1] [1] [6]

1c. Illustrate an ARduino program with circuit diagram for Ultrasound rangefinder which returns the distance. [3] [1] [3] [8]

OR

2a. Define IoT. Explain characteristics of IoT. [1] [1] [1] [10]

2b. Illustrate generic block diagram of an IoT device. [1] [1] [1] [10]

MODULE 2

3a. Design a GPS moving map application, with all steps: from simple requirement form to hardware & software requirements. [2] [2] [1] [10]

3b. Explain any 5 Applications of IoT, listed. [2] [2] [1] [10]

OR

4a. Design an algorithm (pseudo code) to auto ON and OFF car head light system:

a. ON due to night
b. ON when in tunnel / thick road side trees / dark clouds / hard shadow
c. Should not mistaken by street lamps / other light soucres during night.
d. Waiting period / margin time (duration) must be allowed for OFF
e. Instant ON provision [2] [2] [1] [6]

4b. List and compare at least 10 IoT devices, [3] [2] [3] [6]

4c. Demonstrate an Arduino program with circuit for Fading LED. [3] [2] [3] [8]

MODULE 3

5a. Explain IoT for environmental monitoring. [2] [3] [1] [6]

5b. Discuss IoT - media, marketing and advertising. [2] [3] [1] [6]

5c. Illustrate with an Arduino program and circuit that uses LCD (16x2) display. [3] [3] [3] [8]

OR

6a. Illustrate smart wearable devices. [2] [3] [1] [10]

6b. Discuss domain specific IoTs - agriculture. [2] [1] [3] [10]

MODULE 4

7a. Explain IoT-A architectural reference model building blocks. [3] [4] [1] [10]

7b. Discuss Reference architecture for IoT. [2] [4] [1] [10]

OR

8a. Explain High-level representation of the IoT-Reference-Model and IoT- Reference-Architecture dependencies and model influences. [3] [4] [1] [6]

8b. Discuss IoT-A architectural reference model building blocks. [2] [4] [1] [6]

8c. Demonstrate an Arduino program with circuit diagram for PIR (passive infrared sensor) Motion / human presence detection. [3] [4] [3] [8]

MODULE 5

9a. Explain WAMP - AutoBahn for IoT. [2] [5] [1] [10]

9b. Discuss publish-subscribe messaging using AutoBahn. [2] [5] [1] [10]

OR

10a. Explain WAMP Protocol. [2] [5] [1] [6]

10b. Explain DJango Architecture. [2] [5] [1] [6]

10c. Demonstrate an Arduino program with circuit diagram for Digital input read from a push button. [3] [5] [3] [8]

USN : _____ Course Code : 18IS53

Fifth Semester B.E FASTTRACK Examination, AUGUST_SEPTEMBER_2021

INTERNET OF THINGS

Time: 3 hrs Max. Marks :100

Instructions :1. Answer any FIVE full Questions.

	L	CO	PO	M
1a. What is an embedded computer system? Outline complex systems and microprocessors.	[1]	[1]	[1]	[10]
1b. Explain BMW 850i brake and stability control system (ABS), with block diagram and working principle.	[1]	[1]	[1]	[10]
2a. Explain Characteristics of Embedded Computing Applications.	[2]	[1]	[1]	[10]
2b. Interpret Challenges in Embedded Computing System Design	[2]	[1]	[1]	[10]
3a. Define Internet of Things. List Characteristics of Internet of Things.	[1]	[2]	[1]	[10]
3b. Explain generic block diagram of an IoT.	[2]	[2]	[1]	[10]
4a. Explain IoT protocols.	[2]	[2]	[1]	[10]
4b. Illustrate with block diagram, any two IoT levels / deployment templates.	[2]	[2]	[1]	[10]
5a. Explain IoT Key Features, List Advantages & Disadvantages of IoT systems.	[2]	[3]	[1]	[10]
5b. Outline Domain Specific IoTs: 1.Home Automation,2.Cities, 3.Environment, 4.Energy	[2]	[3]	[1]	[10]
6a. Summarize Domain Specific IoTs: 1.Logistics, 2.Agriculture, 3.Industry,4.Health and Lifestyle.	[2]	[3]	[1]	[10]
6b. Demonstrate with reference to Internet of Things: 1.Hardware and Software2.Sensors, 3.Smart Wearable Devices, 4.Standard Devices..	[2]	[3]	[1]	[10]
7a. Explain Architecture Reference Model.	[2]	[4]	[1]	[10]
7b. Explain the Protocols: 1.6LowPAN,2.RPL, 3.CoAP, 4.MQTT.	[2]	[4]	[1]	[10]
8a. Illustrate Device Discovery capabilities: Registering a device, De-register a device.	[2]	[4]	[1]	[10]
8b. Outline Intel IoTivity, XMPP Discovery extension.	[2]	[4]	[1]	[10]
9a. Explain Cloud Storage models and communication APIs.	[2]	[5]	[1]	[10]
9b. Explain Web server for IoT and Cloud for IoT.	[2]	[5]	[1]	[10]
10a. Explain Python web application framework and designing a RESTful web API.	[2]	[5]	[1]	[10]
10b. Explain Amazon Web services for IoT.	[2]	[5]	[1]	[10]