



B.E DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2013)

Sixth Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U13EET604: EMBEDDED SYSTEMS

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Parallel bus is_____.
 - a) USB
 - b) CAN
 - c) PCI
 - d) I²C
2. is the heart of embedded system.
3. The flag bit affected with **clrw** instruction is
 - a) Carry bit
 - b) reset status bits
 - c) zero bit
 - d) Digit carry bit
4. PIC microcontrollers use _____ architecture to achieve an exceptionally fast execution for a given clock rate.
5. The address of which register is being pushed into the stack by the CPU automatically, When an interrupt occurs?
 - a) Stack pointer
 - b) Program counter
 - c) Working register
 - d) Status register
6. Timer 0 is a _____-bit counter.
7. In traffic light control application using PIC microcontroller, the number of ports used to control the traffic are
 - a) 2
 - b) 3
 - c) 1
 - d) 4
8. In common display the anodes of all segments are connected together.
9. The priority inversion problem can arise in certain situations when using a
 - a) Mailbox
 - b) Semaphore
 - c) Mutex
 - d) Queues
10. A consists of a sequentially executable codes under a state-control by an OS.

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. What are the characteristics of embedded systems?
12. List the features of CAN protocol.
13. Define pipelining.
14. How is the instruction set of PIC16F8xx classified?
15. What are the features of built-in ADC?
16. What are the two modes of Synchronous Serial Port (SSP)?
17. What do you mean by interfacing?
18. What are the different sensors used in weather station?
19. What are the features of RTOS?
20. Define ISR?

PART C (5 x 14 = 70 Marks)
(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. With a neat diagram, explain how to drive a seven segment LED display interfaced with PIC microcontroller.

22. (a) Give the significance of Serial Communication? Describe the I²C standard in connecting the various peripheral devices and its data frame in detail?

(OR)

 - (b) (i) Explain with a block diagram how an embedded system processor is networked to other devices/subsystems using PCI bus. (10)
 - (ii) State the features of USB. (4)

23. (a) (i) Compare CISC and RISC architectures. (4)
 - (ii) With a neat architecture, explain the signals and the functional blocks of PIC16F8xx microcontroller. (10)

(OR)

 - (b) Discuss the organization of memory in PIC16F8xx.

24. (a) What is an I²C bus in a PIC microcontroller? Explain its operation with necessary diagrams.

(OR)

- (b) (i) What is MPLAB IDE? Explain how it is used in embedded programming. (6)
(ii) Explain the function of timer1 as an external event counter with neat diagram. (8)

25. (a) (i) Comment on how semaphores are being used in embedded applications. (6)
(ii) What do you mean by scheduling? Discuss round robin scheduling algorithm to make the ready thread to run. (8)

(OR)

- (b) (i) Explain the sequence of events involved in processing a hardware interrupt with a neat diagram. (6)
(ii) Explain in brief the memory managing strategy for a system. (8)
