Om Namah Shivaya

23ECE185: Electronic Devices and Circuits Laboratory (Jan-June 2024)

End Semester Project Evaluation

General Instructions:

Do **NOT** make use of any transformers during the design. You may use any other component/devices that you may have used in the lab.

All resistances should be from the **E-24** series of resistances. Use resistances of values that are practically viable.

The evaluation of the project will be based on five components namely: design (5), simulation (10), quiz (10), project report (5) and project demonstration (10).

For the group projects, the design, simulation, and quiz components will be evaluated on an individual basis while the project report and the demonstration marks will be awarded for the group. The evaluation will be based on the correctness and the knowledge about the project.

Each member of the team is expected to do the design and simulation individually. During the implementation phase, the team can choose one of the designs and implement.

Please note that all your designs and simulations will be passed through a "similarity checker" software and all copied designs and simulations (across classes) will automatically be given zero marks. No excuses will be accepted.

Deadline for uploading your design and simulation is 23.55 hours on **8th April** 2024. A list of required components also needs to be uploaded by the same deadline.

A project report, neatly typed and soft-bound should be submitted before the project demonstration. The details and format of the report will be shared later.

You will be facing challenges related to "**not using transformers**" and using "**grounded load"** with bridge rectifiers. Think hard and try to come up with good solutions.

The list of projects is attached below. Each team has to work on the project that has been assigned to them.

All the best for a happy project journey

Project 1

Using a 3.6 V Zener diode, design a voltage regulator to provide a constant voltage of 3.3 V from a rectified pulsating DC between 5 and 7 V, and with the load drawing any current from 0-70 mA.

Project 2

Using a 3.6 V Zener diode, design a voltage regulator to provide a constant voltage of 3.3 V, from a rectified pulsating DC between 5 and 7 V and with the load drawing any current from 0-60 mA.

Project 3

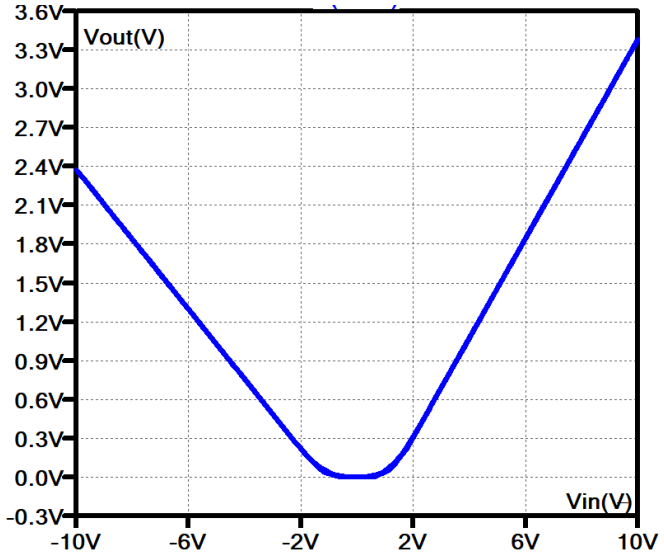
Using a 3.6 V Zener diode, design a voltage regulator to provide a constant voltage of 4.1 V, from a rectified pulsating DC between 6 and 8 V, and with the load drawing any current from 0-70 mA.

Project 4

Using a 3.6 V Zener diode, design a voltage regulator to provide a constant voltage of 4.1 V, from a rectified pulsating DC between 6 and 8 V, and with the load drawing any current from 0-60 mA.

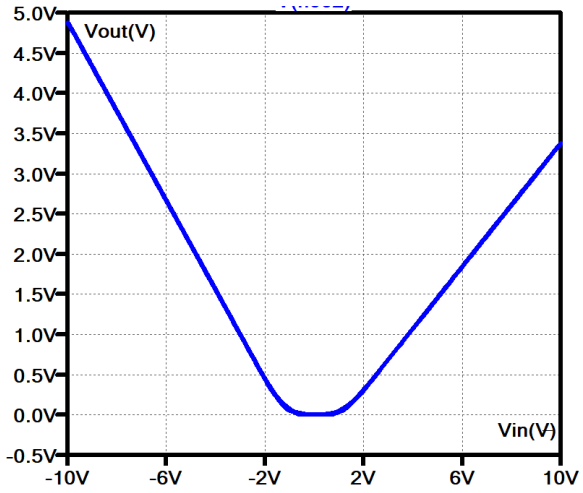
Project 5

Design a circuit with a **grounded load** that produces the following voltage transfer characteristics.



Project 6

Design a circuit with a **grounded load** that produces the following voltage transfer characteristics.



Project 7

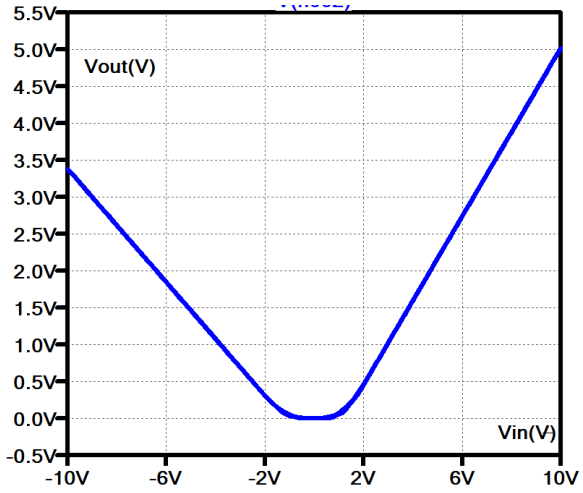
Without using Zener diodes, design a design a voltage regulator to provide a constant voltage of 2.1 V, from a rectified pulsating DC between 4-6 V and with the load drawing any current from 10-40 mA.

Project 8

Without using Zener diodes, design a design a voltage regulator to provide a constant voltage of 2.1 V, from a rectified pulsating DC between 5-7 V, and with the load drawing any current from 20-50 mA.

Project 9

Design a circuit with a **grounded load** that produces the following voltage transfer characteristics.



Project 10

Design a circuit to find out the average value of a given sinusoidal input.