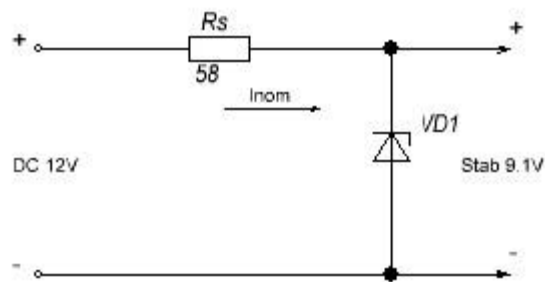# Answer on Question #75508 - Physics / Electric Circuits

Design a zener regulated power supply to give 9.1V DC output with maximum load current of 50 mA. Assume that the minimum Iz required for proper functioning of zener diode is 5 mA, and the unregulated DC input is 12V. Indicate the value of Rs and power ratings of zener diode and Rs.

Solution.

$$I = \frac{U}{R}; R = \frac{U}{I}; \ U_{Rs} = 12V - 9.1V = 2.9V; \ R_s = \frac{U_{Rs}}{I} = \frac{2.9V}{0.05A} = 58 \, Ohm$$

$$P_{Rs} = I^2 * R_{Rs} = 0.05^2 * 58 = 0.145W$$

$$P_{Vd1} = U * I = 9.1V * 0.05A = 0.455W$$

Answer. R_s=58 Ohm, P_{Rs}=0.145W, P_{Vd1}=0.455W