| BIEL-024 |

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

Term-End Examination

00123

December, 2016

BIEL-024 : EMBEDDED SYSTEMS DESIGN

Time : 3 hours   *Maximum Marks : 70*

*Note : Question no. 1 is **compulsory**. Attempt any **four** questions from the rest. All questions carry equal marks. Use of scientific calculator is permitted.*

1. Choose the correct answer for the following questions :   *7×2=14*

    (a) Which of the following is more important in RTOS ?

    (i) Maximizing the throughput of the system

    (ii) Maximizing the processor utilisation

    (iii) Minimizing the response time

    (iv) Response within certain stimulated time period

(b) LED stands for

    (i) Light Emitter Diode

    (ii) Light Emitting Diode

    (iii) Light Editing Diode

    (iv) Liquid Emitter Diode

(c) Which of the following is commercially claimed RTOS ?

    (i) LINUX

    (ii) Windows NT

    (iii) VxWorks

    (iv) Sun Solaris

(d) Once a program is compiled, it can be loaded for execution

    (i) Only from the compiler generated starting address

    (ii) Anywhere in the main memory

    (iii) User needs to specify where the compiled code is to be loaded

    (iv) It is loaded starting from address 0 in the main memory

(e) Who sets the timer for pre-emptive scheduling ?

    (i) The user

    (ii) The processor clock

    (iii) The operating system scheduler

    (iv) ALU clock

(f) 8051 microcontroller is an embedded system.

(i) True

(ii) False

(g) DMA is set up by using an interrupt.

(i) True

(ii) False

2. (a) Explain the role of processor selection in an embedded system. Also differentiate between microprocessor and microcontroller. 7

(b) Define embedded system. Explain embedded system project management. Give some examples of sophisticated embedded systems. 7

3. (a) Discuss the various factors be considered for the selection of RTOS. Explain In-circuit emulator. 7

(b) Explain message-queues, timer function and event memory management offered by RTOS. 7

4. (a) Describe the various addressing modes of 8051 microcontroller with suitable examples. 7

(b) Explain the need of interrupts in processing systems. What is interrupt latency ? Explain the factors affecting it. 7

5. (a) Draw the circuit diagram to interface LCD and 8051 microcontroller and explain it. 7

(b) Explain the working of assembler, compiler and cross-compiler with suitable examples. 7

6. (a) Explain how subroutine calls are executed in 8051 microcontroller. Name the various registers of 8051 microcontroller. 7

(b) Describe the core protocol. What is the importance of testability in the embedded system design ? 7

7. Write short notes on any *two* of the following : 2×7=14

(a) Ethernet

(b) Various Interrupts in 8051 Microcontroller

(c) Integrated Development Environment (IDE)

(d) PIC Microcontroller