

Seat No. : 3313

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 0.5μ 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 500μ sec. Assume the system clock period is 325 n sec, and use bit D_0 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.

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.

OR

Explain execution of RET instruction showing data transfer sequence.

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

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.

OR

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

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5. Answer following questions in one sentence :

(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 ?