

Seat No. : _____

AC-107

April-2016

B.Sc., Sem.-VI

CC-308 : Electronics

(Advance Digital Electronics and Microprocessor)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) **All** questions carry equal marks.
(2) Symbols used have their meanings as usual.
(3) Draw neat and clean circuit diagrams where required.
(4) **All** questions are compulsory.

1. (a) With neat and clean diagram explain 4-bit D/A converter using input gates, flip-flops, level amplifier and resistive divider network. 7

OR

Give logic diagram of 3-bit simultaneous A/D converter and explain its working.

- (b) (i) For a 6 bit DAC having + 10V full scale output find change in output voltage due to change in LSB and also the output voltage for an input 010101. 3
(ii) Explain about monotonicity test of D/A converter. 4

OR

Explain successive approximation technique of A/D conversion.

2. (a) Write a program to count continuously in Hexadecimal from FFH to 00H in a system with 0.5 μ sec, clock period. Use register C to set-up 1 m sec delay between each count and display the number at one of the output ports. 7

OR

Write a program to generate a continuous square wave with the period of 500 μ sec. Assume the system clock period is 325 n sec, and use bit D₀ to output the square wave.

- (b) Show how will you calculate time delay using register pair technique. write a program and calculate the total time delay assuming 16 bit count loaded in the register pair is 2384 H. 7

OR

Show how will you calculate time delay using one register technique. Write a program and calculate the total time delay.

3. (a) What is a stack ? Write PUSH and POP instructions. 7

OR

Write a program to provide on/off time to three traffic lights (Green, Yellow and Red) and two pedestrian signs (walk and don't walk). Signal lights and signs are turned on/off by the data bits of an output port as shown below :

	Lights	Data Bits	On Time
1.	Green	D ₀	15 Sec
2.	Yellow	D ₂	05 Sec
3.	Red	D ₄	20 Sec
4.	Walk	D ₆	15 Sec
5.	Don't walk	D ₇	25 Sec

The traffic and pedestrian flows are in the same direction. The pedestrians should cross the road when Green light is on.

- (b) Explain execution of CALL instruction showing data transfer sequence. 7

OR

Explain execution of RET instruction showing data transfer sequence.

4. (a) List operating modes of 8255A programmable peripheral interface. 7

OR

Explain control word format of 8255 A.

- (b) Assume the DAC connected at port address 21H with 8085. Write an assembly language program to generate square wave using appropriate delay. 7

OR

Assume the DAC connected at port address 21H with 8085. Write an assembly language program to generate triangular wave.

5. Answer following questions in **one** sentence : 14

- (1) What is the MSB weight of 4 bit resistive load ?
- (2) What is called accuracy ?
- (3) What does SAR stand for ?
- (4) What is full form of LIFO used for stack ?
- (5) What is a stack pointer ?
- (6) How many bytes are occupied by call instruction ?
- (7) For masking data bits which instruction is used ?
- (8) What is BSR ?
- (9) In which mode all ports function as simple I/O ?
- (10) What is control word ?
- (11) Which two modes does 8255A operate into ?
- (12) What the execution of PUSH H will result into ?
- (13) A large software project is usually divided into subtasks, known as _____.
(fill in the blank)
- (14) How many bits are required if a DAC gets a resolution of 1 mV, if full scale output voltage is 10 V ?