T.Y. B.Sc. (Sem VI) Mar. 2015

Physics

Electrical Instrumentation - II

Q.P. Code : 14490

(2½ Hours) [Total Marks : 75

N.B. (1) All questions are **compulsory.**
(2) **Figures** to the right indicate **full** marks.
(3) Use of **calculator is prohibited.**

(a) Attempt any **ONE :**

1. What is tri-state logic? Why it is essential in bus oriented system State any four tri-state logic devices used in a microprocessor based system. 8
2. What are buffers? Why do we need bidirectional buffer? Explain working of IC 74LS245 - bidirectional buffer giving its logic diagram and a truth table.

(b) Attempt any **ONE :**

1. What is Multiplexer? State its uses. Implement the following logic equation using 8:1 MUX. 7
   $F(A,B,C,D) = \Sigma m (1, 3, 5, 6, 9, 13, 15)$
2. What is ROM? State uses of ROM. Explain in brief the EPROM.

(a) Attempt any **ONE :**

1. What is flag? Describe in brief the flag format of 8085 microprocessor. 8
2. What is an interrupt? State different types of interrupt in reference with 8085. Describe in brief the TRAP interrupt.

(b) Attempt any **ONE :**

1. Write the instructions to: 7
   a. Load 00H in the accumulator.
   b. Decrement the contents of HL pair.
   c. Make Program Counter to jump to C200H if zero flag is set.
   d. Rotate accumulator right through carry.
   e. Initialize stack pointer to FF00H.
   f. Add the contents of DE register to HL register pair.
   g. Do not perform any operation.
2. State different groups of 8085 instructions. Describe any two instructions, with example, from data transfer group.

3. (a) Attempt any **ONE :**

1) Write an assembly language program to multiply two 8-bit hexadecimal numbers and store the result at a suitable memory location. 8

A series of ten bytes is stored in the memory starting from C100H. Write an assembly language program to arrange the series in ascending order starting from C100H.

b) Attempt any **ONE** : 7

1) Sixteen data bytes are stored in consecutive memory locations starting from C100H. Write an assembly language program to count how many of them are odd numbers. Store the result at memory location C1100H.

2) List the operation modes of 8255 PPI. What is a control word? What is the purpose of control word written to control register in 8255? What is the size of ports in 8255?

(a) Attempt any **ONE** : 8

1. Give the general format of ***switch- case*** statement. Explain with example how it works.

2. Write a program in C++ that accepts a three digit number X and finds the sum of the digits in it. If the input is other than a three digit integer, the program should display the message "input only a three digit number." Use ***if - else*** structure.

b) Attempt any **ONE** : 7

1. Compare the ***for- loop*** and the ***while-loop*** in C++ programming. Write programs to display all the odd integers between 1 and 50 using the ***while-loop***.

2. Describe with suitable example the function declaration and the function call.

ttempt any **THREE** : 15

i) Distinguish between low level language and high level language.

ii) Distinguish between RAR and RRC instructions of 8085.

iii) Define the terms: instruction, opcode and operand.

iv) Write a note on general purpose registers in reference to 8085.

v) Spot the errors in the following C++ statements and write them correctly:

1) int Age =" 43", d.

2) for (num =10, -- num , num ≥ 5)

3) (X>99 && X<=999) ? cout<< " Three digit number "else cout<< " Not a Three digit number\n";

vi) Write a short note on ***break*** statement.