

Code No: RT22023

**R13**
**SET - 1**
**II B. Tech II Semester Supplementary Examinations, April/May – 2019**
**PULSE AND DIGITAL CIRCUITS**

(Com. to EEE, 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 **THREE** Questions from **Part-B**

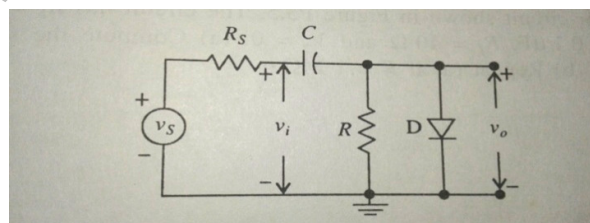
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**PART -A**

1. a) For a common emitter circuit,  $V_{cc} = 12V$ ,  $R_c = 2.2 K\Omega$  and  $I_B = 0.3mA$ , Determine the collector current at saturation condition? (4M)
- b) Why is clamping circuit also called DC inserter? Explain? (4M)
- c) Define the terms Resolving time, settling time and resolution time in multivibrators? (3M)
- d) For a certain IC family, propagation delay is 15ns with an average power dissipation of 10mW. What is its speed power product? (3M)
- e) Define the terms Restoration time, sweep time and fly back? (4M)
- f) Define a relaxation circuit? Give a few examples of a relaxation circuits? (4M)

**PART -B**

2. a) A rectangular pulse of voltage is applied to the base of a transistor driving it from cutoff -to -saturation. Discuss the changes in output potential. Explain the various times involved in the switching process? (8M)
- b) Define an attenuator? Explain the types of compensation in attenuators? (8M)
3. a) Explain the function of a diode used as a series element in a clipper? (8M)
- b) A square wave of peak-to -peak of value 10V with  $T_1 = 2ms$  and  $T_2 = 20ms$  is applied to the restorer circuit shown in figure. The circuit has  $R_s = 0\Omega$ ,  $R_r = \infty\Omega$ ,  $R = 0.5K\Omega$ ,  $C = 0.1\mu F$ ,  $R_f = 10\Omega$ ,  $V_T = 0$ . (i) compute the steady state output waveforms. (8M)

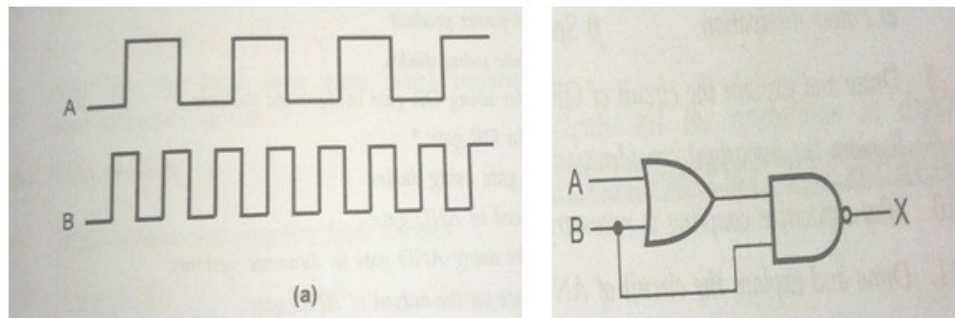


4. a) How can you vary UTP and LTP of a Schmitt trigger? Explain? (8M)
- b) Design a collector- coupled astable multivibrator to generate a square wave of 2.5KHz. (8M)

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5. a) Draw the out waveform X for the given figure with A and B are inputs. (8M)



- b) Draw the circuit diagram of diode-resistor logic AND gate and explain its operation? (8M)
6. a) With the help of a neat circuit diagram and wave forms, explain the working of a transistor boot-strap time-base generator? (8M)
- b) For the bootstrap sweep generator, the input is 1KHz symmetrical square wave,  $V_{cc} = 10V$ ,  $R = 10K\Omega$ , and  $C = 0.07\mu F$ , find (i) width of the gating signal, (ii) sweep amplitude. (8M)
7. a) With the help of a wave forms, explain sine-wave frequency division with a sweep circuit? (8M)
- b) Explain the working principle of bi-directional sampling gates using transistors? (8M)