

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2115

Roll No.

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B.Tech.

(SEM. V) THEORY EXAMINATION 2012-13

ANALOG INTEGRATED ELECTRONICS

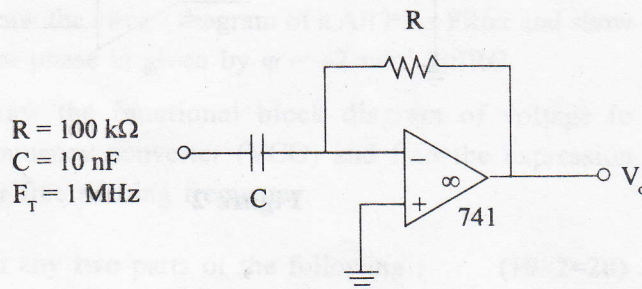
Time : 3 Hours

Total Marks : 100

Note : (1) Attempt **all** questions.

(2) All questions carry equal marks.

1. Attempt any **two** parts of the following : (10×2=20)
- (a) Draw the frequency response of internally compensated OPAMP having pole within the feedback loop and explain it.
- (b) What are different methods for pole compensation in uncompensated OPAMPs ? Discuss Miller Compensation.
- (c) For the OPAMP circuit shown in Figure 1 :

**Figure 1**Calculate f_o , f_x , Q and ϕ_m .

2. Attempt any **two** parts of the following : **(10×2=20)**

(a) Draw the circuit diagram of Grounded load voltage to current converter and find the expression of output current.

(b) Enumerate the requirement of an instrumentation Amplifier. Find the expression for output voltage in terms of input voltages as shown in Figure 2 :

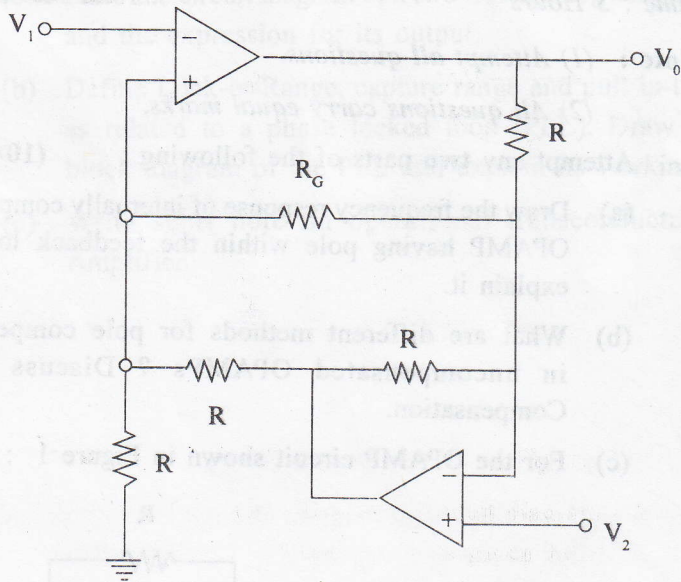


Figure 2

(c) Draw the circuit diagram of a non-inverting integrator and find the expression for output voltage.

3. Attempt any **two** parts of the following : (10×2=20)

(a) For the filter shown in Figure 3 show that the critical

frequency is given by $\frac{1}{\sqrt{R_1 C_1 R_2 C_2}}$.

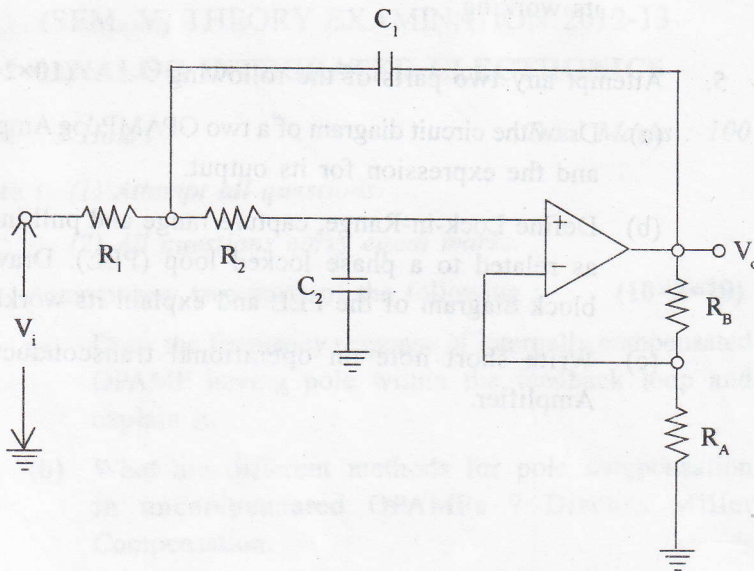


Figure 3

(b) Draw the circuit diagram of a All Pass Filter and show that phase is given by $\phi = -2 \tan^{-1} 2\pi fRC$.

(c) Draw the functional block diagram of voltage to frequency converter (VCO) and find the expression for free running frequency.

4. Attempt any **two** parts of the following : (10×2=20)

(a) Draw the circuit diagram of a Triangular waveform generator and find the mathematical expression for frequency Triangular waveform.

- (b) Draw the circuit diagram of a precision full wave rectifier and mathematically prove that the output is full wave rectified.
- (c) Compare Linear regulator and switching regulator. Draw the block diagram of switching regulator and explain its working.

5. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Draw the circuit diagram of a two OPAMP log Amplifier and the expression for its output.
- (b) Define Lock-in-Range, capture range and pull in-time as related to a phase locked loop (PLL). Draw the block diagram of the PLL and explain its working.
- (c) Write short note on operational transconductance Amplifier.