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# B.Tech.(ECE / ETE) (2011 Onwards) (Sem.–4) PULSE WAVE SHAPING AND SWITCHING Subject Code : BTEC-405 Paper ID : [A1193]

# Time: 3 Hrs.

Max. Marks : 60

# INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

# **SECTION-A**

# Q1. Answer briefly :

- a) What is the purpose of a linear wave shaping circuit?
- b) Define rise time and recovery time.
- c) What do you mean by delay time of a transistor?
- d) Draw a neat circuit diagram of a stable multivibrator.
- e) Sketch a positive series clipping circuit alongwith its input and output waveforms.
- f) What do you understand by switching circuit?
- g) Discuss the effect of temperature on diode.
- h) Why does a resistive attenuator need to be compensated?
- i) What is meant by a fractional tilt?
- j) What is biased clamping?



### **SECTION-B**

- Q2. Derive the expression for gate width of a Monostable Multiviberator considering the effect of Revenues saturation current.
- Q3. Draw the diode differentiator comparator circuit and explain the operation of it when ramp input signal is applied.
- Q4. Explain various transistor switching times.
- Q5. What is Schottky diode? How is it used for reducing storage time?
- Q6. Derive an expression for the lower cut-off frequency of a high-pass circuit.

#### **SECTION-C**

- Q7. a). Explain the attenuator circuit, with suitable equations and waveforms.
  - b) Explain fixed-bias and self-bias bistable multivibrator.
- Q8. What is meant by a low-pass circuit? Derive an expression for the output of a low-pass circuit excited by a square-wave input.
- Q9. a) Why a charge Compensating Capacitor is used in diode switch?

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b) Draw the Circuit Diagram of double diode clipper which limits at two independent levels and explain it with its transfer characteristic.