0055

National University of Computer and Emerging Sciences

Lahore Campus

Electronic Devices and Circuits (EE1004)

Sessional-I Exam

Total Time (Hrs): 1
Total Marks: 40
Total Questions: 4

Date: September 23rd 2024

Course Instructor(s)

Ms. Tamania Javaid

Ms. Akbari Yaqooz

Roll No _____ Section _____ Student Signature _____

Do not write below this line

- **Attempt all the questions.**
- **Show all the calculations, direct answers are not acceptable. Your answers should be approximated up to three decimal places.**
- **Multiple solutions of the same question will carry zero credit.**
- **State your valid assumptions clearly if you have to take any.**

CLO #1: Analyze diode circuits and compute required parameters

Q1: **[10 marks]**

Consider a half wave rectifier with capacitor filter fed by a 60Hz sinusoid having a peak value $V_p = 100V$. Let the load resistor $R = 10k\Omega$.

a) Draw the circuit diagram and **point out** the output.

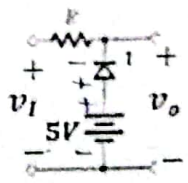
b) **Find** the value of capacitor C that will result in a peak to peak ripple voltage of 1V.

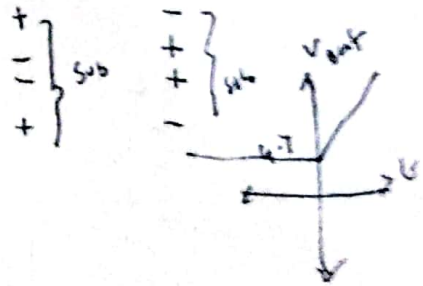
c) **Illustrate** the behavior of the circuit by drawing the output voltage waveform across capacitor including load.

CLO #1: Analyze diode circuits and compute required parameters

Q2: **[10 marks]**

Illustrate the behavior of the given circuit by drawing the transfer characteristic graph. Use constant voltage drop model with $v_{Do} = 0.7V$ and $v_I = 15 \sin t$

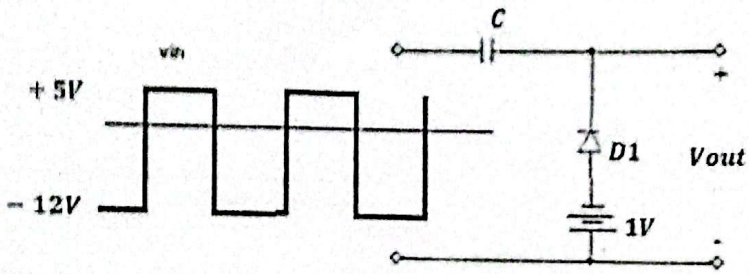




CLO #1: Analyze diode circuits and compute required parameters

Q3: **[10marks]**

Analyze the following circuit



a) **Identify** the name of this circuit? Clamped
b) **Find** the maximum value of capacitor voltage?
c) **Illustrate** the behavior of the circuit by sketching the output voltage waveform. **Find** the maximum and minimum value of the output.
d) If we connect a resistor (in parallel with diode and 5V dc source) at the output, Sketch the voltage waveform.

CLO #1: Analyze diode circuits and compute required parameters

Q4: **[10 marks]**

Sketch the output waveform to **analyze** the behavior of the given circuit. Use constant voltage drop model with $v_{Do} = 0.7V$ and $v_I = 20 \sin t$. **Explain** about the biasing of all diodes in positive and negative half cycle of the input.

F.B
→ D4 – D3
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