

Code: EC4T2, EE4T6

**II B.Tech - II Semester – Regular/Supplementary Examinations –  
April 2017**

**PULSE AND DIGITAL CIRCUITS  
(Common for ECE, EEE)**

Duration: 3 hours

Max. Marks: 70

**PART – A**

Answer *all* the questions. All questions carry equal marks

11 x 2 = 22

1.

- a) What is linear wave shaping? What is the response of the Low Pass RC Circuit when a Sinusoidal Input is applied to the circuit?
- b) Define rise time.
- c) Describe about Series negative clipper circuit, Draw its input and output wave forms and also draw its Transfer characteristics.
- d) State Clamping Circuit theorem?
- e) What do you mean by multivibrator? Write the differences between multivibrators.
- f) Explain about triggering the binary circuit.
- g) What is the purpose of commutating capacitors?
- h) What do you meant by delay circuit? Write its applications.
- i) What are the advantages and disadvantages of Emitter-coupled astable multivibrator?

- j) Define what is sweep-speed error, displacement error and transmission error?
- k) What are the methods of generating a time-base waveform?

### PART – B

Answer any **THREE** questions. All questions carry equal marks.

$$3 \times 16 = 48 \text{ M}$$

2. a) Draw and explain about Low pass RC circuit when it is excited by non-sinusoidal inputs. 8 M
- b) Sketch the output wave forms for an RC integrating circuit when: i)  $\tau = 10t_p$ , ii)  $\tau = t_p$ , and iii)  $\tau = 0.1t_p$  8 M
3. a) Explain about Diode clippers with Clipping above and below reference levels, draw its input and output wave forms and also draw its transfer characteristics. 8 M
- b) Design a diode clamper to restore the bottom peaks (negative peaks) of the input signal to zero level. Use a silicon diode with  $R_f = 50 \text{ ohm}$  and  $R_r = 400 \text{ kohm}$ . The frequency of input voltage is 5KHz. 8 M
4. a) Draw and explain about fixed-bias bitable multivibrator. 8 M

b) The fixed-bias bistable multivibrator uses n-p-n transistors with  $h_{fe}=20$ . The Circuit parameters are  $V_{cc}=12V$ ,  $V_{BB}=3V$ ,  $R_c=1K\Omega$ ,  $R_1=5K\Omega$ ,  $R_2=10K\Omega$ ,  $V_{CE(sat)}=0.4V$ , and  $V_{BE(sat)}=0.8V$ . Find the stable state voltages and currents.

8 M

5. a) Explain about collector coupled astable multivibrator with neat diagram.

8 M

b) Design collector coupled Astable multivibrator to generate un - symmetrical square wave for the following specifications;  $V_{cc}=9V$ ,  $i_c=2mA$ ,  $f=10KHz$ ,  $h_{femin}=20$ , Duty cycle=33% ,  $V_{CE(sat)}=0.3V$ ,  $V_{BE(sat)}=0.7V$ .

8 M

6. a) With neat circuit diagram and waveform explain the principle of operation of Bootstrap sweep circuit.

8 M

b) Design Miller sweep circuit for the following specifications :  $V_{cc}=10V$ ,  $i_c=2mA$ ,  $h_{fe(min)}=20$ ,  $V_{CEsat}=0.3V$ ,  $V_{BEsat}=0.7$ . Assume sweep time be  $T_s=5$  mSecs.

8 M