

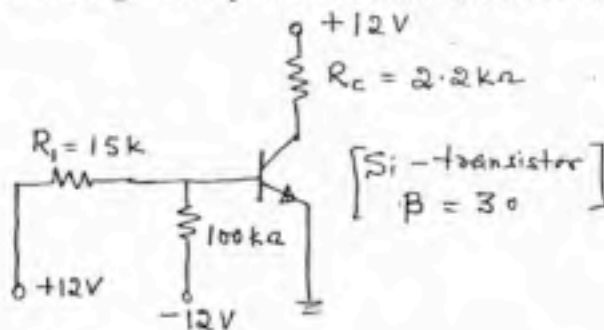
FIRST TERM EXAMINATION

IIIrd Semester [B. Tech.]
 Paper Code: ETEC-207
 Time: 1½ Hrs.

September'2008
 Sub: Analog Electronics- I
 Max. Marks: 30

Note: Attempt Q. No. 1 and any two more questions.

- Q. 1 (a) Prove that the depletion width W is proportional to the square root of total junction voltage in a reverse biased junction diode. (3)
 (b) Draw the Ebers Moll model of a PNP transistor. Obtain equations for I_C & I_E (3)
 (c) Explain the Early effect in transistors. (2)
 (d) Explain the temperature dependence of V/I characteristics of a diode. (2)
- Q. 2 (a) Explain the switching behavior of a P-N junction diode when the input voltage changes from $+V_F$ to $-V_R$. Discuss how storage time can be reduced. (5)
 (b) Design a zener voltage regulator that will maintain an output voltage of 20 V across 1 k Ω load, when the input voltage range in 30-50 V. Determine R_S & maximum zener voltage.
- Q. 3 (a) A half wave rectifier, having a load of 1 K Ω , rectifies an alternating voltage of 325 V peak value & the diode has a forward resistance of 100 Ω . Calculate (a) Average value of current. (b) D. C. power output, (c) Efficiency of the rectifier. (3)
 (b) Write a short note on LED. (2)
 (c) Determine the region of operation for the circuit shown. Assume typical values (5)



- Q. 4 (a) Explain the saturation and cut off condition in a CE connected transistor. (5)
 (b) The voltage at emitter, $V_E = -5$ V, $V_{BE} = 0.7$ V, find V_B , V_C , α , β for the circuit shown. (5)

