

**B.Tech. – VIEP – ELECTRONICS AND
COMMUNICATION ENGINEERING
(BTECVI)**

00545 **Term-End Examination**
June, 2019

BIEL-024 : EMBEDDED SYSTEMS DESIGN

Time : 3 hours

Maximum Marks : 70

***Note :** Attempt any **seven** questions. All questions carry equal marks. Missing data, if any, may be suitably assumed. Use of scientific calculators is permitted.*

1. Explain the role of processor selection in the design of an embedded system. 10

2. List the various development phases involved in the design cycle of an embedded system. 10

3. Explain how various software tools are utilized during the development phase of an embedded system. 10

4. List and explain the various interrupt routines used in a Real Time Operating System (RTOS) environment. 10

5. Briefly explain the following terms with respect to RTOS environment : $4 \times 2 \frac{1}{2} = 10$
- (a) Message Queue
 - (b) Timer Function
 - (c) Events
 - (d) Memory Management
6. Explain the various instruction sets and addressing modes of 8051 microcontroller. 10
7. Briefly describe the architecture of internal registers, clock initialization and interrupts of a PIC microcontroller. 3+4+3=10
8. Draw and explain the architecture of I2C Bus. 10
9. Explain the following processes : 2×5=10
- (a) Interfacing of analog and digital blocks with microcontroller.
 - (b) Interfacing of relays and stepper motor with microcontroller.
10. Write short notes on any **two** of the following : 2×5=10
- (a) IEEE 1149.1 (JTAG) Testability
 - (b) AVR 8515 Microcontroller
 - (c) Serial Data Communication in 8051