JADAVPUR UNIVERSITY

Faculty of Engineering & Technology

Electronics Engg. Laboratory

Name TATHAGATA SUR

Class CSE-UG1 Sec A1 Roll No. 002310501030

Date of Experiment 15/01/24 Date of Submission 22/01/24

Marks Obtained ..... Signature of Examiner .....

NAME	CO-WORKER	ROLL
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Experiment No. 03

Commence at 11:00 AM Completed at 2:00 PM

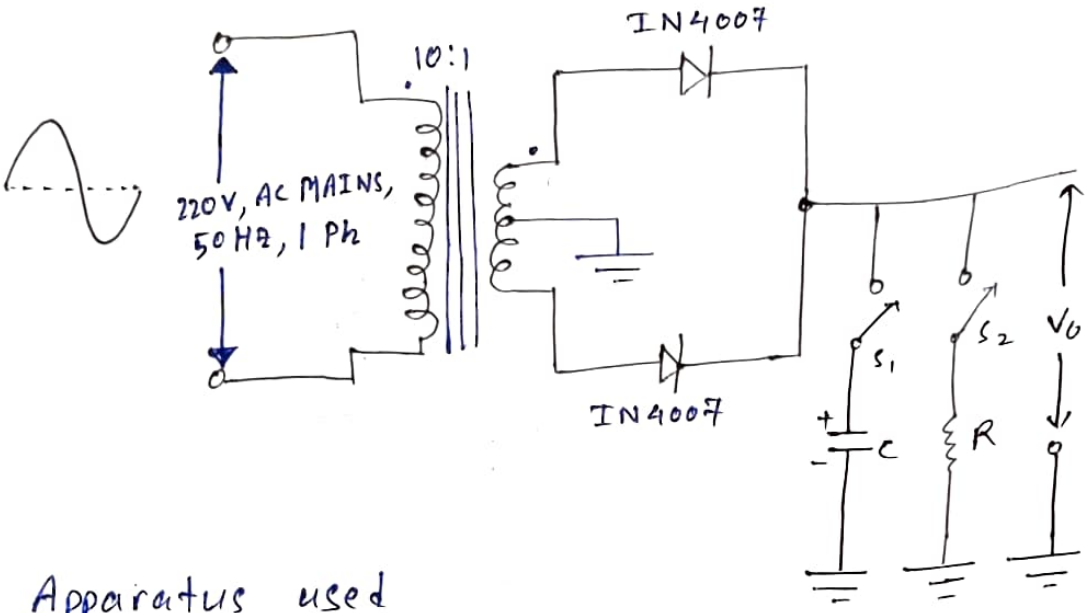
Name of Teacher concerned

TITLE : Study of diode rectifier circuits with capacitor filter.

OBJECT : To study the ripple characteristics and to observe the output waveform of a full wave rectifier with capacitor filter against varying Load current.

Theory:- Full wave rectifier consists of two half wave rectifier circuits with common load. They are connected in such a way that conduction takes place through two diodes in alternate half cycles, and current through the load is sum of two currents. Filters are used to reduce the ripples.

Circuit Diagram:-



Apparatus used

1) Bread Board
2) Diodes (IN4007)
3) Resistors (200 Ω each)
4) Capacitor (1000 μF)
5) Multi-meter
6) Oscilloscope

OBSERVATION TABLE

$C = 1000\ \mu F$, $f = 50\ Hz$

Sl. No.	R_L (in Ω)	V_{rpp} (in V)	$V_{rms} = \frac{V_{rpp}}{2\sqrt{3}}$	V_{dc} by voltmeter with capacitor	Ripple factor $= \frac{V_{rms}}{V_{dc}}$	Calculated Ripple factor $R = \frac{1}{4\sqrt{3} f C R_L}$
1)	200	0.64	0.1848	15.85	0.0116	0.0144
2)	400	0.32	0.0924	16.20	0.0057	0.0072
3)	600	0.22	0.0635	16.32	0.0039	0.0048
4)	800	0.17	0.0491	16.52	0.0029	0.0036

$V_{ac} = 36\ V$, V_{ac} (rectified) $= 16\ V$

Time periods

Non rectified sine wave: 20 ms

Rectified wave: 10 ms

Filtered wave: 10 ms

Graph of waveform

Fullwave Rectifier with Capacitor Filter