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

Paper ID : 131526 Roll No.

B.TECH.

(SEM. V) THEORY EXAMINATION, 2015-16

ANALOG INTEGRATED ELECTRONICS

[Time:3 hours] **[Total Marks:100]**

SECTION-A

1. Attempt **all** parts . All parts carry equal marks. Write answer of each part in short . (2x10=20)

(a) Draw & Explain pin diagram of IC-741 op-amp.

(b) What do you mean by Switching Regualator?

(c) Discuss the frequency response of IC-741.

(d) What are active filters?

(e) Write down the expression of gain for inverting amplifier.

(f) Enlist the characteristics of an Ideal op-amp.

(g) Enlist the advantages of active filters over passive filters.

(h) Design Multiplier Circuit? Enlist any three applications of multiplier ciruit.

(i) Define Capture-range and Lock-in-range of PLL.

(j) Design Full Wave Precision Rectifier?

SECTION-B

Attempt **any five** questions from this section. (10x5=50)

2. What do you mean by Differential Amplifier? Explain the operation of a basic differential amplifier. Calculate the Output Voltage of Difference amplifier with inputs 0.5mV and 0.45mV.Given A_d=4500 and CMRR=10000.

3. Find the expression for Output Voltage for a Non-Inverting Integrator.

4. Draw the circuit diagram of Anti-log amplifier and find the expression for output voltage.

5. How Schmitt trigger can be used for square waveform generation. Also draw the Hysteresis diagram.

6. List the characteristics of an operational trans-conductance amplifier(OTA).Draw the inverting and non-inverting amplifier using OTA.

7. Draw the circuit diagram of All Pass Filter and show that phase is given by $\varphi = -2\tan(2\pi fRC)$.

8. What is the stability of an Op-amp? Explain the various stability specifications with constant gain bandwidth product.

9. Explain Voltage to frequency converter with diagram.

SECTION-C

Attempt **any two** questions from this section. (15x2=30)

10. Draw the circuit diagram of a Triangular wave generator using IC 741 and explain its working with proper mathematical expression.

11. With the help of neat diagram analyze the cicuit of Instrumentation amplifier. How it is superior to conventional differential configuration.

12. Mention the designing criteria of a 2nd order low pass filler. Design a 2nd order Butterworth Low pass filter with overall pass band gain of 3 having corner frequency 2KHz. Also find and plot the frequency response at 100Hz, 500Hz, 1000Hz, 1500Hz, 2000Hz, and 5000Hz.

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