Registration No. : | | | | | | | | | | |

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B. Tech

PCEC 4301

Fifth Semester (Back/Special) Examination – 2013

MICROPROCESSORS

BRANCH : AEIE, BIOMED, EC, ETC, IEE

QUESTION CODE : D 245

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What is tristating ? Explain the utility of tristating in microprocessor ?

   (b) Calculate the Physical address of 8086 microprocessor if the segment register and offset addresses are 1000:1234 respectively.

   (c) What is "Multiplexing" technique and why it is used in microprocessors ?

   (d) Specify clearly what is the importance of $\overline{LOCK}$ pin in 8086 microprocessor ?

   (e) Make a control word for the following arrangement of the Intel 8254 where the counter 1 is used to Read/Load least significant byte only and operate in Mode 1 operation and used for BCD counting ?

   (f) How many ports are present in 8255 PPI ? Mention the truth table for port selection taking A_0 and A_1 as inputs ?

   (g) What is interrupt service routine (ISR) ?

   (h) Explain what is instruction pipelining ?

   (i) How large 8086's memory address space and I/O address space ?

   (j) What is a wait state ? If an 8086 processor running at 10 MHz performs read cycles with two wait states, what is the duration of the bus cycle ?

2. (a) Explain the register organization of an Intel 8086 microprocessor. 5

   (b) Explain the operation of Bus controller Intel 8288 along with the pin diagram. 5

3. (a) What are the different types of operating modes used in 8086 microprocessor ? Explain operation of each type with suitable block diagram. 5

(b) Explain the functions of the following instructions: 5

(i) LAHF

(ii) IN ac, port

(iii) SUB mem/reg, reg/mem

(iv) IDIV mem/reg

(v) XOR ac, data.

4. (a) What are the different addressing modes in 8086 ? Explain with examples. 5

(b) Distinguish between 8086 and 8088 microprocessor. 5

5. (a) Explain the operation of clock generator Intel 8284. 5

(b) Write a 8086 microprocessor based program to arrange a series of data in descending order. 5

6. (a) What are the different classifications of 8086 interrupts ? Explain the Intel predefined Interrupts. 5

(b) What do you mean by USART ? Draw the block diagram of Intel 8251 and briefly explain the operation of it. 5

7. Design an 8086 based systems with the following specifications. 10

(i) 8086 in minimum mode

(ii) 64K-byte EPROM

(iii) 64K-byte RAM.

Draw the complete schematic of the design indicating address map.

8. Write short notes on any **two** of the following : 5×2

(a) DMA Controller

(b) Data transfer schemes

(c) Keyboard/Display Controller - Intel 8279

(d) Operand types of Intel 8086.