

7rd. 25

Exam. Code: 0927
Sub. Code: 6949

1128
B.E. (Electronics and Communication Engineering)
Third Semester
EC-304: Analog Electronic Circuits – II

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
- Draw the circuit diagram of an inverter and derive the gain.
 - Draw the circuit of Non-inverting clipper and its input and output waveforms.
 - Show how a potentiometer can be connected to an op amp circuit so that the output dc offset can be adjusted to its minimum value.
 - List typical specifications of op amp IC 741.
 - For an op-amp differentiator with $R = 100 \text{ K}\Omega$ and $C = 0.1 \mu\text{F}$, an input of $2 \sin 1000 t$ is applied. Determine the value of v_o .

UNIT – I

- II.
 - Explain the differences between constant current bias and current mirror.
 - Why level translator is used with cascaded differential amplifier?
 - Draw the circuit diagram of cascode amplifier. Explain its working principle with the help of input and output waveforms. List its characteristics. Also highlight the application areas. (2,2,6)
- III.
 - Draw and discuss the hybrid Π model for a transistor in CE configuration.
 - What are multistage amplifiers? Draw the frequency response of RC coupled amplifier. Discuss in detail why gain decreases for very low and very high frequencies? (5,5)
- IV.
 - What are the characteristics of an ideal op-amp? List three open-loop op-amp configurations. Explain why open-loop op-amp configuration is not used in linear applications.
 - What is a differential amplifier? Derive the expression of gain and input resistance of dual input balanced output differential amplifier. (5,5)

P.T.O.

(2)

UNIT – II

- V. Analyze an Instrumentation amplifier and discuss its advantages as compared to other basic amplifier circuits. Also discuss the nature of common-mode spurious noise components and show how the instrumentation amplifier suppresses them. (10)
- VI. Define input offset voltage, input offset current and input bias current. Explain why it exists in all op-amps. What are the factors that affect the input offset voltage, input offset current and input bias current. Why is output offset voltage generated by the input bias current always larger than that generated by the input offset current. (10)
- VII. a) Discuss the working of a phase shift oscillator using the circuit diagram. Find the expression of frequency of oscillation. Also draw its input and output waveforms.
- b) What is an All Pass Filter? Where and why it is needed? (5,5)

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