Question Bank (K scheme)
Name of Subject: Embedded Systems (ESY) **Unit Test: II**
Subject Code: 315338 **Course: EJ5K**

Chapter 4: Real Time Operating Systems (12 marks)

2 Marks

1. What is RTOS?
2. Differentiate RTOS with desktop (general purpose) operating system (Any four points).
3. Describe any 4 specifications of RTOS. Give any 4 examples of RTOS.
4. Define Hard real time & soft real time operating system.

4 Mark

5. Draw and explain general Architecture of RTOS.

6. Describe any four characteristics of RTOS.

7. Explain inter process communication in brief. State various inter process communication methods.

8. Describe round robin scheduling algorithm with suitable diagram.

9. List scheduling algorithms of RTOS. Describe concept of Pre-emptive multitasking scheduling algorithm of RTOS with suitable diagram.

10. State the methods of Task synchronization. Describe Semaphore with suitable example.

11. Explain the concept of deadlock with suitable example. Describe any three methods each to detect and prevent deadlock.

12. With the help of neat diagram describe binary semaphore.

13. Explain the following a) watchdog timer b) multitasking

14.With the help of neat diagram describe mutex semaphore.

Chapter 4: I/O interfacing with Arduino (16 marks)

2 Marks

15. State any four features of Arduino board.
16.state different types of Arduino boards.
17.state use of following math function in Arduino with example
    i) sqrt() ii) pow()
18.state use of following digital I/O functions in Arduino with example
    i) pinMode() ii) digitalRead()

4 Marks

19.Draw functional block diagram and explain functional units of Arduino Uno.

20.Draw interfacing diagram of 4x4 matrix keyboard with Arduino.

21.Draw the interfacing diagram of seven segment led display to Arduino and write an Arduino C program to display 0-9 continuously.

22.Draw connection diagram to interface Stepper motor with Arduino and Write program to rotate the motor in clockwise direction.

23.Draw interfacing diagram of temperature sensor (LM35) with Arduino and write a program to display temperature in Celsius.

24. Interface one switch and one LED with Arduino microcontroller and write a program to turn on Led when Switch is Pressed.

25.Draw the interfacing diagram of DC motor with Arduino microcontroller

26.Draw interfacing of Relay with Arduino Microcontroller.

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