

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

Autonomous Institute Affiliated to VTU

December 2018 / January 2019 Semester End Main 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: 01.01.2019

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 characteristics of IoT system. | 05 |
| | b) Analyze which IoT level can be considered for designing smart irrigation system and tracking package handling system. Explain with neat diagram. | 10 |
| | c) Discuss microcontroller based system and microprocessor based system. Analyze and justify how you choose among these systems when designing an IoT device. | 05 |

UNIT - II

- | | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 2 | a) Explain WiFi communication and its benefits for enterprise IoT networking and write commands to configure two ESP8266 modules as access point and station respectively | 05 |
| | b) Consider that LED is connected to pin 9 and Potentiometer to A0 in the circuit and LED brightness is controlled using Potentiometer value. Analyze above scenario and discuss how digital Read/Write pins behave like analog write pins. | 10 |
| | c) Identify the component required for temperature monitoring system and implement the program to read the temperature from the sensor and display it on the serial monitor. | 05 |

OR

- | | | |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 3 | a) Explain the different components of Zigbee network with diagram and discuss the properties of zigbee network. | 05 |
| | b) Write and explain the commands to configure two bluetooth modules as Master and Slave respectively and implement a system to control the home appliances using bluetooth technology | 10 |
| | c) Design and implement a program to call a specified mobile number using Arduino and GSM Module when flame sensor detects "Fire" | 05 |

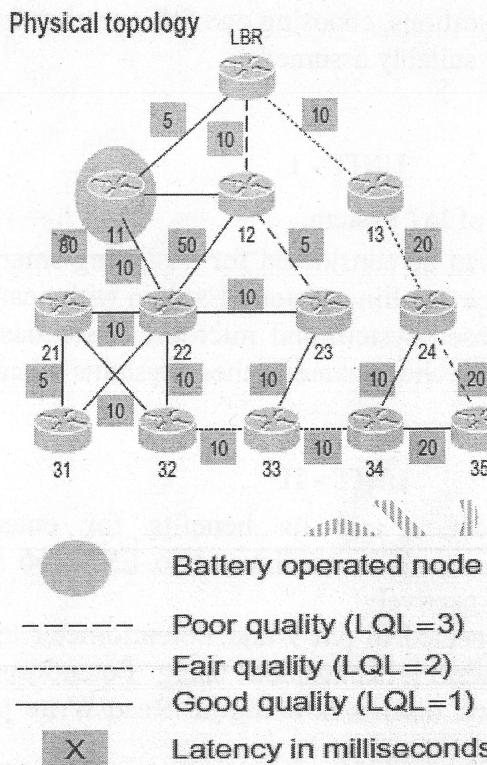
UNIT - III

- | | | |
|---|-----------------------------------------------------------------------------------------------|----|
| 4 | a) Explain 6LoWPAN adaptation layer in the context of 802.15.4 network. | 05 |
| | b) Differentiate between CoAP and HTTP protocol. Analyze how reliability is achieved in CoAP. | 10 |
| | c) Write a C++ program to register a resource in OIC server. | 05 |

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.

OR

- 5 a) Explain the layer-3 functionality of IoT Reference Architecture. **05**
b) Develop a call sequence to find a resource from client side, where the resource is registered in a server using IoTivity support. **10**
c) Consider the physical topology below, Construct DODAG instances with the following objective:
DAG Instance should have High quality links, No battery operated nodes.
Mention the path taken from node 31 to LBR in the DAG instance **05**



UNIT - IV

- 6 a) Explain database services of Amazon Web Services for IoT. **05**
b) Write a program to create a SQS queue and also have the functions to writing and reading to an SQS queue. **10**
c) Write a program for launching EC2 instance in Amazon Web Service. **05**

UNIT - V

- 7 a) Discuss the parameters to be considered while selecting sensors for an IoT system. **05**
b) Discuss WAMP Publisher and WAMP Subscriber using AutoBhan framework with neat diagram. Develop a sequence diagram and messaging using AutoBhan framework. **10**
c) Design and implement access control using RFID technology. **05**
