

**EC-309 PULSE AND DIGITAL SWITCHING CIRCUITS**

(B.Tech., 5<sup>th</sup> Semester, 2125)

Time : 3 Hours

Maximum Marks : 60

Note : Section A is compulsory. Attempt any four questions from Section B and any two questions from Section C. Assume missing data.

**Section - A**

1. (a) Define Linear wave shaping and give examples.  
 (b) Indicating salient points distinguish between compensated and uncompensated attenuators.  
 (c) What is expression of time constant ( $\tau$ ) for an RC-circuit with  $R=500\Omega$  and  $C=20\mu F$ ? Show that the unit of  $\tau$  is second.  
 (d) Elaborate the term "low-frequency compensation" in amplifier.  
 (e) Explain the term "distributed amplifier".  
 (f) Show the circuit diagram of a transistor being used as switch.  
 (g) What is clipping circuit? Give various configurations of clipping circuits.  
 (h) What is 'ringing circuit'? Sketch a ringing circuit arrangement with non zero initial conditions.  
 (i) Distinguish between monostable multivibrators and bistable multivibrators.  
 (j) List applications for voltage and current sweep generators.

(10 x 2 = 20)

**Section - B**

2. Draw the highpass R-C circuit. Derive for step-voltage response of this circuit and show the input-output characteristics of this circuit.

3. Consider an R-C circuit shown in Fig. 1. A symmetrical square wave shown in Fig. 2 is applied as input to this circuit. Obtain an expression for peak to peak value of the output voltage. What is peak to peak voltage for  $\tau = RC$ .

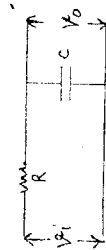


Fig. 1. An R-C Circuit

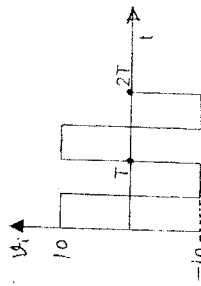


Fig. 2 A sym. Square wave of voltage (v).

4. What is meant by frequency response of an amplifier? Show plots for frequency and time-response of a R-C coupled a.c. amplifier.
5. Discuss behaviour of MOS transistor as a switch. Also enumerate some applications of MOS transistors.
6. With the help of basic circuit diagram discuss the working of a Schmitt trigger circuit. Also show how it is considered as a bistable circuit.

(4 x 5 = 20)

**Section - C**

7. Discuss procedures of realisation of multivibrators using transistors
8. Give a detail description on switching characteristics of electronic switches. Also explain the terms (i) delay time (ii) rise time (iii) storage time & (iv) fall time
9. Write technical notes on
  - (i) User of Schottky Diode
  - (ii) Sweep generators.

(2 x 10 = 20)

