

EASTERN UNIVERSITY, SRI LANKA

THIRD EXAMINATION IN SCIENCE - 2002/2003 - FIRST SEMESTER

(JUNE/JULY 2003)

REPEAT

PH 301 ELECTRONICS II

Time: 01 hour.

Answer ALL Questions

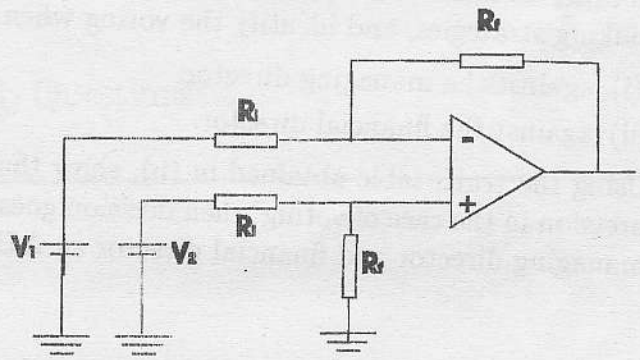
1. (a) State four important ideal characteristics of an Operational Amplifier (OP-AMP).

Draw the circuit diagram of

- (i) inverting
- (ii) non-inverting

operational amplifiers and explain its operations. Hence, using the normal symbols, find the output voltage of these amplifiers.

(b) In a laboratory the following Operational Amplifier circuit has been designed with the values of $R_i = 1k\Omega$, $R_f = 10k\Omega$, $V_1 = 4.95V$ and $V_2 = 5.05V$.



Find the

- (i) output voltage of the above circuit.
- (ii) Common Mode Rejection Ratio (CMRR) of the above circuit.

2. (a) Write down the truth table for the following logic gates and draw their symbols.

(i) AND

(ii) OR

(iii) NAND

(iv) NOR

(b) A company is controlled by four members namely the managing director **A**, financial director **B** and two elected members **C** and **D**. Managing director needs the support of one of the other three members and financial director needs the support of the other two in order to make a decision. Obtain a truth table for the decision making strategies, and identify the voting when the decision goes

(i) against the managing director.

(ii) against the financial director.

Using the truth table obtained in (b), show that the Boolean expression in the case of voting when decision goes agreeable to both managing director and financial director as **AB**.