Printed pages: 02 **Sub Code: EEC-047**

Paper Id: | 3 | 0 | 1 | 5 | **Roll No.** | | | | | | | | | | |

B.TECH
(SEM. VII) THEORY EXAMINATION 2017-18
EMBEDDED SYSTEM

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections.
2. Assume any missing data.

SECTION A

1. Attempt *all* questions in brief. **2 x10 = 20**

a. What are the types of embedded system?
b. Why we use embedded system?
c. What is the significance of watchdog timer in embedded system?
d. What is I2C?
e. What is meant by UART?
f. List the functions of a kernel.
g. What is RTOS?
h. What is the difference between mutexes and semaphores?
i. Define full duplex communication.
j. Write short note on push buttons?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. What is an embedded system? Explain the different applications of embedded system. Also write design parameters of an embedded system and its significance.
b. Describe the advantages and disadvantages of using memory-mapped I/O versus standard I/O mapped.
c. What is Programmable Logic Device (PLD)? What are the different types of PLDs? Explain the role of PLDs in Embedded system design.
d. Explain with examples the different addressing modes supported by 8051 CPU.
e. Describe hierarchical RTOS. List three ways in which an RTOS handles the ISRs in a multitasking environment.

SECTION C

3. Attempt any one parts of the following: **10 x 1 = 10**

a. What is Digital Signal Processor (DSP)? Explain the role of DSP in embedded system design?

b. Explain General Purpose Processor (GPP) and Application Specific Instruction Set Processor (ASIP). Also write the difference between them. Give an example for both.

4. Attempt any one parts of the following: **10 x 1 = 10**

a) Explain RISC and CISC processors in detail. Also write the difference between them. Give an example for both.
b) Explain Harvard and Von Neumann architectures and what are the advantages of Harvard architecture?

5. Attempt any one parts of the following: **10 x 1 = 10**

a) Explain the sequence of operation for communicating with an I2C slave device. What is the difference between I2C and SPI communication interface?

b) Explain the architecture of the 8051 microcontroller with a block diagram.

6. Attempt any one parts of the following: **10 x 1 = 10**

a) Explain with neat sketch about architecture of 80486.

b) Describe Semaphores, Tasks, States and shared data.

7. Attempt any one parts of the following: **10 x 1 = 10**

a) Describe Serial protocols. Parallel protocols and wireless protocols.

b) Interface the DAC, LED and Push Buttons with microcontroller and explain it briefly.