

TIME: 3 Hours

Max.Marks: 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. List out the Ideal Characteristics of basic amplifier.
2. Compare BJT differential pair and MOS differential pair.
3. Draw the general shape of frequency response of differential amplifier.
4. Define loop gain.
5. Mention the advantages of negative feedback.
6. Identify the type of feedback in this circuit shown in figure 6.

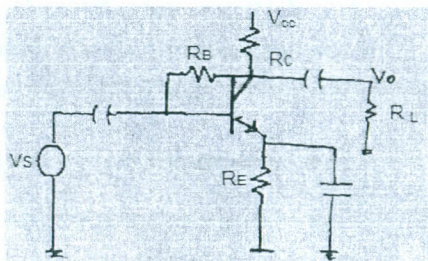


Figure 6

7. Draw the block diagram of shunt-series feedback amplifier and give their input and output resistance.
8. An amplifier has a voltage gain of 1000. With the negative feedback, the voltage gain reduces to 10. Calculate the fraction of the output that is feedback to the input.
9. Mention the essential conditions to be satisfied by an Oscillator circuit.

10. Give the equivalent circuit of Quartz crystal and mention its series and Parallel resonance frequency
11. Calculate frequency of Oscillator for Clapp Oscillator with  $C_1 = 0.1 \mu\text{f}$ ,  $C_2 = 1 \mu\text{f}$ ,  $C_3 = 100 \text{ pf}$ , and  $L = 470 \mu\text{H}$ .
12. "Crystal oscillator possess high degree of frequency stability"- Justify.
13. Write some application of Colpitts bridge oscillator.
14. Define phase shift. What is the purpose of RC Phase shift Oscillator?
15. Draw the electrical equivalent circuit diagram for Pulse transformer.
16. What is class C tuned amplifier efficiency? Draw its circuit.
17. State the uses of Schmitt trigger.
18. What are the other names of Astable multivibrator?
19. Define slope error in sweep generators.
20. What are the different types of filter transmission?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

- 21.a) Explain the Non ideal Characteristics of the differential amplifier. (6)
- b) Briefly explain the behaviors of differential amplifier with frequency response. (6)
- 22.a) With necessary circuit diagrams, explain the operation of differential amplifier with active load (8)
- b) Give short notes of MOS differential pair operation with small signals. (4)

23. a) Draw the block diagram of feedback amplifier and discuss the effect of negative feedback with respect to closed loop gain, bandwidth and distortion. (10)
- b) What type of feedback is applied for Oscillator? (2)
24. a) Draw the block diagrams of the four possible feedback topologies and explain any one of the topology. (6)
- b) Prove that the bandwidth of the amplifier increases with negative feedback. (6)
25. a) Explain the principle of operation of Wien Bridge Oscillator and derive the expression for its frequency of Oscillation. (8)
- b) Write notes on oscillator frequency stability (4)
26. a) Discuss in detail on Butterworth and Chebyshev filters with neat circuit diagram, waveforms and mathematical expressions. (8)
- b) Give notes on the function of synchronous tuning circuits. (4)
27. a) Explain the difference between the operational feature of Collector coupled and emitter coupled Astable multivibrator. (6)
- b) Compare and contrast: Monostable and Bistable Multivibrator. (6)
28. a) With necessary circuit diagram and waveforms, explain the transistor voltage time base generator that uses bootstrapping (8)
- b) Briefly explain about saw tooth generator and its applications. (4)

\*\*\*\*\*THE END\*\*\*\*\*