Unit 1 – Introduction to Analog Electronics

Part B (4 Marks)

1. Comparing the features of BJT and FET
2. In a common base connection, current amplification factor is 0.9. If the emitter current is 1 mA, determine the value of base current.
3. Calculate the voltage gain of an inverting op amp with $R1$ = 4.4 k Ω and resistor $R2$ = 44 k Ω. Calculate the output voltage when the input voltage = 0.5
4. Explain UJT relaxation oscillator
5. Explain the differences between CE,CC and CB configuration
6. Explain the operation of voltage series feedback amplifier with diagram
7. Explain the operation of voltage shunt feedback amplifier with diagram
8. What is an audio power amplifier? What is its need?
9. What is crossover distortion? How can it be eliminated?
10. Give some advantages of class- B push –pull amplifier.
11. Give short notes on class C amplifier.
12. Give short notes on class AB amplifier.
13. List the ideal characteristics of an op-amp.
14. Give the applications of op-amp.
15. Draw the structures of series series and series shunt feedback amplifier?
16. Why positive feedback is not used in amplifier?
17. What type of feedback is used in oscillator? Mention the condition for oscillation
18. Explain the merits and demerits of negative feedback(effects)?
19. Draw the structure of practical voltage series feedback amplifier using OP-AMP.
20. What is oscillator? Mention its types.
21. What are the applications of oscillator?
22. List the applications of 555 Timer.
23. Explain the working principle of crystal oscillator.

Part C (12 Marks)

1. Explain the input and output characteristics of Common Emitter configuration
2. Explain the input and output characteristics of Common Collector configuration
3. Explain the input and output characteristics of Common Base configuration
4. Explain CS configuration
5. Explain the operation of inverting and non -inverting amplifier with its voltage gain derivation.
6. Explain how to detect the peak value of a circuit using peak detector?
7. Explain the operation of inverting comparator with its neat circuit diagram and waveforms.
8. Explain the operation of non-inverting comparator with its neat circuit diagram and waveforms.
9. With neat circuit diagram, explain the operation of a single ended class –A power amplifier.
10. With neat circuit diagram, explain the operation of a push pull amplifier.
11. With a neat circuit diagram, explain the operation of transformer coupled class A power amplifier.
12. Explain the types and operation of class C amplifier.
13. Define Piezo electric effect and explain series and parallel crystal oscillator with neat sketches.
14. With the help of neat diagram explain the working principle of 555 Timer. Also list some of the applications of 555 Timer.
15. Explain the operation of UJT relaxation oscillator with its neat circuit diagram and waveforms.
16. Explain the different type of operational amplifier.