

**328652(28)**

APR-MAY 2022

**B. E. (Sixth Semester) Examination, 2020**

**(New Scheme)**

**(Electronics & Telecommunication Engg. Branch)**

**ELECTRONIC CIRCUIT DESIGN**

***Time Allowed : Three hours***

***Maximum Marks : 80***

***Minimum Pass Marks : 28***

***Note : Part (a) of each question is compulsory and attempt any two parts from (b), (c) & (d) of each question.***

**Unit-I**

- 1. (a) What is clamper circuit. 2
- (b) Explain square wave generator with circuit diagram and wave forms. 7
- (c) Describe High Pass RC as differentiator. 7

[ 2 ]

(d) Describe voltage and current sweep circuits in detail. 7

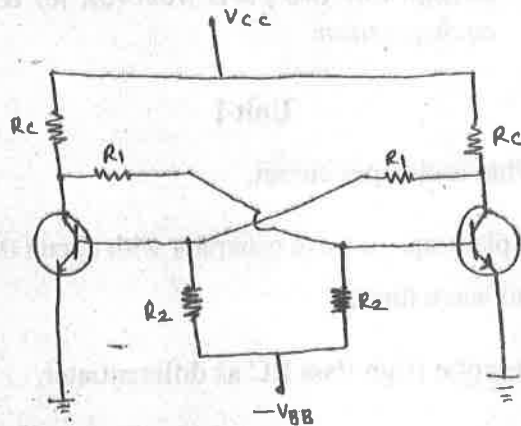
**Unit-II**

2. (a) What is commutating capacitor. 2

(b) Describe collector coupled monostable multivibrator with circuit diagram. 7

(c) The fixed biased Multivibrator shown in below figure uses NPN Si transistors with  $h_{fe} = 20$ . The circuit parameters are  $V_{CC} = 12\text{ V}$ ,  $V_{BB} = -3\text{ V}$ ,  $R_C = 1\text{ k}\Omega$ ,  $R_1 = 5\text{ K}$ ,  $R_2 = 10\text{ K}$ . Verify that one transistor is in cut off and other in saturation and find stable state current and voltages. Assume  $V_{CEsat} = .4\text{ V}$  and

$V_{BEsat} = .8\text{ V}$ . 7



[ 3 ]

(d) Describe Astable multivibrator with circuit diagram. 7

**Unit-III**

3. (a) Define Duty cycle. 2

(b) In astable multivibrator  $R_A = 2.2\text{ k}$ ,  $R_B = 3.9\text{ k}$  and  $c = .1\mu\text{ F}$ . Determine (i) The positive pulse width ( $T_p$ ) (ii) The Negative pulse width ( $T_d$ ) (iii) Free running frequency (f). 7

(c) Describe the operation of 555 timer in astable mode with wave form & circuit diagram. 7

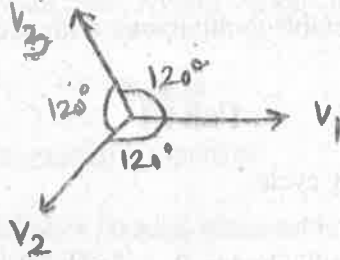
(d) Draw the circuit diagram of schmitt trigger using 555 timer and explain it's operation. 7

**Unit-IV**

4. (a) What do you mean by bilinear transfer function. 2

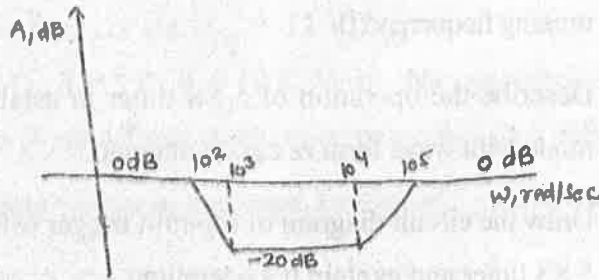
(b) Describe all pass circuit. Design a circuit which provides the set of three 60 Hz voltage of equal magnitude but lagging each other in phase by  $120^\circ$  as shown in figure. 7

[ 4 ]



(c) Design an amplifier filter having the Bode asymptotic plot shown in figure.

7



(d) What is Biquad circuit. Derive an expression for low pass filter using 3.0 P AMP biquad circuit.

7

Unit-V

5. (a) Define Bode Sensitivity.

2

(b) Describe sellen and key circuit and it's transfer function.

7

[ 5 ]

(c) Draw the circuit diagram for Delyiannis Friend's circuit and derive an expression for design parameters.

7

(d) Consider following specification :

7

$$\alpha_{\max} = 25 \text{ dB}$$

$$\alpha_{\min} = 15 \text{ dB}$$

$$W_p = 10,000 \text{ rad/sec}$$

$$W_s = 14,000 \text{ rad/sec}$$

For these specification do the following :

- (i) Determine  $n$ , the required order of the butterworth low pass filter.
- (ii) Determine the half power frequency  $W_0$ .