B.E. Instrumentation Engineering (Model Curriculum) Semester - IV
IN402M - Digital Circuits and Fundamentals of Microprocessor

P. Pages : 1

Time : Three Hours

27 52

Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.

1.	a)	Clarify the advantages and applications of digital system over analog system.	**8**
	b)	State and prove De Morgan's both theorem.	**8**

OR

2.	a)	Classify the SSI, MSI, LSI, VLSI circuits & give their applications.	**8**
	b)	Draw and explain the transistor as a NOT, AND OR gate.	**8**

3.	a)	Elaborate with the help of logic diagram and truth table, an octal-to-binary encoder.	**8**
	b)	Minimize the following expression using K-map. i) $F(W, X, Y, Z)$ = sum (0, 1, 5, 7, 8, 10, 14, 15).	**8**

OR

4.	a)	Construct NOT, AND OR, EX-OR gate using NAND gate.	**8**
	b)	Distinguish between a multiplexer and de-multiplexer.	**8**

5.	a)	Describe with neat circuit diagram and truth table the operation of full subtractor.	**8**
	b)	Explain BCD-to-Seven segment decoders with their diagram.	**8**

OR

6.	a)	Design a 1:32 demultiplexer using two 1:16 demux.	**8**
	b)	Design a 32:1 multiplexer using two 16:1 multiplexer.	**8**

7.	a)	What is latch explain with diagram? Explain the convention of D to T flip flop?	**8**
	b)	Elaborate the race around condition. Discuss how it can be avoided?	**8**

OR

8.	a)	What is meant by a clocked flip flop? Describe a general method for conversion from one type of flip flop to another type.	**8**
	b)	Distinguish between synchronize and A synchronize sequential Circuits?	**8**

9.	a)	Discuss all the addressing modes of 8085 with suitable examples.	**8**
	b)	Discuss the register organization of 8085 μp.	**8**

OR

10.	a)	Draw and elaborate the architecture 8085 microprocessor.	**8**
	b)	Draw and elaborate the block diagram of 8255.	**8**

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