JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-II Semester (ECE-IoT)

COURSE CODE(CREDITS): 21M1WEC236 (3) MAX. MARKS: 15

COURSE NAME: Smart Internet of Things

COURSE INSTRUCTORS: Dr. Shweta Pandit MAX. TIME: 1 Hour

Note: (a)*All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

Q1. a) Provide the working principle of PIR motion sensor and heartbeat sensor. How the measurements are taken by these sensors? What are different modes of operation of PIR motion sensor? **[2][CO-1]**

b) Give the IoT protocol structure with proper functioning of each layer and compare it with OSI model. Elaborate on the requisite hardware and software components facilitating operations at each layer. **[3][CO-1]**

Q2 a) What is the use of Gyro sensor and how does it function? **[1][CO-1]**

b) Explain the IaaS (Infrastructure-as-a-Service), PaaS (Platform-as-a-Service), and SaaS (Software-as-a-Service) under cloud services categorization. Give appropriate examples under each service. **[1.5][CO-1]**

c) Design a system to control the light switch (ON/OFF) remotely through a microcontroller board (Arduino or NodeMCU). Give the proper algorithm and steps to be followed for this control action. **[2.5][CO-3]**

Q3. Differentiate between the interfacing of DHT11, MQ-02 and IR motion sensor through Node MCU microcontroller with proper algorithm of the program. Provide steps for uploading their data on cloud platform along with libraries to be used. **[5][CO-2]**