0404N78

Candidate's Seat No :_____

B.Sc Semester-6 Examination

CC 308

Electronics

April-2024

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 (A) Explain binary ladders designed for 4-Bits in detail. Find the output voltage from a 5-bit ladder that has a digital input of 11010. Assume that 0 = 0 V and 1 = +20 V. 7

(B) Explain Counter type A/D Converter in detail with block diagram. 7

OR

(A) Draw and explain the logic diagram & comparator outputs for input voltage ranges (starting from 0 to +V voltage) of simultaneous A/D conversion. Also draw and explain complete block diagram of 2-bit simultaneous A/D Converter. 7

(B) Draw and explain Continuous A/D converter in detail. 7

2 (A) Explain time delay technique using one resistor with MPU f=1 MHz & load FFH in delay register. 7

(B) Explain time delay technique using a resistor pair with MPU f=1 MHz & load FFFFH in delay register. 7

OR

(A) Explain time delay technique using a resistor pair with MPU f=2 MHz & load 1974H in delay register. 7

(B) Write a program to count continuously in hexadecimal from FFH to 00H in a system with a 0.5 μs clock period, use C to set up a 1 ms delay between each count & display numbers at one of the output ports. 7

3 (A) Write a program to perform the following functions: (1) clear all the flags (2) load 00H in 'A' and demonstrate that the 'Z' flag is not affected by the data transfer instruction. (3) Logically OR the 'A' with itself to set the 'Z' flag, and display the flag at PORT1 or store all the flags on the stack. 7

(B) Define Subroutine. Give similarities and differences between CALL and RET with PUSH and POP. 7

OR

(A) What is stack? Explain Restart, Conditional Call and Return Instructions in detail. 7

(B) 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 (A) List the elements of the 8255A PPI and explain its various operating modes in short. 7

(B) Name and explain eight characteristics of DAC. 7

OR

(A) Draw the block diagram of 8255A explain its chip select logic. 7

(B) Write a program to generate: (a) reverse sawthooth wave, and (b) Square wave. 7

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

1 Two simple but important tests that can be performed to check the proper operation of D/A converter are the steady state accuracy test and the _____ test.
2 If multiplexing is required, the _____ converter is most useful.
3 The error inherent in any digital system due to the size of the LSB is called _____ error.
4 A counter is designed by loading an appropriate _____ in a register.
5 Bits can be masked by instruction _____.
6 RAL and RAR instruction use the Carry flag as the _____ bit.
7 A large software project is usually divided into subtasks called _____.
8 The stack is shared by the _____ and the microprocessor.
9 CALL is _____-byte instruction.
10 Bit D_7 of the control register specifies the I/O function or the _____ function.
11 The process of digitizing an analog value is called _____.
12 The main advantage of R/2R ladder DAC is only _____ types of precision resistors are required.

—X—