Code No: R22021   **R10**   SET - 1

II B. Tech II Semester Supplementary Examinations, November-2017
PULSE AND DIGITAL CIRCUITS
(Com. to EEE, ECE, ECC, BME, EIE)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Define the integrator? Derive the expression for good integrator? (8M)
   b) Derive the characteristic equation of RLC series circuit? (7M)

2. a) Explain and design the function of series diode clipper circuit? (7M)
   b) Derive the clamping circuit theorem? (8M)

3. a) Calculate the maximum operating frequency of a diode whose reverse recovery time is 9ns? (7M)
   b) Draw the circuit diagram of three input AND gate using diodes? (8M)

4. a) Explain the function of Schmitt trigger circuit with suitable diagram? (8M)
   b) Design a collector coupled bistable mutivibrater to operate from a ±10 V power supply. Using npn transistor having $h_{fe} = 70$ and $I_{CE\ Sat} = 5$ mA. (7M)

5. a) Why the external triggering circuit is not required in astable multivibrator? Explain? (8M)
   b) Define rounding? Explain how to eliminate rounding? (7M)

6. a) In UJT sweep circuit V_{BB}=20v, V_{YY}=50V, R=5kΩ, R_{B1}=R_{B2}=0Ω and C=0.01μF. The UJT fires when V_1=10.6V and goes to OFF state when V_C=2.8V. Find the
      i)the amplitude of sweep signal   ii)the slope and displacement error
      iii)the duration of the sweep   iv)the recovery time (8M)
   b) Explain the procedure to generate the time base generator? (7M)

7. a) What is relaxation oscillator? Name some negative devices used as relaxation oscillators and give its applications? (7M)
   b) Explain the procedure to achieve synchronization with frequency division by a factor of 5? (8M)

8. a) Prove that the monostable blocking oscillator with emitter timing generates a stable pulse width? (8M)
   b) Explain the working principle of bidirectional sampling gate, using 2-transistors? (7M)