1104E136

Candidate's Seat No :_____

B.Sc. Sem.-6 Examination
CC-308
Electronics
April-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Instructions: (1) All questions carry equal marks
(2) The symbols have their usual meanings & figures to the right indicate marks.

1 (i) Give logic diagram of 3-bit simultaneous type A/D converter & explain its working in detail. 7
(ii) Explain Counter type A/D Converter in detail with block diagram. 7

OR

(i) With diagram explain binary ladders designed for 4-Bits in detail. Calculate the output voltage (V_A) caused by third and fourth MSB in a 5-bit ladder if the input levels are 0 = 0 V & 1 = +10 V? 7
(ii) Explain Single-ramp A/D converter with the help of logic diagram and the waveforms. 7

2 (i) Write a program to generate a continuous square wave with the period of 1000 µs. Assume the system clock period is 325 ns, and use bit D_0 to output the square wave. 7
(ii) Explain time delay technique using one resistor with MPU f=5 MHz & load FFH in delay register. 7

OR

(i) Write a program to count continuously in hexadecimal from FFH to 00H in a system with a 0.5 µs clock period, use register C to set up a 1 ms delay between each count and display the numbers at one of the output ports. 7
(ii) Explain time delay technique using a resistor pair with MPU f=10 MHz & load 1977H in delay register. 7

3 (i) Define Subroutine. Give similarities and differences between CALL and RET with PUSH and POP. 7
(ii) Write a program to perform the following functions: (1) clear all the flags (2) load 00H in accumulator and demonstrate that the zero flag is not affected by the data transfer instruction. 7

OR

(i) Define Stack. Explain Restart (RST), Conditional Call and Return Instructions in detail. 7
(ii) Write a program to provide the given ON/OFF time to 3 traffic lights (G, Y & R) & two pedestrian signs (WALK & DON'T WALK). The traffic & pedestrian flow are in the same direction, the pedestrian should cross the road when the Green light is on. 7

Lights	Data Bits	On Time
1. Green	D_0	15 seconds
2. Yellow	D_2	5 seconds
3. Red	D_4	20 seconds
4. WALK	D_6	10 seconds
5. DON'T WALK	D_7	30 seconds

4 (i) List the elements of the 8255A PPI and explain its various operating modes in short. 7
(ii) Write a program to generate square wave. 7

OR

(i) Explain in detail 8255A control word format for I/O Mode and BSR Mode. 7
(ii) Explain DAC 0808 with features, pin configuration, block diagram & applications. 7

5 Attempt any **SEVEN** out of twelve. 14

1 Either the resistive _____ or the ladder can be used as the basis of D/A converter.
2 Two very important aspects of the D/A converter are the resolution & the _____ of the conversion.
3 If multiplexing is required, the _____ converter is most useful.
4 Full form of RLC is _____.
5 Bits can be masked by instruction _____ ing.
6 Counters and time delays can be designed using _____.
7 A large software project is usually divided into subtasks called _____.
8 When PUSH is executed, the SP is _____ by two.
9 When RET is executed, the SP is _____ by two.
10 Fast settling time of DAC 0808 is _____ ns.
11 Bit _____ of the control register specifies the I/O function or the Bit Set/Reset function.
12 The process of digitizing an analog value is called _____.