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**GIET UNIVERSITY, GUNUPUR – 765022**  
 B. Tech ( Third Semester – Regular) Examinations, December – 2020  
**BESEC 3050 - DIGITAL ELECTRONICS**  
**(CSE & CST)**

Time: 2 hrs

Maximum: 50 Marks

**The figures in the right hand margin indicate marks.**

**PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)**Q.1. Answer ALL questions

[CO#] [PO#]

- a. A universal logic gate is one which can be used to generate any logic function. Which of the following is a universal logic gate? CO1 PO1
- i) OR ii) AND  
 iii) XOR iv) NAND
- b. The given hexadecimal number  $(1E.53)_{16}$  is equivalent to \_\_\_\_\_ CO1 PO2
- i)  $(35.684)_8$  ii)  $(36.246)_8$   
 iii)  $(34.340)_8$  iv)  $(35.599)_8$
- c. The expression for Absorption law given by CO2 PO10
- i)  $A+AB = A$  ii)  $(A+AB) = B$   
 iii)  $AB+AA' = A$  iv)  $A+B=B+A$
- d. The inputs/outputs of an analog multiplexer/demultiplexer are \_\_\_\_\_ CO2 PO1
- (i) Bidirectional (ii) Unidirectional  
 (iii) Even parity (iv) Binary-coded decimal
- e. What type of logic circuit is represented by the figure shown below? CO1 PO2
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- (i) XOR (ii) XNOR  
 (iii) AND (iv) XAND
- f. Internal propagation delay of asynchronous counter is removed by \_\_\_\_\_ CO3 PO4
- (i) Ripple counter (ii) Ring counter  
 (iii) Modulus counter (iv) Synchronous counter
- g. The truth table for an SRFF has how many VALID entries? CO3 PO1
- i) 1 (ii) 2  
 (iii) 3 (iv) 4
- h. The chip by which both the operation of read and write is performed CO3 PO4
- (i) ROM (ii) EPROM  
 (iii) PROM (iv) RAM
- i. The full form of ECL is \_\_\_\_\_ CO5 PO1
- (i) Emitter-collector logic (ii) Emitter-complementary logic  
 (iii) ) Emitter coupled logic (iv) Emitter-cored logic

- j. Which of the following method is employed for ADC? CO4 PO2
- (i) Successive approximation type (ii) Ladder network  
 (iii) PWM type (iv) None of the mentioned

**PART – B: (Short Answer Questions)**

**(2 x 5 = 10 Marks)**

Q.2. Answer ALL questions

[CO#] [PO#]

- |  |     |     |
|--|-----|-----|
| a. What is the decimal equivalent of the number $3A_{16}$ ?      | CO1 | PO1 |
| b. What is the 1's and 2's complement of binary number 01011000? | CO1 | PO2 |
| c. Define Half adder and full adder                              | CO2 | PO4 |
| d. Give the comparison between PROM and PLA.                     | CO3 | PO4 |
| e. What is propagation delay?                                    | CO4 | PO2 |

**PART – C: (Long Answer Questions)**

**(6 x 5 = 30 Marks)**

Answer ANY FIVE questions

Marks [CO#] [PO#]

- |  |     |     |      |
|--|-----|-----|------|
| 3. Simplify the following Boolean expression in i) sum of product ii) product of sum using K-MAP $AC'+B'D+A'CD+ABCD$     | (6) | CO1 | PO1  |
| 4. Briefly explain about the NOR and NAND implementation   | (6) | CO1 | PO2  |
| 5. Implement the following Boolean function using 4:1 Multiplexer.<br>$F(W, X, Y, Z) = \sum m(0, 1, 2, 4, 6, 9, 12, 14)$ | (6) | CO2 | PO2  |
| 6. Explain Moore and Mealy models in detail.   | (6) | CO3 | PO4  |
| 7. Design a decade counter using JK Flip Flop  | (6) | CO3 | PO10 |
| 8. Elaborate the concept of memory decoding, error correction and error detection.                                       | (6) | CO4 | PO4  |
| 9. Explain the construction, working principle of the following<br>(i) Successive-Approximation A/D Converter.           | (6) | CO4 | PO2  |
| 10. Explain the working 2 input CMOS NOR gate in detail  | (6) | CO5 | PO1  |

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