

TH-2 Analog Electronics and OPAMP

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2  
Figures in the right-hand margin indicates marks

1. Answer All questions 2 x 10
  - a. Define Zener and Avalanche break down voltage.
  - b. Mention the advantages of negative feedback.
  - c. State Barkhausen criterion for sustained oscillation.
  - d. Why FET is called unipolar device and BJT is called bipolar device?
  - e. Define stabilization and stability factor.
  - f. Draw the equivalent circuit of OP-AMP.
  - g. Why CE configuration is most popular in amplifier circuit?
  - h. List the characteristics of ideal OP-AMP.
  - i. Define and classify transistor biasing.
  - j. State the difference between voltage and power amplifier.
  
2. Answer Any Six Questions 6 x 5
  - a. With a neat sketch explain the working of inverting and non inverting OP-AMP.
  - b. State the function of filter circuit in rectifier? Explain the working of capacitor input filter.
  - c. Explain the working of bridge rectifier and calculate (i) RMS current and voltage (ii) Ripple factor, (iii) Efficiency.
  - d. Derive the relationship between the current amplification factor of transistor.
  - e. Discuss the working of Zener diode and explain V-I characteristics.
  - f. With neat diagram derive the of  $I_C$  and  $V_{CE}$  using voltage divider biasing method.
  - g. Define Oscillator and Explain the working of Wein bridge oscillator.
  
3. Describe all types of transistor configuration with input and output characteristics. 10
4. Explain the working of a integrator and differentiator and derive the expression for its output voltage. 10
5. Define DC drain resistance, AC drain resistance and trans-conductance of FET and explain the working of FET. 10
6. With neat diagram explain the working of a class B push pull amplifier with its frequency response curve. 10
7. What is clamping circuit? Explain the function of positive clamper and negative clamper. 10