

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (ECE) (PIT) (Sem.-4)

ANALOG CIRCUITS

Subject Code : UC-BTEC-401-19

M.Code : 79983

Date of Examination : 02-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is the effect of negative feedback on Gain and Bandwidth, Impedances of an amplifier?
- b) Define the terms: Transconductance, Voltage Gain and Power gain of an amplifier.
- c) What is Harmonic distortion in Power amplifiers?
- d) What do you mean by an Oscillator? Classify them.
- e) What is a Clapp Oscillator? Give its circuit.
- f) What do you mean by a Small-signal Amplifier? *
- g) What is the significance of an Emitter follower circuit?
- h) The current gain of an amplifier is 200 without feedback. When negative feedback is applied, determine the "effective current gain of the amplifier? Given that current attenuation = 0.012.
- i) Define Gain Margin and Phase Margin.
- j) What are the various biasing techniques for a bipolar junction transistor? List them.

SECTION-B

2. What are the various biasing techniques for Field Effect Transistors? Explain any one of them using a suitable circuit diagram.
3. What is Barkhausen criterion in Oscillators? Explain the working principle of a Hartley Oscillator using its circuit diagram.
4. A 1mH Inductor is available. Choose the capacitor values in a Colpitts Oscillator so that $f = 1$ MHz and feedback fraction = 0.25?
5. Describe using suitable equivalent circuit model that how you can carry out the Low-frequency analysis of a transistor.
6. Discuss the various stages of a practical Power Amplifier using its block diagram.

SECTION-C

7. Discuss the various types of Amplifier Circuit Models using suitable equivalent circuits and analyze them using their respective gain parameters, Input and Output Resistances?
8. Discuss the various coupling schemes for Multistage amplifiers briefly using suitable circuit diagrams.
9. Write a note on Feedback Topologies.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.