Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 11350

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Third Semester

Electronics and Communication Engineering

EC 1201 — DIGITAL ELECTRONICS

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Convert binary number 11011110 into its decimal equivalent.

2. State Demorgan's theorem.

3. What is tristate logic? What are the demerits?

4. State the features of Bipolar logic families.

5. Draw the logic diagram and give the truth table of Half subtractor.

6. State the principle of parity checker.

7. How does JK flip flop differ from an S-R flip flop in its basic operation?

8. Mention any four applications of Shift Registers.

9. What is the basic structure of PAL?

10. How is individual location in a EEPROM programmed or erased?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Convert the following decimal numbers to their heradecimal equivalent. (8)

        (1) 14_{10}

        (2) 80_{10}

        (3) 3000_{10}

        (4) 2500_{10}

   (ii) Explain the Canonical and Standard forms of Boolean expression with examples. (8)

Or

(b)   (i)   Elaborate the basic laws of Boolean algebra with sample   (8)

(ii)   Write the steps for simplifying a logic expression using a Karnaugh map.   (8)

12.   (a)   (i)   Draw a CMOS NAND gate and explain its operation. List the characteristics of CMOS Logic family.   (10)

(ii).   Draw a tristate TTL gate and explain its operation.   (6)

Or

(b)   (i)   Compare the features of TTL, ECL and HTL families.   (10)

(ii)   Enumerate the precautionary measures to be considered while handling CMOS device.   (6)

13.   (a)   (i)   Draw the logic diagram for a master slave J-K flip flop and explain.   (8)

(ii)   Explain 16-1 multiplexer with diagram.   (8)

Or

(b)   (i)   Explain the function of an encoder.   (6)

(ii)   Draw and explain a 4 bit Magnitude comparator.   (10)

14.   (a)   (i)   Explain the following term   (8)

(1)   Critical race

(2)   Hazard

(3)   Flow table and flow table reduction

(4)   Non critical race

(ii)   Explain the different modes of operation of asynchronous circuits.(8)

Or

(b)   (i)   Explain the procedure of analyzing Asynchronous sequential circuit.   (8)

(ii)   Explain 4 bit serial in serial out shift register with diagram.   (8)

15.   (a)   Explain in detail the features, organization, types and operations with time diagrams of RAM and ROM.   (16)

Or

(b)   (i)   Explain the basic structure of 256×4 static RAM with neat sketch.   (8)

(ii)   Implement binary to excess 3 code converter using ROM.   (8)

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