B.Tech. 3rd Semester (CSE-AI &ML) (G-Scheme)
Examination, November-2023
DIGITAL LOGIC AND COMPUTER ARCHITECTURE
Paper - PCC-CSE-251-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : ***Question No. 1 is compulsory.*** *Attempt any five questions, selecting* ***one*** *question from each Unit. All questions carry equal marks.*

1. (a) What are Universal Gates ? Realize XOR with the basic gates.

   (b) Differentiate between sequential and combinational circuits.

   (c) Give the difference between RAM and ROM memories.

   (d) Discuss Enabling and Disabling Interrupts

   (e) What do you understand by Virtual Memory ? Where do we use it ?

   (f) Explain any four binary arithmetic operations using an example.

Unit–I

2. Convert the following :

   (a) 145.689 decimal numbers into binary

   (b) 11000010.101 binary into octal

   (c) 3CB hexadecimal into binary

   (d) 4578.54 decimal into hexadecimal

   (e) 3457.346 octal into decimal

3. Minimize the following Boolean function using any *two* methods and verify the result

   F = ABC`D` + ABC`D + ABC`D + AB`C`D + ABCD + AB`CD + AB`CD`

Unit–II

4. What are Addressing Modes ? Also, focus on its types in detail.

5. Explain Algorithms for fixed point and floating point addition, subtraction, multiplication and division operations by taking a suitable example.

Unit–III

6. Explain various CPU Architecture types (accumulator, register, stack, memory/register) in detail.

7. Discuss Hardwired and Micro Programmed Controlled units in detail with their merits and demerits.

Unit–IV

8. What are Interrupter ? Write its types. Also focus on Enabling and Disabling Interrupts.

9. What is Direct Memory Access ? Name the Registers used in it. Draw a block diagram and explain it.