EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE - 2003/2004

FIRST SEMESTER

(NOV/DEC 2004)

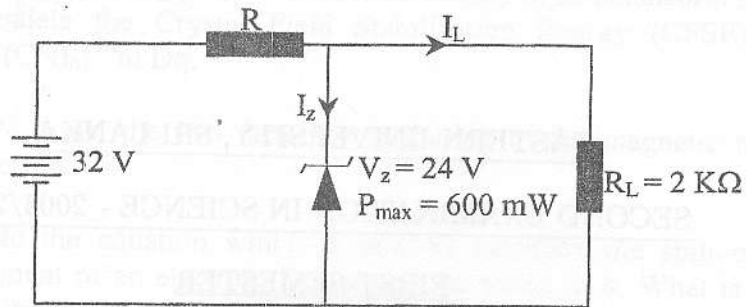### REPEAT

PH202 - ELECTRONICS I

Time: 01 hour.

Answer <u>ALL</u> questions

1. Explain Voltage-Current characteristic of a PN – junction diode.

   What do you mean by the terms Junction break down, Zener break down and Avalanche break down.

   A 24 V, 600 mW Zener diode is to be used for providing a 24 V stabilized supply to a load resistance 2 KΩ as shown in the figure. If input voltage is 32 V, Calculate;

   (i)   Maximum current through the Zener diode $I_{z(max)}$.
   (ii)   Voltage across R_L.
   (iii)   Series resistance R required.
   (iv)   Current across the load resistance R_L.
   (v)   Total current in the circuit.
   (vi)   Current across the Zener diode.

2. Describe the behavior of the NPN transistor.
   Explain the function of the Emitter, Base and Collector of a transistor.

   Draw and clearly label an input and an output characteristic curve of a transistor. What do you mean by the terms Active region, Saturation region and Cut Off region.
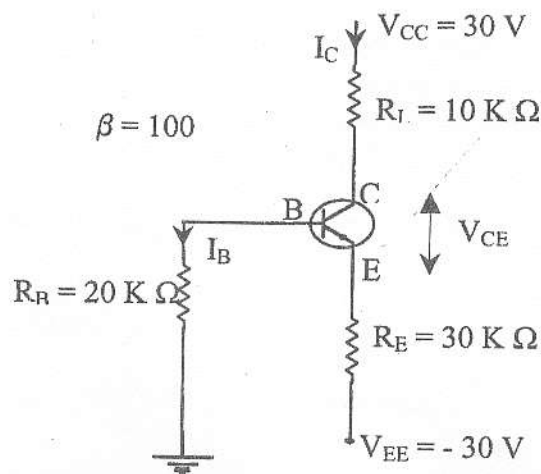
   In the above NPN transistor circuit, assume $\beta = 100$ and V_{BE} is negligible, Find the;

   (i) I_E (ii) I_B (iii) I_C (iv) V_{CE}