

11 OCT 2014

EASTERN UNIVERSITY, SRI LANKA

THIRD EXAMINATION (SPECIAL REPEAT) IN SCIENCE - 2010/2011

FIRST SEMESTER (June 2014)

PH 301 ELECTRONICS II

Time: 01 hour.

Answer ALL Questions

- 1) In an amplifier feedback circuit, show that closed-loop voltage gain is given by $A_f = \frac{A_0}{1 - \beta A_0}$, where A_0 is the open-loop voltage gain of the amplifier and β is the voltage feedback factor. Hence, describe "negative" and "positive" feedback.

If an overall gain of an amplifier is reduced from 500 to 100 when negative feedback is introduced, find the following

- Feedback ratio β .
- Percentage of drop in gain of the feedback amplifier when the gain of the amplifier without feedback fallen by 20 %.

- 2) State the features of an ideal Operational Amplifier (Op-Amp).

By means of circuit diagrams and derivations, show how Op-Amps can be used to add, integrate and differentiate.

A voltage of 1 V and another of 0.5 V are added together in an inverting summing amplifier. Determine the output voltage if an ideal OP-Amp is used with,

- input resistors of 1 M Ω each and a feedback resistor of 1 M Ω ,
- input resistance of 0.5 M Ω and 0.8 M Ω for 1 V and 0.5 V signals respectively, and a feedback resistor of 1.5 M Ω .