

EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE - 2002/2003

FIRST SEMESTER

(JUNE/JULY 2003)

REPEAT

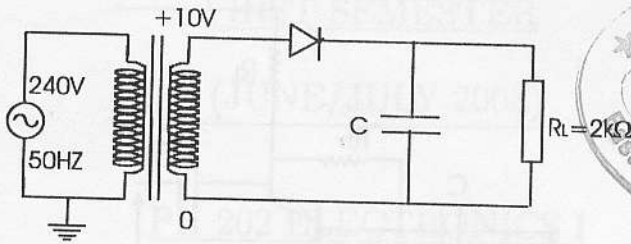
PH 202 ELECTRONICS I



Time: 01 hour.

Answer ALL Questions

1. Explain the physical action of a PN junction Diode when it is in forward and reversed biased condition. Sketch and explain voltage-current characteristic of the PN junction diode.



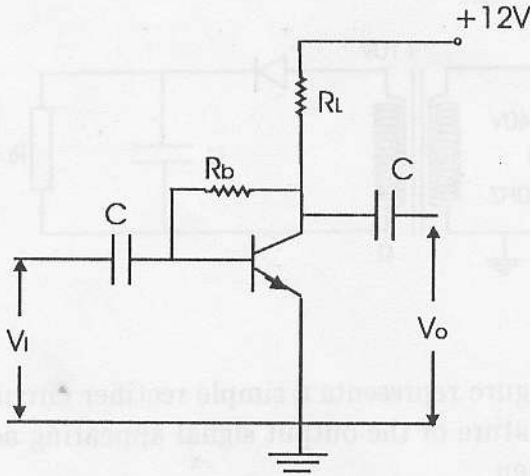
The above figure represents a simple rectifier circuit.

Sketch the nature of the output signal appearing across the load resistance R_L when

- (i) the capacitor is removed
- (ii) the capacitor is not removed
- (iii) if the capacitor is $6\mu F$, estimate the d.c voltage and the ripple voltage across the load resistance R_L .

Prove any formula you may use.

2. (a) (i) Describe the action of a *NPN* bipolar junction transistor.
 (ii) Sketch and explain the input and output characteristic curves of a *NPN* bipolar junction transistor.



- (b) The figure shows the modified form of the simple common-emitter amplifier where the base bias is supplied from the collector instead of the positive power supply terminal. The transistor has $\beta = 100$ and it is required to set the operating point such that $V_{ce} = 8V$ and $I_c = \frac{1}{2}mA$.
- (i) Find the values of R_b and R_L .
- (ii) The transistor is now replaced by another having $\beta = 250$. What is the new operating point? Hence comment on the desirable feature of the biasing configuration.