C

Reg. No. :

Question Paper Code: R2F05

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Second Semester

Computer science and Design

R21UCD205- DIGITAL AND COMPUTER ORGANIZATION

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. Give the decimal value of binary 10010. CO1-U

   (a) 610 (b) 910 (c) 1810 (d) 2010

2. How many outputs would two 8:3 line encoders, expanded to a 16:4 line encoder, have? CO1-U

   (a) 3 (b) 4 (c) 5 (d) 6

3. The addressing mode, where you directly specify the operand value is _____ CO1-U

   (a) Immediate (b) Direct (c) Definite (d) Relative

4. Throughput is calculated as ____. CO1-U

   (a) The number of instructions/ Total time to complete the instructions

   (b) Total time to complete the instructions/number of instructions

   (c) Speed of the processor/ Number of instructions

   (d) The number of instructions/speed of the processor

5. The techniques which move the program blocks to or from the physical memory is called as _____. CO1-U

   (a) Paging (b)Virtual memory organization (c) Overlays (d) Framing

PART – B (5 x 3= 15Marks)

6. Define min term and max term CO1-U

7. Implement the following Boolean function using 4:1 multiplexer CO2-App

   $F(A,B,C)=\sum m(1,3,5,6)$

8.		Define Memory unit.	CO1-U	
9.		What are the classifications of data hazards?	CO1-U	
10.		How the interrupt is handled during exception?	CO1-U	

PART – C (5 x 16= 80 Marks)

11.	(a)	Simplify the Boolean expression using K-map $F(A,B,C,D) = \sum m(0,2,3,8,10,11,12,14)$.	CO2-App	(16)
		Or		
	(b)	Simplify the Boolean expression by using a QuineMcCluskey method $F(A,B,C,D) = \sum m(0,1,3,7,8,9,11,15)$	CO2-App	(16)
12.	(a)	Briefly Explain about Flip-Flop and its types.	CO1-U	(16)
		Or		
	(b)	Draw the circuit for 3 to 8 decoder and explain.	CO1-U	(16)
13.	(a)	Write the various types of instructions with an example.	CO1-U	(16)
		Or		
	(b)	Explain various instruction format illustrate the same with an example	CO1-U	(16)
14.	(a)	Explain the various pipelining concepts in computer architecture.	CO1-U	(16)
		Or		
	(b)	Explain in detail about superscalar Operation.	CO1-U	(16)
15.	(a)	Explain in detail about virtual memory with neat diagrams.	CO1-U	(16)
		Or		
	(b)	What is an interrupt? Explain the different types of interrupts and the different ways of handling interrupts.	CO1-U	(16)