Seat No. : 3994

NC-107

December-2015

B.Sc., Sem.-V

Core Course-302 : Electronics
(New Course)

Time : 3 Hours] **[Max. Marks : 70**

Instructions : (1) **All** questions carry equal marks.
(2) Symbols used have their meanings as usual.

1. (a) Give brief account on 5 × 2 (mod.10) decade counter, giving circuit diagram, Truth table and waveforms. 7

OR

Explain 3-bit synchronous counter giving circuit diagram, Truth table and waveforms.

(b) Explain Moore and Mealy models giving their state transition diagram of sequence detector. 7

OR

Explain conversion between Moore and Mealy models.

2. (a) All the signals of 8085 microprocessor can be classified into six groups name them and write about them. 7

OR

Define : (i) Instruction cycle, (ii) Machine cycle and (iii) T-State.
What will be the time of instruction cycle for execution of MVI A, 32H assuming 4 T-states for op-code fetch and 3 T-states for Memory Read, if clock frequency is 2 MHz.

(b) Give schematic diagram for (i) Demultiplexing of low order address bus and (ii) Generation of Read/Write control signals for memory and I/O. 7

OR

Draw Flag register and brief about each flag.

3. (a) Draw neat and clean timing diagram for instruction 2065 IN 84H. 7

OR

Give comparison between memory mapped I/O and peripheral mapped I/O techniques of addressing.

(b) (i) The contents of accumulator are 93 H and the contents of register C are B7 H. Add both contents and show resultant status of flags Sign S, Zero Z and Carry CY. 4

(ii) Assume accumulator holds the data byte FFH, Illustrate the differences in the flags set by adding 01 H and by incrementing the accumulator contents. 3

OR

Register B has 65 H and the accumulator has 97 H. Subtract the contents of register B from the contents of the accumulator. Show status of resultant flags Sign S, Zero Z and Carry CY. Show subtraction in four steps using 2's complement. 7

4. (a) Assume accumulator contents are AAH and CY = 0. Illustrate the accumulator contents after execution of the RLC instruction twice. 7

OR

Write an instruction to load the accumulator with data by 64 H and verify if the data byte in memory location 2050 is equal to the accumulator contents. If both data bytes are equal then jump to memory location BUFFER.

(b) Sixteen bytes of data are stored in memory locations at XX50H to XX5FH. Transfer the entire block of data to new memory locations starting at XX70H. 7

OR

A set of three readings is stored in memory starting at XX50H. Sort the readings in ascending order. Data (H) 87,56, 42.

5. Answer the followings in one sentence : 14

(1) How many flipflops are required to construct mod-1024 counter ?
(2) Why glitch occurs at the output of the decoding gate ?
(3) What is the difference between 5 × 2 and 2 × 5 decade counters ?
(4) What is racing ?
(5) Which signals are used in memory mapped I/O technique of addressing ?
(6) How many bytes does an OUT instruction have ?
(7) How do RRC and RAR instructions differ ?
(8) Which three instructions can make contents of register A zero ?
(9) Give illustration of STAX instruction.
(10) Give illustration of LDA instruction.
(11) How does serial counter differ from parallel counter ?
(12) What does instruction JMP do ?
(13) Why do we demultiplex AD_7-AD_0 ?
(14) Give illustration of CMA instruction.