CBCS SCHEME

USN | | | | | | | | | | 15NT54

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Digital Systems Design

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Module-1

1 a. Draw and explain NAND and NOR gates with truth table. **(04 Marks)**
b. Define half adder. Design half adder with truth table and block diagram. **(06 Marks)**
c. With the aid of block diagrams, distinguish between a decoder and encoder. **(06 Marks)**

OR

2 a. State and explain the applications of a multiplexers. **(04 Marks)**
b. Write a verilog code for all the basic gates using data flow, structural flow and behavioural flow description method. **(12 Marks)**

Module-2

3 a. Explain briefly the operation of ripple carry adder with block diagram and logic diagram. **(08 Marks)**
b. Write a short note on parity generators. **(08 Marks)**

OR

4 a. Explain the operation of 3 bit rotators using multiplexer. **(08 Marks)**
b. Write a verilog code for 4-bit ripple carry adder. **(08 Marks)**

Module-3

5 a. Explain the operation of SR latch using NAND gate with truth table. **(08 Marks)**
b. Define shift register. Discuss PIPO with a neat diagram. **(08 Marks)**

OR

6 a. Discuss binary 4-bit synchronous up counter. **(07 Marks)**
b. Discuss the operation of SISO with a neat diagram. **(05 Marks)**
c. Draw the circuit diagram and truth table for up down counter. **(04 Marks)**

Module-4

7 a. Draw and explain realization of CMOS NOR gate and NAND gate. **(08 Marks)**
b. Explain NMOS and PMOS with suitable diagram. **(08 Marks)**

OR

8 a. Discuss CMOS transmission gates and multiplexers. **(10 Marks)**
b. Explain the power dissipation equation for CMOS. **(06 Marks)**

Module-5

9 a. Write a Verilog HDL code for SR and D flip-flop. **(10 Marks)**
b. Write a verilog HDL code for 4-bit ALU design by behavior model method. **(06 Marks)**

OR

10 a. Write a note on programmable logic array and field programmable gate array. **(12 Marks)**
b. How to write a verilog code for latch? **(04 Marks)**

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