Seat No.

Total No. of Pages : 3

OCT-NOV 2025 WINTER EXAMINATION

1154 B.Tech. CBCS

Sub. Name: Embedded Systems

Sub. Code: 83824/84050

Day and Date: Thursday ,18-12-2025 **Total Marks: 70**

Time: 02:30 PM To 05:00 PM

Instructions:
1. **All questions are compulsory**
2. **Draw neat labelled diagrams wherever necessary**
3. **Figures to the right indicate full marks**
4. **Use of Scientific calculator is allowed**

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

i. PIC Microcontroller has ------Timers & -------Capture/ Compare /PWM Modules respectively.

A. 2,2
B. Brown-out reset
C. 3,3
D. None of the above

ii. In an Operating System, each process has its own_____.

A. address space and global variables
B. open files
C. pending alarms, signals and signal handlers
D. all of the above

iii. SPI stands for -----

A. Serial Peripheral Interface
B. Standard Performance Index
C. Serial Processing Image
D. None of The Above

iv. Each instruction in ARM machines is encoded into ------- Word.

A. 2 byte
B. 4 byte
C. 3 byte
D. 8 byte

v. In LPC-2148, following is the function of mask register

A. Byte Addressability
B. Treating set of port bits in the form of group without changing other bits
C. Relocation to ARM local Bus

83374

D. All of the Above

vi. ARM processors where basically designed for -------
A. Main frame systems
B. Distributed systems
C. Mobile systems
D. Super computers

vii. TRISA register used to ----------
A. To control direction of Port A
B. To write on Port A
C. Both A&B
D. None of The Above

Q2) Attempt any TWO of the following. (02*07=14) **[14]**

a. Explain the characteristic and design issues of embedded system. **[7]**

b. Explain various Addressing modes of PIC Microcontroller **[7]**

c. Draw and explain port C of 16F877 **[7]**

Q3) Attempt any TWO of the following. (02*07=14) **[14]**

a. Draw and explain various CPU Register of PIC Microcontroller. **[7]**

b. Draw and explain block diagram of Timer 0 of PIC16F877 also explain OPTION register related to Timer 0 **[4]**

c. Draw and explain ARM Data flow model **[7]**

Q4) Attempt any TWO of the following. (02*07=14) **[14]**

a. Write ASM code to copy CPSR register to a memory location 0x40000000. **[7]**

b. Write embedded C program to interface the 16*2 LCD to LPC 2148 and to display the message 'Shivaji University on LCD. **[7]**

c. State the different states of tasks and explain. **[7]**

Q5) Attempt any TWO of the following. (02*07=14) **[14]**

a. Explain the concept of RTOS. Give difference between Embedded system & RTOS **[7]**

b. Explain single register load and store instructions in case of ARM 7 along with **[7]**

83674

examples.

c. Explain power saving concept in embedded system. How power optimization can be achieved using power control block and what are the registers associated with power control? **[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

83637 4