

Seat No. : _____

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.