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

II B. Tech II Semester Supplementary Examinations, April/May - 2019
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) Derive the cut-off frequency of RC low pass circuit, when sinusoidal is applied as input? (8M)
   b) For a high pass RC circuit it is desired to pass a 3m sec sweep ramp input, with less than 0.3% transmission error. Determine the highest possible value of the lower 3-dB frequency? (7M)

2. a) Explain the function of negative clamper circuit with suitable example? (7M)
   b) With suitable diagram, explain the function of parallel negative clipper with reference voltage 'V_R'? (8M)

3. a) Explain the function of a diode as a switch? Explain the switching times of a diode? (7M)
   b) Design a 2-input RTL NOR gate and explain the function with truth table? (8M)

4. a) Explain the need of triggering circuit in bistable multivibrator? List out the types of triggering circuits? Explain the function of binary multivibrator with triggering circuit? (10M)
   b) Define resolving time in binary multivibrator and calculate f_{max}? (5M)

5. a) Define quasi-stable? Explain the working principle of quasi-stable multivibrator? (10M)
   b) If R_1=10kΩ and R_2=5kΩ and C_1=C_2=0.1μF, find the frequency and duty cycle of the astable output? (5M)

6. a) Determine the sweep error of the simple current sweep circuit. The components values in the circuit are V_{CC}=18V, L=150mH, the yoke resistance R_L=15Ω, R_S=10Ω and R_d=150Ω. (8M)
   b) Derive the equation for displacement error and transmission error? (7M)

7. a) Explain the role of amplitude in synchronization system? (8M)
   b) Explain the working principle of sine wave frequency division with a sweep circuit? (7M)

8. a) Explain the effect of damping in blocking oscillator? (7M)
   b) List out the advantages, differences and limitations with the four diode and six diode sampling gate? Explain the working principle of four diode sampling gate? (8M)
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