University of Engineering & Management, Kolkata

End Semester Examination, January, 2022

Programme Name: B.Tech in CSE/CST/CSIT Semester: 5th

Course Name: Analog Electronic Circuits

Course Code: ESC502

Full Marks: 100 **Time: 3 Hours**

GROUP – A (20 marks)

Answer the following questions. Each question is of 2 marks. **10 x 2 = 20**

1. i) Relate the function of regulation in power supply.
ii) Describe the equation for capacitive reactance.
iii) Illustrate the importance of bias stabilization.
iv) Sketch the importance of DC load line in Transistors.
v) Show the factors on which collector current depend on BJT.
vi) The slope of DC load line will depend on the value of collector resistor. Explain.
vii) Demonstate a voltage follower.
viii) Demonstrate input offset current and input offset voltage.
ix) Show the working principle of a Scmitt Trigger.
x) Show the number of states that are there in astable multivibrator.

GROUP – B (30 marks)

Answer the following questions. Each question is of 5 marks. **6 x 5 = 30**

2. Analyze the types of feedbacks present in amplifier.
3. Judge why is 555 timer called so.
4. Analyze Ramp Signal.
5. A. Describe the working principle of a Step Down Transformer with characteristic equations.
OR
B. Sketch the Ripple factor of a Half wave and full wave rectifier.
6. A. Illustrate the voltage divider bias for BJT amplifier.
OR
B. Classify all the parameters present in h parameter configuration of Transistors.
7. A. State the properties of an ideal op amp.
OR
B. Show the Virtual ground in Op -Amp.

GROUP - C (50 Marks)

Answer the following questions. Each question is of 10 marks. **5 x 10 = 50**

8. Explain internal block diagram of monostable multivibrator using IC 555 and explain its one application.

9. **i)** Distinguish differences between astable and monostable multivibrators. **5 + 5**

ii) State applications of Multivibrators.

10. A. Extract the full working principle of a Half wave rectifier with suitable diagram and explain the ripple factor of it.

OR

B. Illustrate Op amp based shunt Voltage regulator and explain its operation.

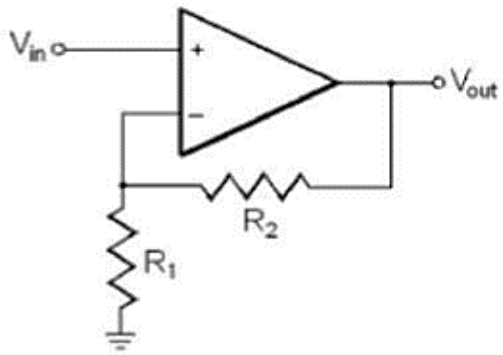
11. A. i) Explain Potential divider circuit. **5 + 5**

ii) Explain the Base Biasing method of Transistor with suitable diagram.

OR

B. Explain the operation of Colpitt Oscillator and explain its operation.

12. A. i) If Vin=2V, R1 and R2 are 5KΩ, Evaluate the output voltage and voltage gain for the given circuit. **5 + 5**



ii) Explain the block diagram of op-amp.

OR

B. i) Demonstrate how op-amp can be used as a differentiator. **5 + 5**

ii) Discuss the relevance of CMRR and slew rate in op-amp application.

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