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B. E. (Sixth Semester) Examination, April-May 2020

(New Scheme)

(Et & T Branch)

ELECTRONIC CIRCUIT DESIGN

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) is compulsory and carries 2 marks and, attempt any two from part (b), (c) & (d) and carries 7 marks.

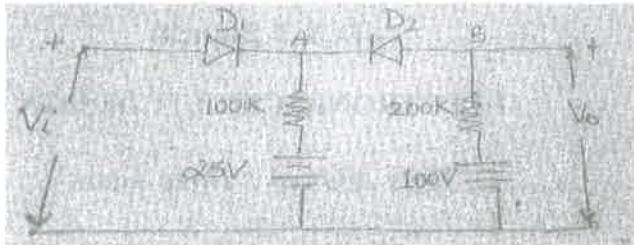
Unit - I

1. (a) Draw circuit for current and voltage sweep generator.
- (b) Draw schematic diagram of Sawtooth-Wave generator & explain how the potentiometer affects

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the frequency & amplitude of output waveform.

- (c) Explain negative clamper circuit, with proper circuit diagram and waveforms to the junction.
- (d) The input voltage V_i to the two-level clipper shown in figure varies linearly from 0 to 150 V. Sketch the output voltage V_o to the same time scale as the input voltage.



Unit - II

- 2. (a) What is the role of commutating capacitors in multivibrator circuit.
- (b) Derive the expression for the gate-width of Monostable multivibrator.
- (c) Design an astable multivibrator to generate a square wave of 1 kHz frequency with the duty cycle of 25%. Assume Si transistors with $h_{fe} = 40$. Take $V_{CE(sat)} = 0.3V$, $V_{BE(sat)} = 0.7V$, $I_{B(actual)} = 1.5 *$

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$I_{B(min)}$ and when transistor in saturation $I_{C(sat)} = 5 \text{ mA}$ and $V_{CC} = 12 \text{ V}$.

- (d) Explain transistor as a switch.

Unit - III

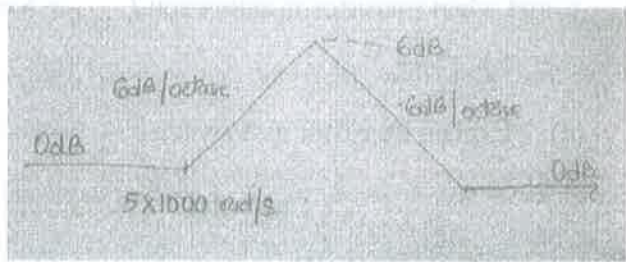
- 3. (a) Define duty cycle.
- (b) Explain any two applications of 555 timers as a monostable multivibrator.
- (c) Explain the operation of 555 timer as astable multivibrator.
- (d) Describe square wave generator using 555 timer.

Unit - IV

- 4. (a) Draw magnitude and phase response of LPF.
- (b) Draw the lattice circuit for an all-pass filter. Also derive its transfer function.
- (c) Shows that RC low pass filter is a phase-lagging circuit.
- (d) Find the transfer function for given asymptotic of bode plot shown below.

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Unit - V_c

5. (a) What is the order of Butterworth low-pass filter.
- (b) What do you mean by RC-CR transformation?
- (c) Derive the transfer function of sallen-key circuits.
- (d) Design a low pass Butterworth filter for specification shown below :

