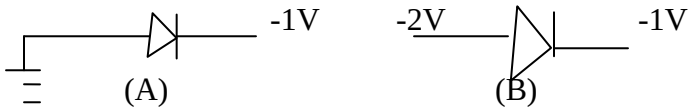
TEST SERIES (PHYSICS)

MT-11/2h **SEMICONDUCTOR** **MM-30**

Q1.Make the energy band diagram of p type and n type semiconductor.(1)

Q2.In p n junction how the width of depletion layer varies with increasing doping concentration?(1)

Q3. Select which one is biased forward or reversed?(1)



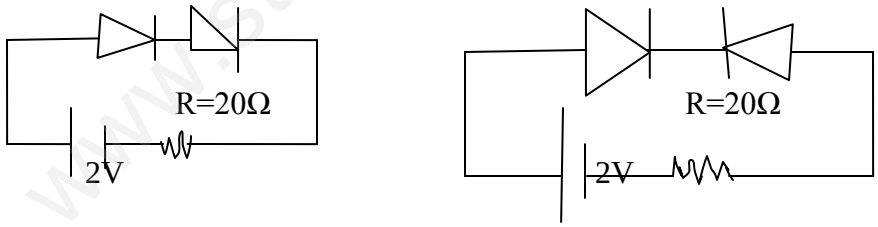
Q4.How the width of depletion layer varies with increasing forward biasing of pn junction diode?(1)

Q5.Why width and doping concentration of base in a transistor remains to be thin and lightly doped?(1)

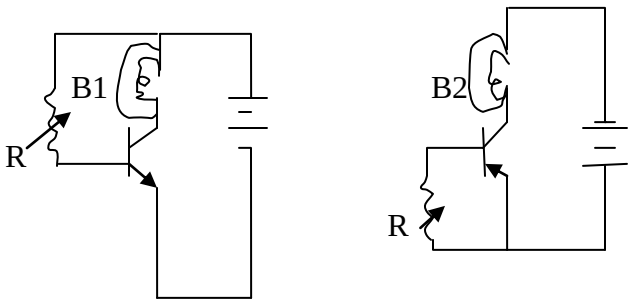
Q6.With the help of a diagram explain the term ‘ Deplition layer’ and ‘potential barrier’ in p-n junction diode ?(2)

Q7.W hy a photo diode operated in reverse bias mode? For what purpose is a photodiode used?Draw its I-V characteristics for different intensities of illumination.(2)

Q8-Determine the current in the resistance R?(2)



Q9.Write with reason which bulb will glow?Write the effect of increasing resistance R on brightness of the bulb if it glows?(1)

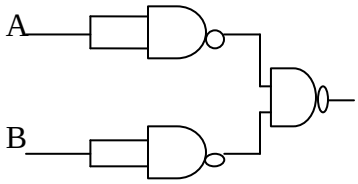


P.T.O.

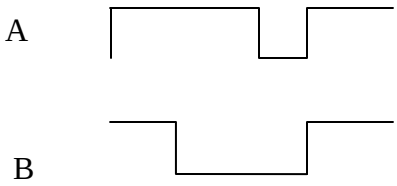
B

Q10.Which diode is used as a voltage regulator? with the help of circuit diagram explain how we use to this diode as a voltage regulator?(2)

Q11.Identify the logic gate realized by the following circuit? Make its symbol. write its truth table. (2)



If the following are the inputs for above gate draw the output



Q12.With the help of suitable circuit diagram briefly explain the use of transistor as a switch.(3)

Q13.Draw the transfer characteristic curve of a base biased transistor in CE configuration.Explain clearly how the active region of the V0 vs Vi curve in the transistor is used as an amplifier?And prove that $A_V = -\beta r_O / r_i$ (3)

Q14.State the principle of a transistor amplifier with positive feedback working as an oscillator.Draw a circuit diagram showing how the feedback can be achieved by induction coupling to get the self sustained oscillator? Write its working.

Q15.Draw a circuit for drawing the characteristics of transistor. draw the input and output characteristics. what information we obtain from these graphs?(2)

Q16.(a)In CE transistor amplifier the output signal voltage across collector resistance of 4kohm is 2volt.if the base resistance is 2ohm and the current amplification factor is 100,find the input signal voltage and current.(1)

(b)explain the working of full wave rectifier.(2)