

Code No: RT22023

R13
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: 70

 Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)

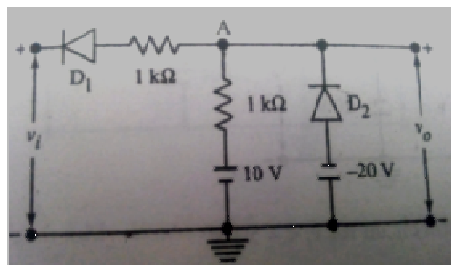
 2. Answer **ALL** the question in **Part-A**

 3. Answer any **THREE** Questions from **Part-B**
PART -A

1. a) Define time constant of a RC circuit. (3M)
- b) Design a clamping circuit using diode to restore the negative peaks of 2kHz signal to 0V. Assume $R_f = 100\Omega$, $R_r = 200k\Omega$, drop across diode is 0.6V. (4M)
- c) Distinguish between different methods of triggering. (3M)
- d) Define the terms fan-out, fan-in and noise margin. (4M)
- e) Define the terms displacement error and transmission error. (4M)
- f) Define synchronization and mention different types of synchronization. (4M)

PART -B

2. a) Using relevant diagrams and wave forms explain the response of a low pass RC circuit to ramp input. Obtain the expression for its output voltage. (10M)
- b) Discuss different factors involved with delay time of a transistor. (6M)
3. a) Obtain the transfer characteristic for the clipper circuit shown in figure below. (10M)



- b) Explain the principle of clamping and also discuss the need for shunt resistor in parallel with the diode in the basic clamping circuit. (6M)
4. a) Design a bistable multi vibrator with the following specifications. (8M)
 $V_{CC} = V_{BB} = 10V$, $I_{C \text{ sat}} = (5M)A$, $h_{FE} (\text{min}) = 25$ and max trigger frequency of 25kHz.
- b) Explain the operation of an astable collector coupled multivibrator using relevant diagrams. (8M)
5. a) Explain the operation of a 2 input TTL NAND gate. (8M)
- b) Explain the operation of a CMOS NOR gate. (8M)
6. a) Explain the working of transistor bootstrap time base generator with different gate width signal as input. (10M)
- b) Write short notes on current base sweep generator? (6M)
7. a) Explain the working of a four diode sampling gate (8M)
- b) Explain pulse synchronization of relaxation devices. (8M)