Hall Ticket Number:

Code No. : 15401 O(A)

VASAVI COLLEGE OF ENGINEERING (*Autonomous*), HYDERABAD
B.E. (ECE) III Year I-Semester Old Examinations, May-2019
Digital Integrated Circuits and Applications

Time: 3 hours   Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Define Tri-state logic and give its applications.

2. List applications of CMOS bilateral switch.

3. Write the function of an interface circuit with respect to logic families.

4. Give temperature ranges of Digital IC's.

5. Design a full adder circuit using 3 to 8 line decoder with suitable gates.

6. Distinguish between parallel and serial adder in terms of speed and component count.

7. How do you convert a given J-K flip-flop into D flip-flop?

8. Determine the output frequency at the eighth flip-flop of a 10-bit UP counter for clock frequency of 512 KHz.

9. State the advantages of PLD's over fixed function ICs.

10. Distinguish between SRAM and DRAM.

Part-B (5 × 10 = 50 Marks)

11. a) Draw a standard TTL NAND gate circuit with totem-pole output and explain its operation. [5]
    b) Compare the advantages and limitations of open collector, totem-pole and tri-state output of TTL circuits. [5]

12. a) Explain the operation of ECL OR/NOR gate with the help of neat circuit diagram [5]
    b) Write salient characteristics of CMOS IC's. [5]

13. a) Describe the principle of operation of a carry-look-ahead adder. Derive the two level equations for the carry output. [5]
    b) Design a 3-bit even parity generator and checker circuit. [5]

14. a) Design a 3-bit Johnson ring counter using D-flip-flops and draw the timing diagram for a continuous clock. [5]
    b) Design a mod-3 up/down synchronous counter using T flip-flops and explain its operation. [5]

15. a) Describe the differences among ROM, PROM, EPROM and EEPROM. [5]
    b) Draw a SRAM cell with read and write control signals and explain its operation. [5]

16. a) Discuss about Wired Logic mentioning a few advantages and disadvantages. [4]
    b) Compare CMOS, NMOS and dynamic NMOS inverters with respect to their circuit implementation. [6]

17. Write short notes on any *two* of the following:
    a) Binary multiplier [5]
    b) Sequence detector. [5]
    c) PLD's. [5]

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