



C09-AEI-305

**3215**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**MARCH/APRIL—2013**

**DAEI—THIRD SEMESTER EXAMINATION**

**DIGITAL ELECTRONICS**

*Time* : 3 hours ]

[ *Total Marks* : 80

**PART—A**

3×10=30

**Instructions** : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Compare between weighted and non-weighted codes. 3
2. Realize the following expressions using basic gates : 3
  - (i)  $AB \quad A\bar{B}$
  - (ii)  $AB \quad \bar{C}$
3. Draw the logic circuit of a 4 1 multiplexer and give the truth table. 3
4. List the applications of decoders. 3
5. Explain race around condition in *J-K* flip-flop. 3
6. Draw the diagram of *D*-flip-flop. 3

- 7. Differentiate between synchronous and asynchronous counter. 3
- 8. State the use of shift register as memory. 3
- 9. List the different types of memories. 3
- 10. Define accuracy and monotonicity of a D/A converter. 3

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11. (a) Perform (i)  $1011 \ 0101$  and (ii)  $(649)_{10} \ ( \ )_2$ . 5
- (b) Explain the De Morgan's theorem. 5
- 12. Using K-map method, simplify the following and realize using basic gates :
  - (i)  $Y \ M(0, 1, 2, 4, 5)$  5
  - (ii)  $X \ \overline{ABC} \ \overline{A}BC \ A\overline{B}C \ A\overline{B}\overline{C} \ ABC$  5
- 13. (a) Draw and explain 2-bit digital comparator with truth table. 5
- (b) Construct a full-adder circuit and write the output expressions. 5
- 14. Explain the operation of a tri-state buffer with a neat circuit diagram. 10

- 15.** (a) Draw and explain the working of a *J-K* fiip-flop with the help of truth table. 5  
(b) Draw and explain *S-R* flip-flop with NAND gates. 5
- 16.** Explain mod-16 counter with a neat diagram. 10
- 17.** (a) Explain with a neat diagram the operation of dynamic RAM. 7  
(b) Compare between static RAM and dynamic RAM. 3
- 18.** (a) Explain the D/A converter using weighted resistor method. 7  
(b) Mention the disadvantages of weighted resistor method. 3

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