



Reg. No. :

Name :

Third Semester B.Tech. Degree Examination, January 2015
(2008 Scheme)
08.306 : DIGITAL ELECTRONICS (T)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions.

1. Convert the number $(F3CA)_{16}$ to binary and octal.
2. Simplify $Y = \overline{(AB + C)}(\overline{A + B + C})$.
3. Differentiate between static and dynamic RAM.
4. Write down the features of combinational circuits.
5. Write down the applications of flipflops.
6. Compare synchronous and asynchronous sequential circuits.
7. Explain how a JK flipflop is converted into a T flipflop.
8. What are races and cycles ? Give examples.
9. Draw the circuit to produce a static – 1 hazard.
10. Differentiate between state equation and characteristic equation. **(10×4=40 Marks)**





PART – B

Answer **any two** questions from **each** Module.

Module – I

11. Realize the operation of a full adder using 3×8 decoder.
12. Simplify the following Boolean expression by Quine-Mccluskey method.

$$f = \sum_m (0, 1, 3, 7, 8, 9, 11, 15). \text{ Verify the result using Karnaugh map.}$$

13. Implement a $16 : 1$ MUX using two $8 : 1$ MUX.

Module – II

14. Design and draw the circuit of a 4 bit twisted ring counter. Draw the waveforms also.
15. Design and draw the circuit of a random sequence generator for 3, 4, 1, 7, 8, 6 ---
16. Explain the monostable operation using IC 74123, draw the waveforms also.

Module – III

17. a) Explain the Moore and Mealy notation in JK flipflop.
b) Differentiate between static and dynamic hazard.
18. Design a sequence detector to detect the beginning of a message. The detector produces an output 1, when the sequence 1101 is detected. Use any flipflop for realization.
19. Write notes on :
 - i) State Assignment Techniques
 - ii) State equivalence
 - iii) State reduction
 - iv) State machine notation.

(20×3=60 Marks)