

# Experiment 5:

## Diode Rectifier Circuits

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### In-Lab Report

#### A. Rectifier Characteristics

For each of the circuits in Figs 1, 2, and 3 adjust the load resistor to get  $I_{DC} = 50 \text{ mA}$ . Observe the output across the load on the oscilloscope and determine each of the quantities 1 to 4 mentioned in the Theory section above.

	Half Wave Rectifier	Full Wave center taped	Full Wave Bridge
Figure #	(Fig.1)	(Fig.2)	(Fig.3)
$V_{DC}$	3.17 V	6.49V	
$V_{\text{ripple Pk-Pk}}$	10.4 V	10.8 V	
$I_{DC}$	50 mA	50 mA	
$I_{\text{peak}}$	$10.4 / 48.17 = 0.216 \text{ A}$	$10.8/117 = 0.0923 \text{ A}$	
PIV	11.8 V	23.6 V	
$V_{DC}$ Open circuit	3.52 V	7.3 V	

#### B. Full Wave Rectifier with Capacitor (Fig.4)

	RL= 680Ω				RL= 2.2KΩ			
C(μF)	$V_{DC}$	$I_{DC}$	$V_r$	$I_F$	$V_{DC}$	$I_{DC}$	$V_r$	$I_F$
1	6.89V	0.0101 A	10.4 V	0.0218	7.11 V	3.23 mA	8.8 V	0.0145 A
22	9.15 v	0.0134 A	3.8V	0.075	10.2 V	4.63 mA	1.8 V	0.02 A
100	10.1 V	0.014 A	1.4 V	0.118 A	10.6 V	4.81 mA	600 mV	0.0345 A
1000	9.87 V	0.0145A	600 mV	0.21 A	10.2 V	4.63 mA	600mV	0.15 A