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BIEL-031

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

Term-End Examination

00107

June, 2015

BIEL-031 : MICROCONTROLLER

Time : 2 hours *Maximum Marks : 70*

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

1. Choose the correct answer from the given four alternatives. *7×2=14*

(a) Which feature of microcontroller is ***not*** available in a microprocessor based system ?

(i) Registers

(ii) Program memory lock

(iii) ADC

(iv) None of these

(b) Reset input for 8051

(i) clears all ports

(ii) loads SP by 00H

(iii) selects bank #1

(iv) None of these

(c) What would be the content of the accumulator after the execution of the instruction MOV A, SP just after the System Reset in 8051 ?

(i) Undefined

(ii) 07H

(iii) 08H

(iv) None of these

(d) Which one of the following addressing modes is ***not*** available for ADD, ADDC and SUBB instructions ?

(i) Indexed

(ii) Direct

(iii) Register indirect

(iv) None of these

(e) Addressing mode used in the instruction RAR is

(i) Direct

(ii) Indirect

(iii) Immediate

(iv) Implicit

(f) Non-vectored interrupt having least priority in 8085 is

(i) RST 0

(ii) RST 5·5

(iii) RST 6·5

(iv) INTR

(g) Which one of the following is *not* a machine control instruction ?

(i) EI

(ii) NOP

(iii) HLT

(iv) STC

2. (a) What are the advantages and disadvantages of using Harvard architecture in 8051 ? 6

(b) Draw the block diagram of 8051 microcontroller and explain its salient features. 8

3. (a) Explain PSW SFR. Give the application differences between carry and overflow flags. 7

(b) Twenty bytes of data are stored in location from 7FH to 6CH of internal RAM. Count the number of those bytes which contain 00H, and store this number of null bytes in RAM location 6BH. 7

4. (a) Explain the model input configuration of 8255 using its control word, control signals, timing diagram and status word. 7

(b) Configure the ports of the 8255 as given : Port A = input, Port B = output, PC_U = output, PC_L = input. Assume that the four registers of the 8255 PPI are located at 40H – 43H. 7

5. (a) Explain the addressing modes of 8051 with suitable examples. 7

(b) Describe the functions of $\overline{PSEN}$, $\overline{EA}$, XTAL1 and XTAL2 pins of 8051 microcontroller. 7

6. (a) Draw and label the block diagram of IC 8155. Discuss its operating modes. 7

(b) List various data transfer techniques. Describe any one in detail with suitable example. 7

7. (a) What are assembler directives ? Differentiate between a compiler/interpreter and an assembler. 7

(b) Design a system (both software and hardware) that will cause four LEDs to flash alternately when a push button is pressed using 8255 with 8085 microprocessor. 7

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

(a) Power Management feature of 8051

(b) EPROM and FLASH

(c) VLIW Architecture