Roll No. 1130118539

24043

B. Tech. 3rd Sem. Information Technology (Branch – VI) Examination – December, 2011

DIGITAL ELECTRONICS

Paper : EE-204-F

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : The students have to attempt *first common question which is compulsory,* and *one* question from each of the four remaining Sections. All questions carry equal marks.

1. Answer the following :

(i) 111001111.0011 binary into its octal equivalent.

(ii) 1001,1101,1111.10001 Binary into hexadecimal.

(iii) Define magnitude comparator.

(iv) What are various uses of demultiplexers ?

(v) What are sequential circuits ?

(vi) Differentiate between counters and registers.

(vii) What is Hazards ?

(viii) Signed binary numbers.

SECTION – A

2. (a) Simplify the given function using Quine Mc Clusky method.

F(A, B, C, D) = 0, 2, 3, 5, 7, 11, 12, 13, 14, 18,20

(b) Explain error detecting and correcting codes in detail.

3. (a) Verify that NAND and NOR operations are commutative but not associate.

(b) Simplify the given function using K-map method

F(A, B, C, D) = 0, 2, 3, 5, 7, 11, 12, 13, 14

SECTION – B

4. (a) What is multiplexer? Write down its applications and design a 3*8 multiplexer.

(b) Describe binary multiplier and encoders. Also write down the applications of encoders.

5. (a) Design a combinational circuit that accepts a three-bit number and generates an output binary number equal to the square of the input number.

(b) What is decoder ? Write down its application and construct a 3-to- 8 line decoder.

SECTION – C

6. What are counters ? How do we use them in digital system. Explain asynchronous and module 10 counter with diagrams.

7. (a) Explain serial in serial out shift registers. Also explain its different applications.

(b) Draw a logic diagram, truth table and output waveform for a ring counter with four flip flops.

SECTION – D

8. Discuss reduction of state and flow table in detail with suitable diagrams. Also explain analysis procedure of asynchronous sequential logic.

9. Write a short note on the following :

(a) RAM & ROM

(b) Hazards

(c) Reduction of states

(d) Circuit with latches
