# ELECTRONICS LAB (NEC-459) LAB TEST 1

**Question 1:-** A resistor R is placed parallel to a Ge tunnel diode. The tunnel diode has

$$\left|\frac{di_d}{dv}\right|_{max} = \frac{1}{10}\ mho$$

Find the value of R so that the combination does not exhibit negative resistance region in Volt-ampere characteristics.

**Question 2:-** The Zener diode can be used to prevent overloading of sensitive meter movement without affecting meter linearity. The circuit shown represent a DC voltmeter which read 20V full scale.

The meter resistance is 500 Ohm and $R_1 + R_2$=99.5 K-Ohm. If the diode is 16V Zener, find $R_1$ & $R_2$ so that when $V_i$>20V the zener diode without conduct and overload current is shunted away from the meter.

**Question 3:-** Over what range of input voltage will the zener regulator circuit maintain 30V across 2K-Ohm resistor, assuming Rs=200K-Ohm and maintain zener current is 25mA.

**Question 4:-** Differentiate between Avalanche, Zener & Thermal breakdown.

**Question 5:- (a)** Tunnel diode exhibit _____characteristics.

**(b)** Varactor diode are operate in _____and their_____ capacitance varies with voltage.

**(c)** Zener diode operate in _____ bias for _____.


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