

## FACULTY OF ENGINEERING

B.E. 2/4 (ECE) II Semester (Main) Examination, May/June 2011

## PULSE, DIGITAL &amp; SWITCHING CIRCUITS

Time : 3 Hours.]

[ Max. Marks : 75

Note : Answer all questions of Part – A. Answer five questions from Part – B.

## PART – A

(Marks : 25)

1. Sketch the step response of a high pass RC circuit. 3

2. Match the following : 2

## A

## B

- |                |  |
|----------------|--|
| (1) Integrator | (a) Reduce the amplitude of the signal     |
| (2) Attenuator | (b) Required Diodes, Resistors & Capacitor |
| (3) Clamper    | (c) Required Diodes and Resistors only     |
| (4) Clipper    | (d) Low Pass RC circuit.                   |
|                | (e) High Pass RC circuit.                  |

3. Compare UJT and SCR. 2

4. Draw the circuit of a Schmitt trigger. 3

5. Show the Truth Table for the following function and find its simplest product of sum form :

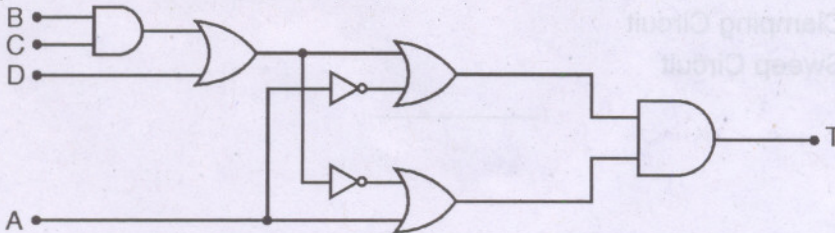
$$f(x, y, z) = \bar{x} + y\bar{z}$$

3

6. Simplify the following algebraic expression : 2

$$\bar{w}\bar{x} + \bar{x}\bar{y} + \bar{w}\bar{z} + yz$$

7. Express T as a function of A, B, C, D. 3



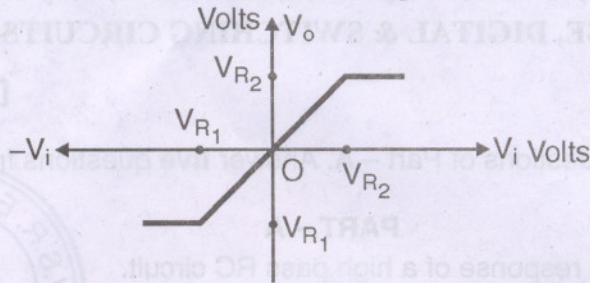
8. Design Half adder with NAND gates only. 3

9. Convert a JK to D flip-flop. 2

10. Write the excitation table of SR and JK flip-flop. 2

**PART - B****(Marks : 50)**

11. (a) Compare Differentiator and Integrator: **3**  
 (b) Design a circuit to obtain the following transfer characteristic : **7**



12. (a) Draw the circuit of a monostable multivibrator and derive an expression for pulse width. **6**  
 (b) Plot the waveform at the base and collector of each transistor. **4**
13. Find the minimal SOP and POS Expression for the following expression using K-map : **10**  

$$f(w, x, y, z) = \sum m(0, 1, 4, 5, 6, 7, 9, 11, 15) + \sum d(10, 14)$$
14. Design a circuit which converts a BCD code to 7 segment display code. **10**
15. Design a contact network, with four input relays, w, x, y and z, which receives BCD numbers and produces a signal whenever the present number is 3 or multiple of 3. **10**
16. Design a 3 bit synchronous up counter using JK flip-flop. **10**
17. Write short notes on any **two** :  
 (a) Symmetric Network **5**  
 (b) Clamping Circuit **5**  
 (c) Sweep Circuit **5**