| BIEL-024 |

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

Term-End Examination

June, 2016

00296

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 defines response time ?

          (i)   Time from the first character of input to the first character of output

          (ii) Time from the last character of input to the last character of output

          (iii) Time from the first character of input to the last character of output

          (iv) Time from the last character of input to the first character of output

(b) Identify which of these is a real time application scenario.

(i) An aircraft's yaw control system

(ii) Recounting a day's transaction in an account book of a small company

(iii) Printing of a company's annual report

(iv) An online bus ticketing system

(c) ROM stands for

(i) Read Once Memory

(ii) Read Only Memory

(iii) Random Access Memory

(iv) Random Only Memory

(d) An example of RTOS is

(i) LINUX

(ii) VxWorks

(iii) UNIX

(iv) Window

(e) Bluetooth basically works on the frequency

(i) 81 MHz

(ii) 2·4 GHz

(iii) 900 MHz

(iv) None of these

(f) Microprocessors have their own ROM.

(i) True

(ii) False

(g) Time sharing system is always a multiprogramming system.

(i) True

(ii) False

2. (a) Tabulate the difference between microprocessors and microcontrollers. Discuss the usage of software tools for the development of an embedded system. 7

(b) Explain the design cycle in the development phase for an embedded system. 7

3. (a) What is the function of message queues and timer in RTOS ? Explain the advantages and disadvantages of using larger number of tasks in RTOS. 7

(b) Explain the rules that interrupt routines must follow in a RTOS. 7

4. (a) Draw the architecture of 8051 microcontroller and explain its functional blocks. 7

(b) Describe serial interface, timer/counter and interrupts in 8051 microcontroller. 7

5. (a) Draw and explain the interfacing of a stepper motor as a peripheral device with 8051 microcontroller. 7

   (b) Give the functional block diagram of typical ADC and DAC system and explain. 7

6. (a) Write down the features of CAN bus, SHARC link ports and Bluetooth protocol. 7

   (b) Draw and explain the Boundary scan architecture for IEEE 1149·1 (JTAG). 7

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

   (a) Issues in Embedded System Design

   (b) Compiler and Cross Compiler

   (c) Introduction to AVR 8515 Microcontroller