R16

SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, November - 2020
PULSE AND DIGITAL CIRCUITS
(Com to ECE, EIE, ECC)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A

1. a) Define the terms rise time t_r, fall time t_f and tilt in a practical pulse waveform (2M)

   b) Draw the transfer characteristics of clamper (2M)

   c) How diode act as a switch? (3M)

   d) Mention the applications of AstableMultivibrator (2M)

   e) Write short note on Negative Resistance Switches (3M)

   f) Compare the different logic families (2M)

PART -B

2. a) Obtain the response of an RC low-pass circuit to a square wave input for long, medium and short time constants. (7M)

   b) Show that an RC low-pass circuit can be used as an Integrator. (7M)

3. a) Design a two level clipper for bias voltages $V_1 = 5V$ and $V_2 = -5V$. Use practical diodes. (7M)

   b) Explain the effect of diode characteristics on clamping voltage. (7M)

4. a) Explain the saturation parameters of transistor and their variation with temperature (7M)

   b) Explain the operation of emitter coupled Bistablemultivibrator (7M)

5. a) A collector coupled monostablemultivibrator using n-p-n silicon transistors has the following parameters: $V_{CC} = 12V$, $V_{BB} = 3V$, $R_C = 2k$, $R_1 = R_2 = R = 20k$ $h_{FE} = 30$, $r_{bb} = 200\Omega$, and C = 1000 PF. Neglect I_{CBO}. (7M)
      (i) Calculate and plot to scale the wave shapes at each base and collector.
      (ii) Find the width of the output pulse.

   b) Explain the application of AstableMultivibrator as a voltage to frequency converter (7M)

6. a) Draw and explain exponential sweep circuit (7M)

   b) Draw the circuit diagram of Bootstrap time base generator and explain the operation with the help of a waveforms. (7M)

7. a) Explain with a neat circuit diagram the operation of ECL OR/NOR gate (7M)

   b) Compare unidirectional and bidirectional sampling gates. (7M)

1 of 1

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