SP-170

Total No. of Pages : 3

Seat No.	

Fourth Year (Electronics & Telecommunication Engg.)
(Semester - VII) (CBCS) Examination, December - 2023
EMBEDDED SYSTEMS
Sub. Code : 83824

9406

Day and Date : Friday, 01- 12 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 1.00 p.m.

Instructions :
1) **All questions are compulsory.**
2) **Figures to right indicates full marks of the question.**
3) **Assume suitable data wherever appropriate.**
4) **Use of nonprogrammable scientific calculator is allowed.**

Q1) Choose the correct answer. Each sub-question carries 2 marks. **[7×2=14]**

a) PIC 16F877 has _____ bidirectional I/O ports.

i) 5 ii) 4

iii) 3 iv) 2

b) The CCP Module of PIC 16F877 contains _____.

i) 16 bit capture register

ii) 16 bit compare register

iii) PWM master/slave duty cycle register

iv) All of these

c) Which of the following is/are the constraints of an embedded system?

i) Available system memory ii) Available processor speed

iii) Limited power dissipation iv) All of these

P.T.O.

d) Which register is used as a stack pointer in ARM7 processor core?

i) R11 ii) R13

iii) R15 iv) R12

e) The LPC 2148 microcontroller has _____ GPIO ports.

i) 4 ii) 2

iii) 3 iv) 5

f) The LPC 2148 Microcontroller has _____ on-chip PLLs.

i) 2 ii) 3

iii) 1 iv) 5

g) RTOS stands for _____.

i) Real timer Operating System

ii) Real trigger on system

iii) Real time operating system

iv) Real to operate system

Q2) Attempt any two of the following. **[2×7=14]**

a) Develop the assembly language program for PIC16F877 to count even numbers in a data block stored at data memory (file register locations).

b) Sketch the Compare mode block diagram of CCP module for PIC 16F877.

c) Describe the types of embedded system based on generation.

Q3) Attempt any Two of the following. **[2×7=14]**

a) Draw A/D result justification format of PIC 16F877. Which register decides it?

b) Sketch the simplified block diagram of On-chip Reset circuit of PIC 16F877.

c) Describe the design issues of embedded system.

Q4) Attempt any Two of the following. **[2×7=14]**

a) Write & analyse ASM code to enable IRQ interrupt of ARM core.

b) Sketch the block diagram of External interrupt logic of LPC 2148 Microcontroller.

c) Explain semaphores & shared data.

Q5) Attempt any Two of the following. **[2×7=14]**

a) Write embedded C code to blink the LEDs interfaced to GPIO port-1 of LPC 2148.

b) Sketch the RESET block diagram including the watch dog timer of LPC 2148 Microcontroller.

c) Describe function queue scheduling & RTOS.

9406