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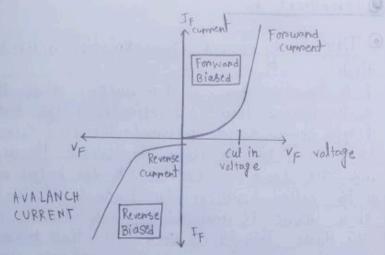
Experiment No. 3

* Title: Study of V-I Chanacteristics of P-N junction P-N Junction d'ode: A P-N junction diode isa device formed from a junction of n-type and P-type semiconductors material. The lead connected to the P-type material is called the anode and the lead connected to the n-type material is called cathode. In general, the cathode of a diode is marked by a solid line on the diode. This is a component that restricts the direction of movement of charge carries. Essentially sit allows an electric current to flow in one direction. But its blocks it is in opposite direction. The Primarry function of the diode is neetification when it is forward biased it will pass current when it is reversed biased current flowing is blocked in ideal case. The characteristic curre for a Practical is shown in fig.

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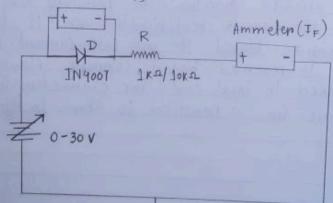
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Chanacteristics curve of Forward and Revensed Biased P.N.

Voltmeter (VF)



cincult diagram of obtaining V-I Chanacteristics curve of a forward biased PN junction diade

• Forward biased pr Junction diode: when the higher Potential is connected to the anode lead of a prejunction diode it will pass current. It is called forward biased pen junction diode.

Reversed biased f-n junction diode:

when the higher Potential is connected to
the cathode lead of a f-n junction diode it
will pass reverse saturation current. It is
called Reverse biased f-n junction diode.

I = Io (e VD/(hVI-1))

where I = Diode current, Io = Reverse Solundion current, VD = Veltage across the diode, VI = Thre-shold valtage, n = Intrinsic Coefficient.
Cut in voltage (V cut-in): The forward biased valtage at which a diode starts conducting is called cut-in voltage.

Platting of v-I characteristics curve of P-N junction diode

a) connect the circuit on the Bread board as shown in the figure.

b) till up the table.

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Page No. 25 Expt. No. · Foroward biased pri Junction diode: when the higher Potential is connected to the anode lead of a P-n junction diode it will pass current. It is called forward biased Ph junction diode. · Reversed biased p-n junction diode: when the higher Potential is connected to the cathode lead of a P-njunction diode it will pass reverse saturation current. It is called Reverse biased pen junction diode.

I = Io (e VD/(nVT-1)) where I = Diode cument , To = Reverse Saturation current, 1 > 2 voltage across the diode, 1 = Threshold voltage, n = Intrinsic coefficient. Cut in voltage (V cut-in): The formand biased voltage at which a diode starts conducting is called cut-in voltage. O Plotting of V-I characteristics curve of P-N junction diode as connect the circuit on the Bread board as OMFORD shown in the figure. by Fill up the table. Teacher's Signature ... n diode

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C) Draw the V-I characteristic (wrove of a forward biased f-n junction diode following result of VF and IF.

1. Experimental results:

	SI	R.P.S voltage (V)	VF (Foroward voltage	IF (Forward current			
	No.	(Regulated Power supply)		through tiode (4A)			
	1	0.1	0.142	0			
I	2	0.3	0.32	0			
r	3	0.5	0.43	0.17	The state of the s		
I	4	0.0	0-433	0.30			
I	5	0.7	0.443	0 · 27			
1	6	0 · 8	0.457	0.42			
1	7	0.9	0.462	0.47			
1	8	1	0.472	0.63	NAME OF TAXABLE PARTY.		
	0	1.1	0.476	0.71			
	10	1.2	0.48	0.8	ALTERNATION OF THE PERSON		
	11	1.4	0.487	0.37			
	12	1.6	0. 504	1.39			
	13	2	0.51	1.54	A STATE OF THE PARTY OF THE PAR		
	14	2.2	0.514	١٠ ٦3			
0	15	2.4	0.52	1.96			
	1.6	2.6	0. 522	2.09			
	17	2.8	0. 525	2.23	Towns of the last		
	18	3.0	0.531	2.47			

OMOUD!

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H	CT	RPS (Dogulated Power	VF (Foreward voltage	IF (Forward current		
	SI	supply I voltage (V)	through diode (V)	through diode (UA)		
	No.	adial) min lech	Third will store of the			
	19	3.2	0.534	2 . 62		
1	20	3.4	0 · 537	2 . 83		
1			0.543	3.13		
1	21	3.6		3.44		
1	22	3-8	0.548			
1	23	4.0	0.550	3.56		
1	24	4.2	0.551	3.63		
1	25	4.3	0.553	3.76		
1	26	4.6	0.559	4.17		
	27		0.563	4.54		
	91	5.0	0.363			

2. Observation from V-I characteristics curve of a forward biased f-n junction diode:

Diode Static Impedance	1.54 -2
Rf = VF/IF (ohm)	
Diode Dynamic Impedance	0.0252
Rd = AVF/AIF (ohm)	
cut in voltage	0.553
Vout-in	

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	[(0×5 €5 ; 4 ier)	
407	1 (0.559: 2.17)	
9,0		
2*%	(0.653,3.96)	
315 315 315	(0.550,3.56)	
3:3	1(0.548, 8.44)	
34 T	(0 · 543 · 3·13)	
2.81	1(0.537, 2.83)	
2.61 2.47 2.47 2.51	(0-534, 2-62)	
2.4.	+(0.531, 2-47)	
3/8/* 3/2/*	.(0.525, 2.23) .(0.522, 2.03)	
×11	1(0.52, 1.36)	
110 110 111	+(0.514×1.43)	
115 1	(0.51.1.54)	
1:3:	66.504,1.33)	
1+2-	(0.487,0.97)	
0.9 1	4(0.48,0.8)	
0:1 - 0:6 -	(0.472,0.63)	
0'5 1 0'1 7	(0.462,90.47) (0.457,0.42)	
0-15 + 0-1. + (0.1412.p)	(0.45) (0.45) (0.45) (0.43,0.17)	
01 0.5 01 0.5		V _E

P. Million of the Control of the Con