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BIEL-031

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)/ ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRONICS AND COMMUNICATION ENGINEERING (ACECVI)

00513

Term-End Examination

December, 2016

BIEL-031 : MICROCONTROLLER

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. Question no. **1** is **compulsory**. All questions carry equal marks. Use of scientific calculator is allowed.*

1. (a) What is the size of the flag register in 8051 ?

(b) The minimum number of machine cycles needed to execute an 8051 instruction is _____ .

(c) All of the 8051 ports can be used for both input and output. (True/False)

(d) Why does "RLC R1" give an error in the 8051 ?

(e) Give the magnitude of the unsigned char and signed char data types in 8051.

(f) To mask certain bits we must AND them with _____ .

(g) Which 8051 port needs pull-up registers to function as an I/O port ? *7×2=14*

2. (a) Compare and contrast the various members of the 8051 family. *7*

(b) Explain the ROM memory map of the 8051 microcontroller. *7*

3. (a) Discuss crystal frequency versus machine cycle of 8051 microcontroller. *7*

(b) Explain the dual role of port '0' and port '2' of 8051 microcontroller. *7*

4. (a) Discuss how to access the SFR in 8051 microcontroller. *7*

(b) Draw and explain MCS-51 architecture. *7*

5. Assume that the on-chip ROM has a message. Write a program to copy it from code space into the upper memory space starting at address 80H. Also, as you place a byte in upper RAM, give a copy to P0. *14*

6. (a) Explain and differentiate RISC and CISC microcontrollers. 7

(b) Write a program to transfer value 41H serially (one bit at a time) via pin P2·1. Put two highs at the start and at the end of the data. Send the byte LSB first. 7

7. (a) Explain Synchronous and Asynchronous Serial and Parallel Handshaking. 7

(b) List the timers of the 8051 and their associated registers. 7

8. Explain the purpose of each pin of the 8051 microcontroller. 14