JAWAHAR NAVODAYA VIDYALAYA

MEJA-KHAS, PRAYAGRAJ

AISSCE PROJECT 2022-23

PHYSICS PROJECT

Submitted By :

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Class:- XII (Sci)

Submitted To :

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(PGT PHYSICS)

CERTIFICATE

This is to Certify that Muskan Pal a student of class XII-Sci has successfully completed the Project Work titled "RECTIFIER" under the guidance of MR. R.K MISHRA (Subject Teacher) During the academic year 2022-23 in partial fulfillment of physics practical examination conducted by AISSCE, PRAYAGRAJ .

Signature of External Examiner **Signature Of Physics Teacher**

Signature Of Principal

ACKNOWLEDGEMENT

I express my sincere thanks to ***Smt. Sudha Sethi Principal , J.N.V Mejakhas Prayagraj*** who has always been a solurce of inspiration and encouragement, throughout the execution of this project. I am very much grateful to **Mr. R.K Mishra** (P.G.T) for his valuable guidance in the carrying out this project throughout the completion of this project throughout the completion of this assignment.

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INTRODUCTION

A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to Direct Current (DC), which flows in only one direction . The Process is known as rectification produces a type of DC that encompasses active voltages and currents, which are then adjusted into a type of constant voltage DC, although this varies depending on the current's end-use. The current is allowed to flow uninterrupted in one direction, and no current is allowed to flow in the opposite direction.

Physically, rectifiers takes a number of forms, including vaccum tube diodes, mercury arc valves, copper and selenium oxide rectifiers, semiconductor diodes, silicon controlled rectifiers and other silicon-based semiconductor switches.

Rectifiers circuits may be single- phase or multi- phase . Most low power rectifiers for domestic equipment are single-phase, but three-phase rectification is very important for industrial applications and for the transmission of energy as DC.

AIM

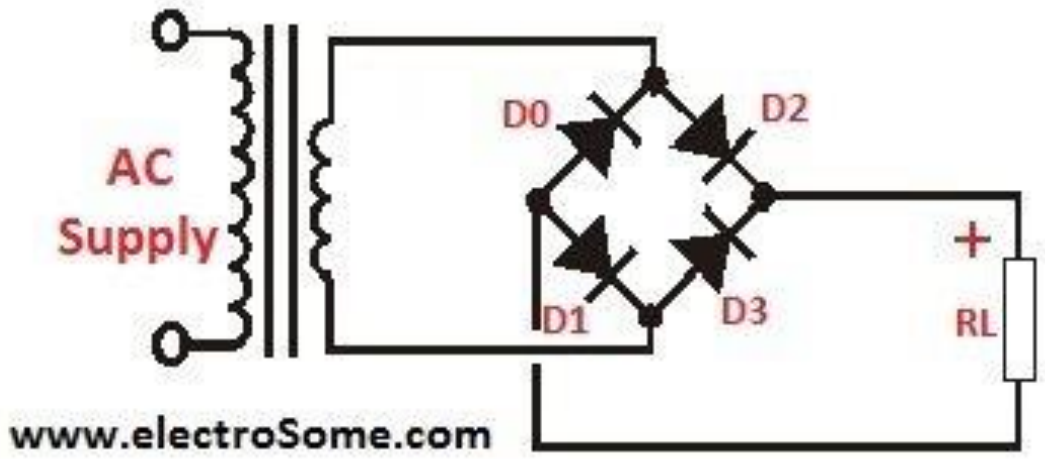
To construct a Full Wave Bridge Rectifier and show that the (AC) alternating current is rectified into a direct current (DC).

MATERIALS REQUIRED

1. *Connecting Wires*
2. *A plug*
3. *Single Lead Wire*
4. *Three Nuts & Bolts 2-3cm length*
5. *Circuit Board*
6. *A Transformer (12V)*
7. *A Resistor*
8. *P-N Junction Diodes (4nos)*
9. *A LED*
10. *Insulation Tape, Blades, Soldering Wax,*

Soldering Lead, Soldering Iron & Sand Paper

CIRCUIT DAIGRAM



PROCEDURE

Take the transformer and attach it to one end of the circuit board . Attach the plug with the wire of desired length and connect it to the transformer AC In now take four diodes and connect the 4 diodes into a loop. Connect The Anode of diode D1 to the anode of D2.

Connect the cathode of D2 to anode of D3 connect the cathode of D3 to anode of D4 and connect the anode of D4 to cathode of D1. The output of transformers should be connected to A and C. Now, take two capacitor and connect its –ve terminal to –ve and +ve terminal to +ve . And connect both the capacitor to B and D. Connect a resistor and a LED to the capacitor Attach wire from the capacitors and connect it to the output device.

WORKING

When the AC is supplied to the transformer, it step down the 240V main supply to 12V. It has a capability of delivering 700mA. The 12 volts AC appearing across the secondary is the RMS value. The Four diodes labeled D1 to D4 are arranged in "series pairs" with only two diodes conducting current during each half cycle.

During the positive half cycle of the supply,diodes D1 and D2 conduct in series while diodes D3 and D4 are reverse biased and the current flows through the load as shown below.

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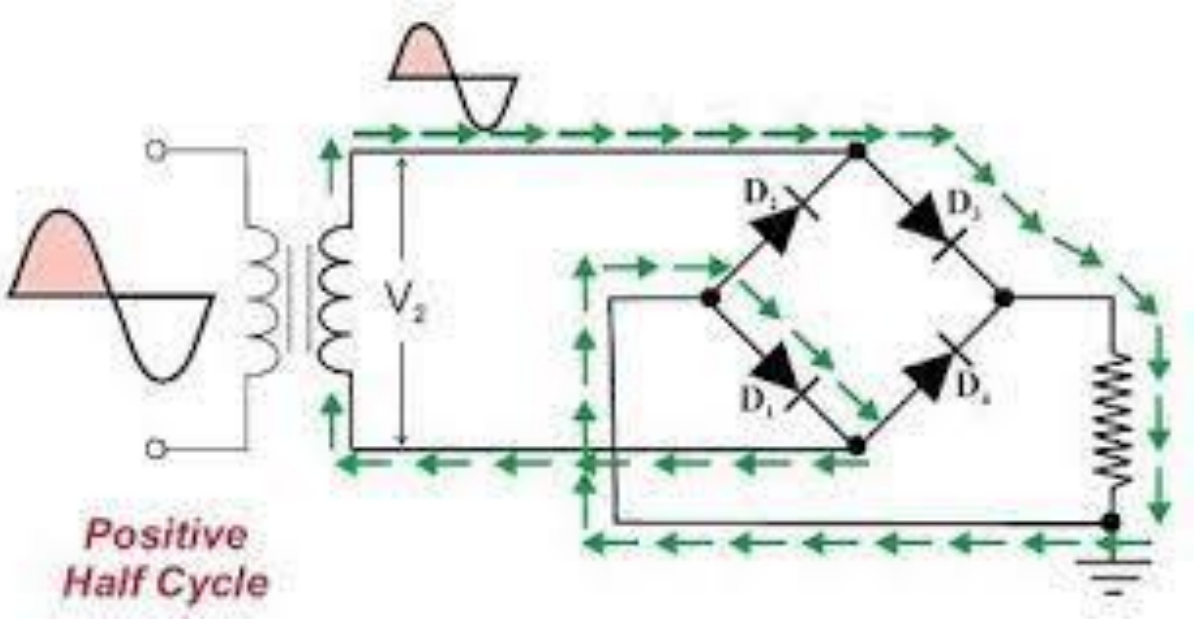
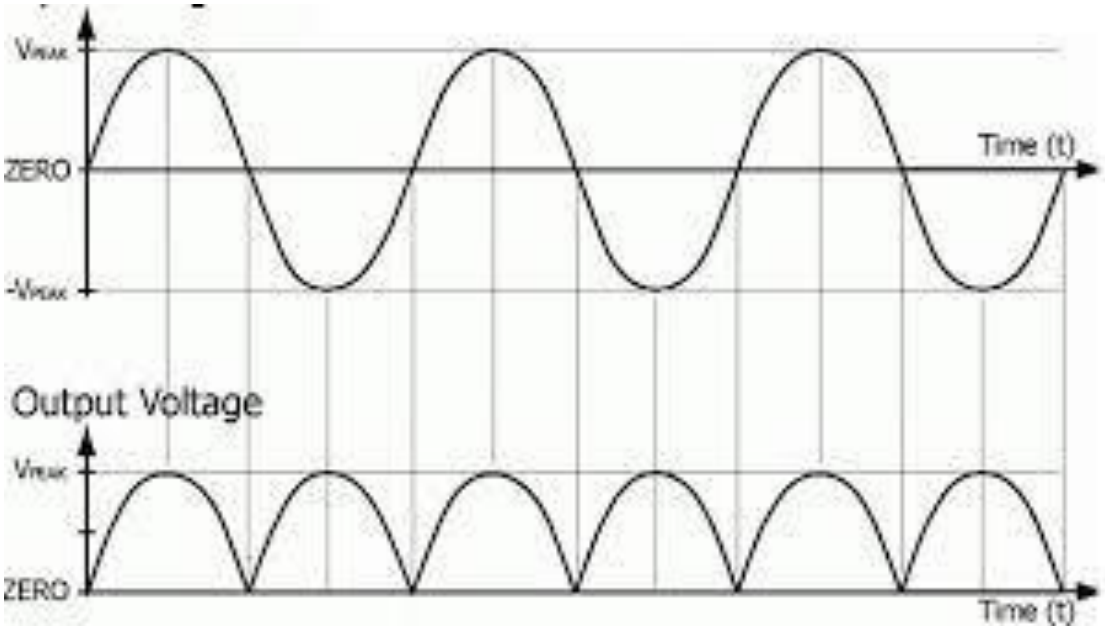


OBSERVATION & CONCLUSION

On connecting a voltmeter to the output of bridge

circuit 12V current is coming.



RECTIFIED D.C VOLTAGE

PRECAUTIONS

1. ***Keep safe yourself from high voltage.***
2. ***Solder the wire safely***
3. ***While soldering don't touch the soldering tip***
4. ***solder under adult supervision***

USES

Most electronic device cannot withstand very high voltage or alternating current due to its intense high power. The use of batteries in all devices is not practical as their replacement and durability is a huge problem as the device has to be dismantled each time for such replacement. So, these rectifiers are used in most of the electronic devices like TV's, Radios. Chargers and Lightings etc. The common uses of rectifiers are to supply polarized voltage for welding ,detection of amplitude modulated radio signals.

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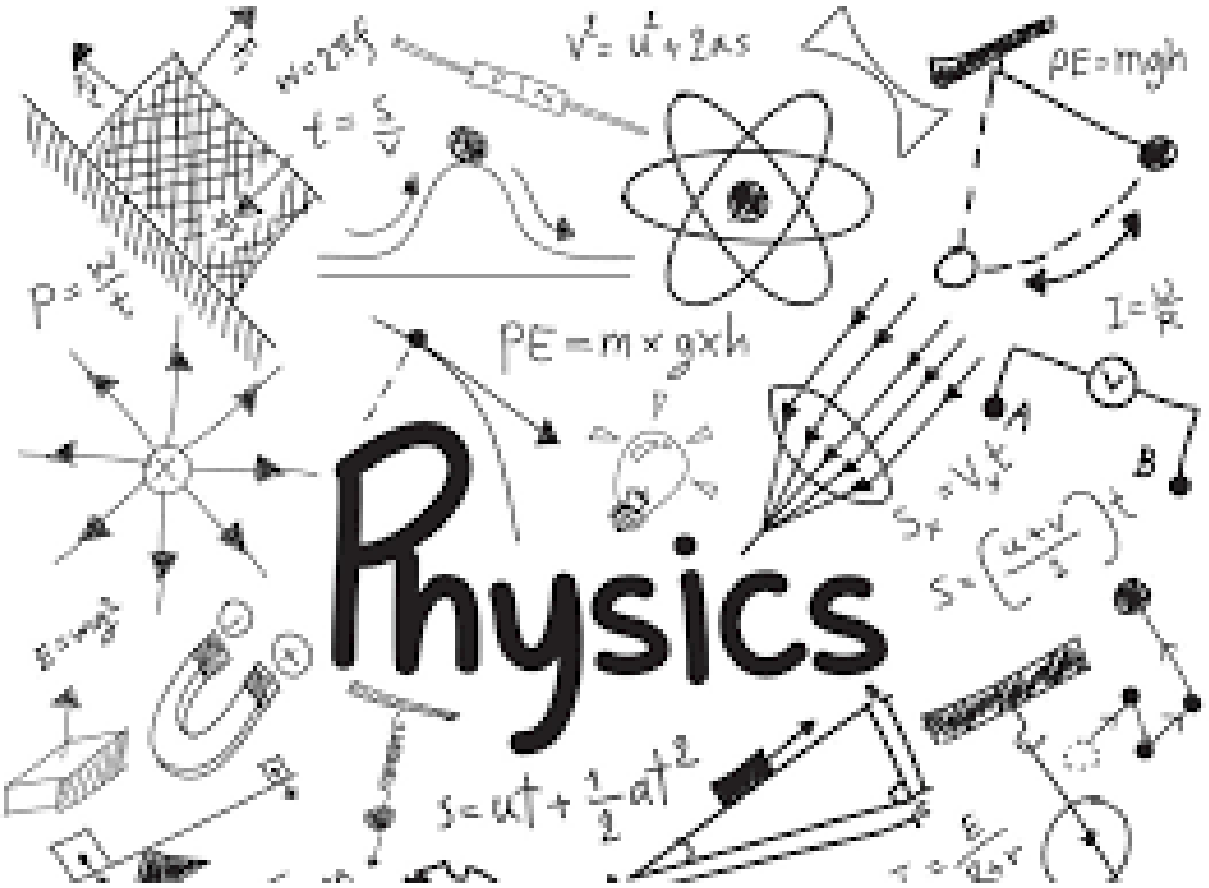

THANK YOU