

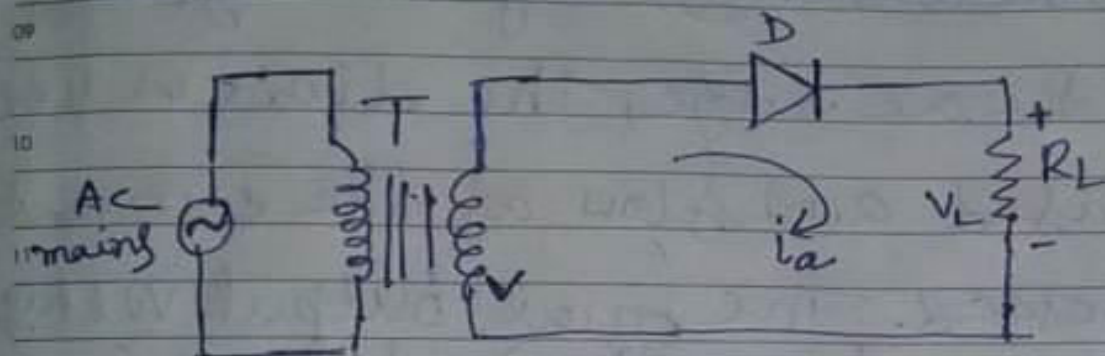
SEM. IV, paper- CC10

Two terminal devices and their applications

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Lecture-I

① Half wave rectifier: —



A half wave rectifier ckt. Fig-1
+ve half cycle.

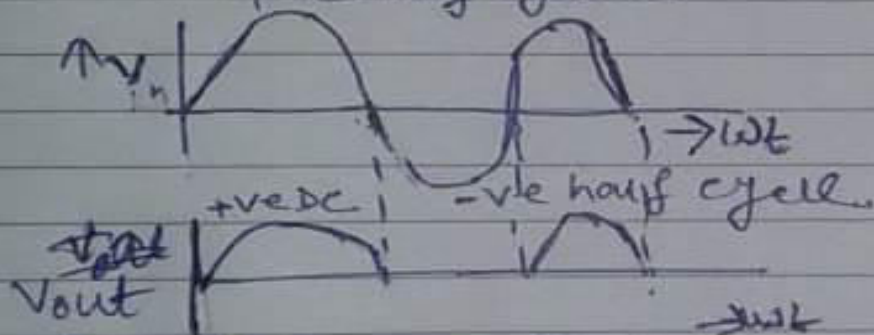


Fig-2

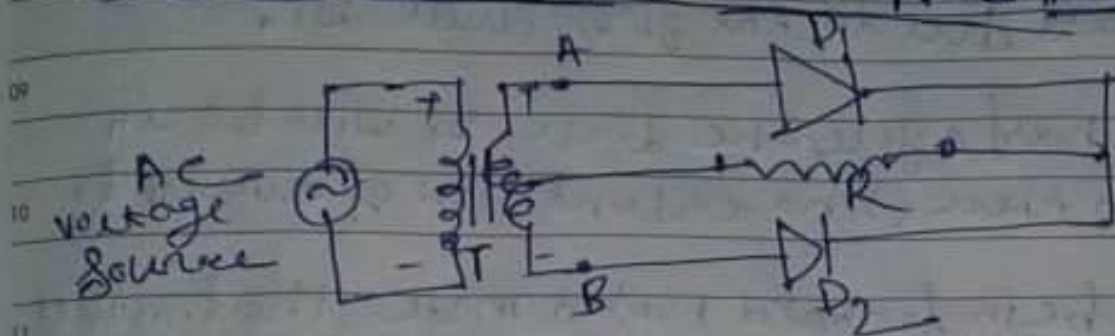
Input voltage and Diode current wave forms,

When a high AC voltage is applied to the primary side of the step-down transformer and we will get a low voltage at the secondary winding which will be applied to the diode.

During the positive half cycle of the AC voltage,

The diode will be forward biased and current flows through the diode. During the negative half cycle of the ac voltage, the diode will be reverse biased and flow of the current will be blocked. The final output voltage on the secondary side (DC) is shown in Fig-2 above.

Full wave center tapped Rectifier circuit.



Full wave center tapped Rectifier circuit diagram.

A full wave rectifier based on center tapped consists of two diode in it as well as a center tapped transformer along with that a resistive load is connected across it.

Working Principle:

As the input applied to the circuit it gets equally split at the center that is positive half and the negative half. For the positive half, the upper part of the diode will be in forward bias that is in conducting mode. Hence a path is established so that the current flows in the circuit.

Where as for the first half the other diode in the lower part will be in reverse bias. Hence it is unable to conduct.

• In the above case, the diode current is observed across the load due to the first diode D_1 .

• For the next half cycle, the diode D_1 will be in reverse bias. So there is no evident flow of current.

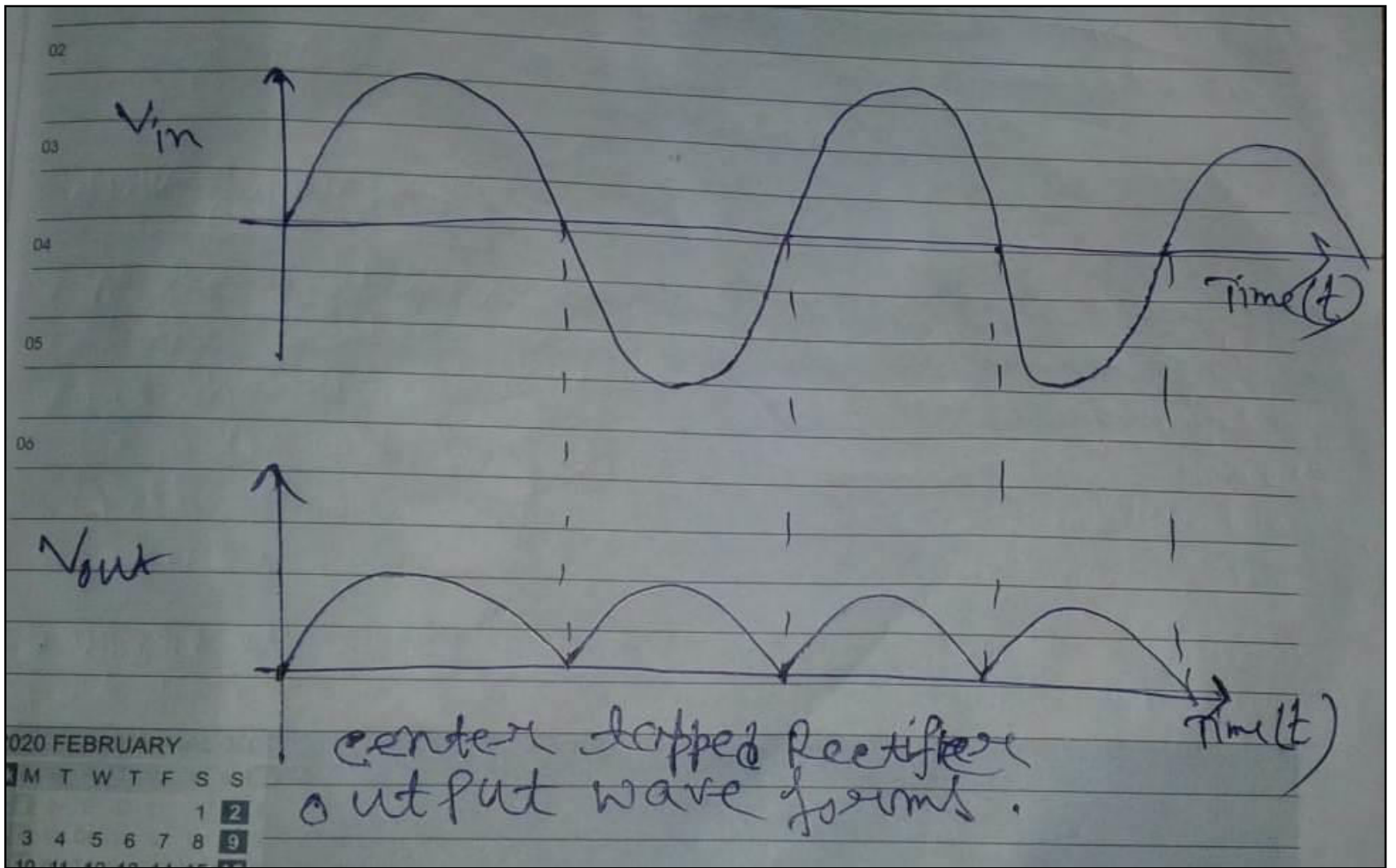
• But D_2 will be in forward biased mode that makes the conduction possible for the negative half of the cycle.

• So the rectified output at the load is observed across the load is because of diode D_2 .

• Hence the current at the load can be calculated based on the sum of the flow of individual currents across the respective diodes.

• Hence both cycles are utilized and the output after rectification is obtained it must be in form of DC.

• But rectified output will always contain some ripples in it. In order to obtain the purest form of DC, the rectified output must be connected to the filter circuit.



Lecture-II
on
Bridge Rectifier