Total No. of printed pages = 6

EC 131504

Roll No. of candidate | | | | | | | | | | |

2017

B.Tech. 5th Semester End-Term Examination

Electronics and Communication

MICROPROCESSOR AND APPLICATIONS

Full Marks – 100 Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer Question No. 1 and any *six* from the rest.

1. Answer all questions : (10 × 1 = 10)

   (a) 8086 is a ———— (8 bit/16 bit/32 bit/64 bit) microprocessor.

   (b) In 8086 the overflow flag is set when ———— (the sum is more than 16 bits./ signed numbers go out of their range after an arithmetic operation / carry and sign flags are set / subtraction)

   (c) Status register is also called as ———— (accumulator / stack / counter / flags)

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(d) (Address bus / Control bus / Data bus) ———— is bidirectional.

(e) A 20-bit address bus can locate ———— (1,048,576 locations / 2,097,152 locations / 4,194,304 locations / 8,388,608 locations)

(f) (Arithmetic operations / Logic operations / Data transfer operations/ Branch operations) ———— group of instructions do not affect the flags.

(g) In the RCL Instruction, the contents of the destination operand undergoes function as ———— (carry flag is pushed into LSB & MSB is pushed into carry flag/ carry flag is pushed into MSB & LSB is pushed into carry flag / auxiliary flag is pushed into LSB & MSB is pushed into carry flag / parity flag is pushed into MSB & LSB is pushed into carry flag.)

(h) In 8086, Example for Non maskable interrupts are ———— (TRAP / RST6.5 / INTR / RST6.6).

(i) The BIU prefetches the instruction from memory and store them in ———— (queue / register/ memory / stack)

(j) The instruction that performs logical AND operation and the result of the operation is not available is ———— (AAA / AND / TEST/ XOR).

2. (a) What is meant by multiplexed address and data bus in the 8086? How is the 20 bit physical memory address calculated in 8086? (5)

(b) Draw the flag register of 8086 and explain the typical function of each flag bit. (5)

(c) Why is memory divided into segments in 8086? List the segment registers and their default offset registers. (5)

3. (a) What is the function of the following signals? $\overline{BHE}, ALE, TEST, \overline{DEN}, READY$. (5)

(b) What is the function of the Queue register in the BIU of 8086? (4)

(c) Write an assembly Lagrange program using 8086 instruction sets to count the +ve and –ve numbers from a set of 10 nos stored sequentially in memory. (6)

4. (a) What are the function of the following instructions? DAA, XLAT, LOOP, INT n, REPE. (5)

(b) Describe the different addressing modes in 8086 giving example of each. (6)

(c) Write the different directives that are used to define variables and constants with example of each. (4)

5. (a) What is stack. How are the registers affected after the execution of PUSH and POP instructions? (5)

(b) What will be the value of AX and AL after the execution of the following instructions (5)

LEA SI, 2111H

PUSH SI

POP BX

MOV AX, BX

ADD AL, BL

(c) Write a program to count the no. of characters (each type) in a string of characters stored from the address A000:2000. (Use 8086 instruction sets). (5)

6. (a) If the content of BP = 1000h and SI =2000, what is the value present in CX after 8086 executes the instruction LEA CX, [BP+SI] and LEA CX, [SI]? (4)

(b) What is the difference between SUB and CMP operations? (3)

(c) Write an assembly Lagrange program using 8086 instruction sets to check whether a given string is palindrome or not store the given strings stored sequentially in your detailed memory location. (8)

7. (a) What is the function of the interrupt in a microprocessor? How many interrupt types are present in 8086 and how are they classified ? Write the priority among the interrupts. (6)

(b) Write the sequence of steps performed by the 8086 when it receives an interrupt other than INTR. (5)

(c) What is the function of the T and I flag in the 8086 and how can they be set / reset (4)

8. (a) What are the differences between memory mapped I/O and I/O mapped I/O? (3)

(b) Interface four 16 K × 8 EPROM chips with 8086 such that the memory address range assigned to the EPROME chips is 9000-9FFFF$_H$, using address decoder. (8)

(c) Explain with example fixed port and variable port addressing with respect to 8086 μp. (4)

9. (a) What do you mean by PPI? Draw the block diagram of 8255 and the types of ports along with features. (4)

(b) Explain the I/O mode and BSR mode of 8255 and give the control word with meaning of each bit in both the cases. (6)

(c) Write the control word and the program for alternately setting and resetting PC_3 of port C using BSR mode. (5)

10. What do you mean by Assembler directives? Explain the assembler directives with respect to the following: (3 +12 = 15)

(a) Label

(b) BB

(c) EQU

(d) END.
