

# B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

## July / August 2019 Supplementary Examinations

**Programme: B.E.**

**Branch : Computer Science and Engineering**

**Course Code : 16CS5DCIOT**

**Course Title : Internet of Things**

**Semester : V**

**Duration: 3 hrs.**

**Max Marks: 100**

**Date: 29.07.2019**

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any may suitably assumed.

### UNIT - I

- |   |  |    |
|---|--|----|
| 1 | a) Explain the different communication models in IoT   | 06 |
|   | b) Apply the knowledge of different IoT levels and analyze the suitable IoT levels for designing Smart irrigation system and package tracking system | 08 |
|   | c) Identify and list the sensors used to sense closeness of an object relative to another object and illustrate its working principle.               | 06 |

### UNIT - II

- |   |  |    |
|---|--|----|
| 2 | a) Illustrate the features and pin configuration of Arduino Board  | 06 |
|   | b) Design and implement a IoT system to generate an alert by sending call to the farmer when an intruder or animal enters the farm | 08 |
|   | c) Design and implement an IOT system for smart home where the lights are ON/OFF based light intensity in the room.                | 06 |

### OR

- |   |   |    |
|---|---|----|
| 3 | a) Define Actuators and describe the principle of operation of Electromechanical Actuators.   | 06 |
|   | b) Design and implement an IoT system to detect any obstacle in the range and calculate the distance of the obstacle using suitable sensor. | 08 |
|   | c) Write a program to implement a system to control the home appliances using bluetooth technology.   | 06 |

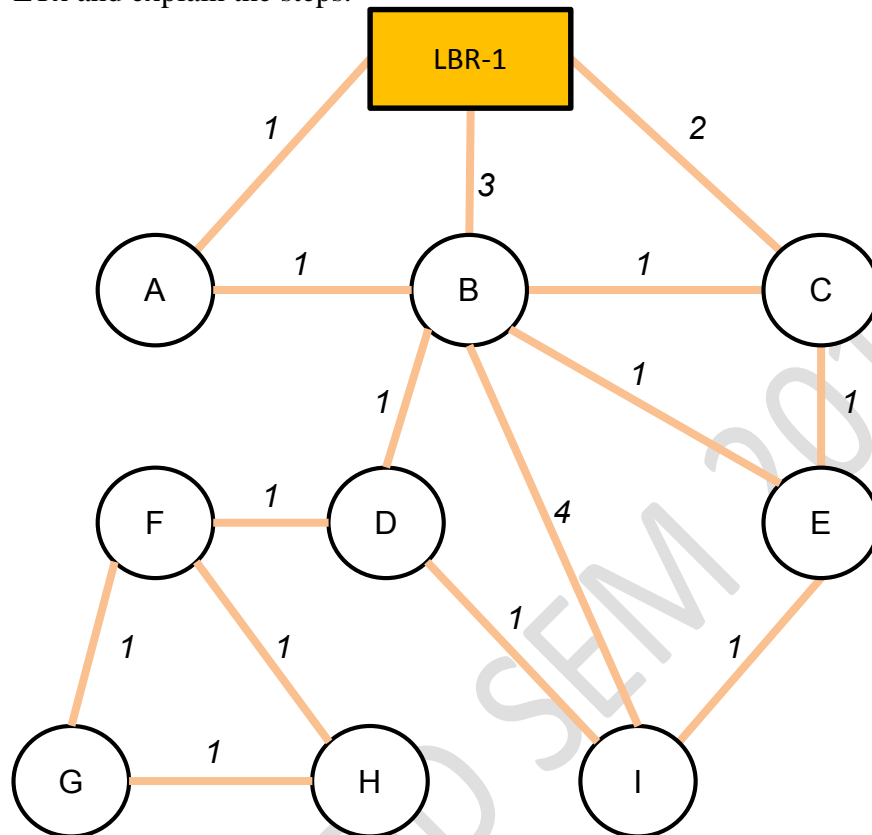
### UNIT - III

- |   |  |    |
|---|--|----|
| 4 | a) Explain features of 6LoWPAN adaptation layer and mesh addressing headers in the context of 802.15.4 network.  | 06 |
|   | b) Identify the need for IoT Reference Architecture. Describe the layer which provide connectivity-communication and layer which provide data analysis and transformation functionality according to IoT Reference Architecture. | 08 |
|   | c) Demonstrate how CoAP protocol is different from HTTP protocol and illustrate the method to achieve reliability in CoAP.   | 06 |

### OR

**Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

- 5 a) Describe the services provided by IoTivity. **04**
- b) Demonstrate the Type of messages exchanged in RPL. Construct a RPL DODAG for the topology with OF (Objective Function) is to minimize the ETx and explain the steps. **10**



- c) Generate a sequence diagram to register a resource in server **06**

#### UNIT - IV

- 6 a) Describe Django architecture and develop a Django model to display temperature data collected by IoT Device. **06**
- b) Write an example of WAMP Publisher and WAMP Subscriber implementation using AutoBahn framework. **08**
- c) Construct a code and explain the functions used for launching an EC2 instance. **06**

#### UNIT - V

- 7 a) Describe any two major technologies that play a key role in IoT. **06**
- b) Describe the features of RFID reader and tags in RFID. Write a program to read the code present on RFID tag and print it in serial monitor. **08**
- c) Illustrate the MQTT characteristics and identify the attributes of MQTT publish message. **06**

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