

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Tech-II Semester (ECE-IoT)

COURSE CODE(CREDITS): 21M1WEC236 (3)

MAX. MARKS: 25

COURSE NAME: Smart Internet of Things

COURSE INSTRUCTORS: Dr. Shweta Pandit

MAX. TIME: 1 Hour 30 Min.

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**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.

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**Q1.** Differentiate between general purpose operation system (GPOS) and real-time operating system (RTOS). What is hard and soft RTOS? Also compare Contiki, FreeRTOS, RIOT, and TinyOS RTOS. [2.5+.5+2][CO1]

**Q2.** What are the key features of Raspberry Pi microcontroller? Compare Raspberry Pi with Arduino Uno and Node MCU microcontrollers. [3][CO1]

**Q3.** Design a home automation system to control lights of house remotely through Raspberry Pi. Provide the information about the libraries required while coding the system along with proper control commands. [4][CO3]

**Q4.** Design a smart irrigation system that uses soil moisture sensors and weather data to optimize watering schedules, conserving water and maximizing crop yield. Provide the working principle of the sensor/s used. [4][CO3]

**Q5.** Build a home security system that integrates motion sensors, cameras, and door/window sensors, allowing users to monitor their home remotely and receive alerts in case of intrusions. Provide the working principle of the sensor/s used. [5][CO2]

**Q6.** Explain in detail the different functions of RTOS with proper examples. [4][CO1]