Register Number:……..

KUMARAGURU
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B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Third Semester

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

U18CSR3001**:** IoT Fundamentals and its Applications

COURSE OUTCOMES

CO1: Understand the characteristics and working of IOT components. [K2]
CO2: Outline the Architectural Overview of IOT.[K2]
CO3: Illustrate the working principles of various sensors and actuators.[K3]
CO4: Identify and analyze IOT applications in various domains.[K2]

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match List I with the following List II CO3 [K_1]

List I	List II
A. UART Interface	i. Peer to peer communication
B. CoAP Interface	ii. Fingerprint sensor
C. SPI Interface	iii. Temperature and Pressure Sensor
D. I2P Interface	iv. Web transfer protocol

	A	B	C	D
a)	ii	i	iii	iv
b)	iii	iv	ii	i
c)	ii	iv	iii	i
d)	iii	i	ii	iv

2. Which of the following touch sensors is used in a cell phone? CO3 [K_2]

a) Resistive sensor b) Human sensor

c) Capacitive sensor d) Follow sensor

3. What two methods can be access and modify an existing program that is running on an IoT device in Cisco Packet Tracer? CO2 [K_2]

1. Click on the device then select the **Programming tab**

2. Go to the home gateway, then select the **Editor tab** prior to logging in
3. Click on the device, then go to the **Thing editor** tab
4. Go to the registration server and login. Then select the **Editor tab**.

a) 1,3 b) 1,4

c) 1,2 d) 2,3

4. A device that converts one form of energy into other form of energy is called_____ CO3 [K_2]

a) Transmitter b) Transducer

c) Receiver d) Inductance

5. Assertion (A): Internet is a collection of interconnected computer networks linked by transmission media such as copper wires, fiber optic cables etc. CO1 [K_1]

Reason (R): WWW is a collection interconnected documents

a) Both A and R are Individually true and R is the correct explanation of A b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false d) A is false but R is true

6. Smallest changes which a sensor can detect is _____ CO3 [K_2]

a) Resolution b) Precision

c) Accuracy d) Scale

7. Arrange the IoT protocol stacks in order CO2 [K_1]

1.Sensing and information

2. Information Passing

3. Network connectivity

4. Application layer

a) 2-3-4-1 b) 1-3-2-4

c) 3-4-2-1 d) 4-1-3-2

8. A network administrator is using packet tracker to mock up a network that includes IoT devices. What can the administrator do from the physical tab of any IoT devices? CO2 [K_2]

a) Change the power supply b) Change pin connections

c) Increase or decrease wattage d) Turn the device ON or OFF

9. Assertion (A): The Internet of things is a rapidly evolving technology capable of transforming numerous areas of our lives. CO1 [K_2]

Reason (R): There are no issues of security, compatibility and data privacy associated with IoT.

a) Both A and R are Individually true and R is the correct explanation of A

b) Both A and R are Individually true but R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true

10. Which type of elements helps in streaming XMPP? CO2 [K_1]

a) XHL

b) XML

c) XPL

d) MPL

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. State the characteristics of IoT. CO1 [K_2]
12. Define 6LoWPAN. CO1 [K_2]
13. List the cloud computing services. CO1 [K_1]
14. Difference between IoT and M2M. CO2 [K_2]
15. What is REST based communication API? CO2 [K_2]
16. Compare COAP and MQTT. CO2 [K_2]
17. Define velocity. CO1 [K_1]
18. What is smart parking? CO4 [K_3]
19. Define fog computing. CO4 [K_2]
20. What are IoT enabling technologies? CO2 [K_2]

Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 350 words)

21. a) Explain with diagram one M2M IoT standardized architecture. 7 CO2 [K_3]

b) Design the protocol layer of IoT and explain various protocols used in each layer. 7 CO2 [K_2]

22. a) Formulate the logical design of IoT with explanation. 8 CO2 [K_2]

b) Discuss about IoT communication model. 6 CO2 [K_2]

23. a) Explain the potential and benefits of an IoT oriented approach over M2M by considering a Health band as the real world use case example. Compare the main characteristics of M2M and IoT. 7 CO4 [K3]

b) Describe some of the technologies which play a key role in IoT enabling technologies 7 CO2 [K_2]

24.	a)	Illustrate the various steps involved in the IoT system design methodology with suitable diagrams.	7	CO4	[K3]
	b)	Explain how actuators and sensors interact with the physical world. Classify actuators based on energy type.	7	CO3	[K_3]
25.	a)	Develop a case study of a smart home automation which includes intrusion detection, smart lighting and Smoke / Gas detection. Illustrate the case study with respect to its IoT levels.	8	CO4	[K_4]
	b)	Explain the working principles of temperature sensor.	6	CO3	[K_2]
26.	a)	Using prefabricated building components can be faster and more cost effective than traditional building methods, and it has an added benefit of creating less construction waste. However, using prefab for large commercial buildings projects can be very complex to coordinate. Demonstrate how IoT is helping to solve this problem.	9	CO4	[K4]
	b)	What are the different challenges of IoT?	5	CO2	[K_2]

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