

Seat No. **MAR\_APR 2025 SUMMER EXAMINATION****11731 Bachelor of Technology (NEP-2.0)****Sub. Name: Embedded Systems****Sub. Code: 83824/84050****Day and Date: MAY ,06-05-2025****Total Marks: 70****Time: 10:30 AM To 01:00 PM**

- Instructions:**
1. All questions are compulsory
  2. Assume suitable data wherever necessary and mention it boldly
  3. Draw neat labelled diagrams wherever necessary
  4. Use of Scientific calculator is allowed

**Q1) Solve following MCQ.****[14]**

- i. Which instruction is applicable to set any bit while performing bitwise operation settings?
  - A. bcf
  - B. bsf
  - C. both a & b
  - D. none of the above
- ii. Which timer/s possess an ability to prevent an endless loop hanging condition of PIC along with its own on-chip RC oscillator by contributing to its reliable operation?
  - A. Power-Up Timer (PWRT)
  - B. Oscillator Start-Up Timer (OST)
  - C. Watchdog Timer (WDT)
  - D. All of the above
- iii. What is the rate of power up delay provided by an oscillator start-up timer while operating at XT, LP and HS oscillator modes?
  - A. 512 cycles
  - B. 1024 cycles
  - C. 2048 cycles
  - D. 4096 cycles
- iv. Where do the conversion interrupt flag (ADIF) end sets after an accomplishment of analog-to-digital (ADC) conversion process?
  - A. INTCON
  - B. OPTION
  - C. ADCON0
  - D. None of the above
- v. ARM7 processor core is placed in \_\_\_\_\_ mode after reset.

- A. supervisor
- B. system
- C. User
- D. Undef

- vi. The size of Timer0 is \_\_\_\_\_ bit and Timer 1 in \_\_\_\_\_ bit in LPC2148 respectively
- A. 16, 16
  - B. 16,32
  - C. 32,32
  - D. 8,8
- vii. In Task state diagram the Highest priority Task is moved from Ready state to \_\_\_\_\_ state.
- A. Block
  - B. Running
  - C. Ready
  - D. None of Above

**Q2) Solve any TWO [14]**

- a. What is embedded system? Classify them based on complexity . [7]
- b. Explain the format of OPTION\_REG and STATUS register in detail in PIC16F877. [7]
- c. Write a program for multiplication of two 8 bit numbers in assembly for PIC16F877. [7]

**Q3) Solve any TWO [14]**

- a. What is pipeline? Explain pipeline execution sequence with example. [7]
- b. Explain Timer 1 Module of PIC16F877 along with FSRs [7]
- c. Execute assembly language program to Flash LED connected to Port B using PIC 16F877. [7]

**Q4) Solve any TWO [14]**

- a. Describe task & task states? Also explain multitasking. [7]
- b. solve the functions of following registers of LPC 2148 [7]  
a) IOPIN b) IOCLR c) IODIR d) IOSET
- c. Draw a format of PCON register of LPC 2148. [7]

**Q5)** Solve any TWO

- a.** Discuss semaphores and shared data in RTOS. **[7]**
- b.** State the features of LPC 2148 Microcontroller **[7]**
- c.** Test the embedded C code to transmit 'Examination' using UART in LPC2148 **[7]**

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (84050) Embedded Systems Part 4 SEM 7
- 2] (1154) B.Tech. CBCS (83824) Embedded Systems Part 4 SEM 7