

DE-7040**11**

DISTANCE EDUCATION

B.C.A. DEGREE EXAMINATION, DECEMBER 2009.

ELECTRONIC DEVICES AND DIGITAL CIRCUITS

(2003 onwards)

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

1. (a) Explain the representation of Gray code with truth table.
(10)
- (b) Convert the decimal numbers 94.5 and 43.75 into equivalent binary numbers.
(5)
- (c) (i) $(2D5)_{16} = (?)_{10}$
(ii) $(32)_8 = (?)_2$
(iii) $(11110110101)_2 = (?)_{16}$
(iv) $(8697)_{10} = (?)_{16}$. (5)
2. (a) What is meant by an Overflow? Is it a Software problem or hardware problem? (10)
- (b) State and prove De Morgan's theorems. (10)
3. (a) What are the applications of Boolean Algebra. (10)
- (b) How does OR addition differ from the ordinary addition method?
(10)
4. (a) Implement $Y = \overline{AB} + A + (\overline{B + C})$ using NAND gates only.
(10)
- (b) $Y = (A + C)(A + \overline{D})(A + B + \overline{C})$ using NOR gates only.
(10)
5. (a) What is a Flip-Flop? What is its function? Explain RS Flip-Flop in detail.
(10)

- (b) Describe K-map simplification for BCD to excess 3 code conversion. (10)
6. (a) Discuss the difference between synchronous and Asynchronous sequential circuits. (10)
- (b) (i) Sketch the logic system for a JK Flip-Flop.
(ii) Verify that the state of the system does not change in between clock pulses. (10)
7. (a) Explain the characteristics of PN diode. (10)
- (b) Explain the process of achieving breakdown in Zenor-Diode. (10)
8. (a) What are the fundamental operations of Bipolar Junction Diode (BJI)? (10)
- (b) Explain the difference between the UJI and SCR characteristics. (10)
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