University of Engineering & Management, Kolkata

End Semester Examination, January, 2022

Programme Name: B.Tech in CSE/CST/CSIT/CSBS/CSE(A.I.M.L)/CSE(I.O.T) **Semester: 3rd**

Course Name: Analog Electronic Circuits

Course Code: ESC301

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) Define the Purpose of Filters in a circuits.
ii) Contrast the relation between Inductivity and Inductance.
iii) Teach the function of R and C in Amplifiers.
iv) Show the factors on which collector current depend on BJT.
v) Classify Barkhausen Criterion.
vi) Discover the definition of CMRR.
vii) Define slew rate of an OPAMP.
viii) Explain Barkhausen Criterion.
ix) Show the number of states that are there in astable multivibrator.
x) Demonstrate the significance of time constant in multivibrator circuits.

GROUP – B (30 marks)

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

2. i) Categorize positive and negative IC regulators. **3 + 2**
ii) Contrast the differences between Pi and L filters
3. Judge biasing of BJT and defend need for biasing.
4. Demonstrate a feedback Amplifier.
5. A. Sketch the diagram of a Seriest regulator and explain its operation.
OR
B. Sketch the Ripple factor of a Half wave and full wave rectifier.
6. A. If ADM = 20000 and CMRR = 80 dB. Then decide the value of ACM.
OR
B. Analyze the significance of infinite input impedance in OPAMP.
7. A. Discuss where 555 timer is used.
OR
B. i) Sketch the Square wave signal. **2.5 + 2.5**
ii) Illustrate sinosidal Signal and explain each parameter.

GROUP - C (50 Marks)

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

8. i) Explain the operation of crystal oscillator. **5 + 5**

ii) Define Tuned collector oscillator.

9. Draw and explain operation of IC 555 timer in Bistable mode mode of Operation.

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

OR

B. i) Correlate between 7812 , 7912 ic series. **5 + 5**

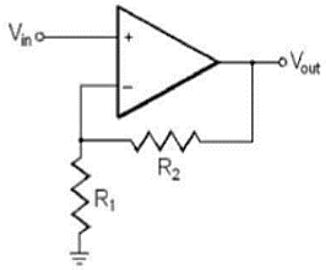
ii) Describe the advantages of IC regulators in voltage regulation over series and shunt regulators.

11. A. Sketch and explain RC coupled amplifier. Sketch a typical frequency response curve. Explain the salient points in it.

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 OPAMP.

OR

B. i) Construct an op-amp integrator circuit to and explain. **5 + 5**

ii) List the ideal characteristics of OPAMP.

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