| BIEL-031 |

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

Term-End Examination

June, 2016

00906

BIEL-031 : MICROCONTROLLER

Time : 2 hours   *Maximum Marks : 70*

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

1. (a) Name three features of the 8051 microcontroller.

   (b) The flag register in the 8051 is called _____ .

   (c) In the 8051, the machine cycle remains up to 12 clock cycles of the crystal frequency. (True/False)

   (d) Write the instructions to get status of P2.7 and put it on P2.0.

(e) Write down different types of interrupts in 8051.

(f) What is the largest hexadecimal value that can be moved into an 8-bit register ? What is its decimal equivalent ?

(g) Is "MUL A, R1" a valid 8051 instruction ? Explain.   *7×2=14*

2. (a) Discuss the advantages of microcontroller based systems over microprocessor based systems.   7

   (b) Enlist the salient features of 8051 family of microcontrollers.   7

3. (a) Discuss the register set of MCS-51 family of microcontrollers.   7

   (b) Draw and discuss the internal architecture of 8051.   7

4. Discuss the following signal descriptions of 8051 : 7×2

   (a) ALE / PROG

   (b) $\overline{\text{EA}}$ / V_{PP}

   (c) $\overline{\text{PSEN}}$

(d)　RXD

(e)　$\overline{INT_0}$ and $\overline{INT_1}$

(f)　$\overline{WR}$

(g)　$\overline{RD}$

5.　(a)　How does 8051 differentiate between external and internal program memory ? Explain in detail.　　7

　　(b)　Draw and explain a typical stepper motor interface with 8255.　　7

6.　Draw and discuss the formats and bit definitions of the following SFRs of 8051 :　　7×2

　　(a)　PCON

　　(b)　TCON

　　(c)　IE

　　(d)　IP

　　(e)　TMOD

　　(f)　PSW

　　(g)　SCON

7. (a) Explain the different modes of operation of 8255. 7

   (b) What is the advantage of DMA controlled data transfer over interrupt driven or program controlled data transfer ? Why is DMA controlled data transfer faster ? 7

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

   (a) EEPROM and FLASH Memory

   (b) Power Saving Options of 8051

   (c) Minimum System Configuration of 8085

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