582

Register No.:

October 2018

Time – Three hours
(Maximum Marks: 75)

[N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory. Answer any FOUR questions from the remaining in each PART – A and PART – B

(2) Answer division (a) or division (b) of each question in PART – C.

(3) Each question carries 2 marks in PART – A, 3 marks in Part – B and 10 marks in PART – C.]

PART – A

1. Draw the AND gate circuit using CMOS.
2. What are races? What are its types?
3. Define synthesis.
4. State the VHDL concurrent signal assignment statements.
5. What is a state diagram?
6. Write the excitation table for JK FF.
7. Expand FPGA and CPLD.
8. What is a macro cell?

PART – B

9. Compare combinational and sequential circuits.
10. Draw the block diagram of an encoder. State a few applications.
11. What is a shift register? State its types.
12. Write the VHDL code for AND gate.
13. Distinguish between a latch and a flip flop.
14. Explain the features of product term expansion in PAL.
15. Draw the block schematic diagram of FPGA.
16. Write the syntax of architecture.

[Turn over.....

PART – C

17. (a) (i) Construct a full adder using 3 × 8 decoder.
(ii) Draw the logic diagram of a single bit magnitude comparator with truth table.

(Or)

(b) (i) Implement the function F=∑m(0,1,2,3,4,8,9,12) with minimal gates.
(ii) Implement the above function with a 4:1 multiplexer (mux).

18. (a) Write the VHDL code for a 2 × 1 mux. Write the truth table and logic diagram of 2 × 1 mux.

(Or)

(b) Write the VHDL code for 2 × 4 binary decoder. Write the truth table.

19. (a) Design a modulo-5 counter using D-FF from state diagram.

(Or)

(b) Design a modulo-6 counter using D-FF from state diagram.

20. (a) Write the VHDL code for JK FF with or without reset.

(Or)

(b) Write the VHDL code for Johnson counter.

21. (a) (i) Implement f=∑(1,2,3,5,7) in PLA.
(ii) Draw the block schematic of CPLD and name the blocks in it.

(Or)

(b) Implement the combinational circuit in PAL
w(A,B,C,D)=∑ m(0,2,6,7,8,9,12,13)
y(A,B,C,D)=∑ m (2,3,8,9,10,12,13)
