Code No: 153AC

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, August/September - 2022
ANALOG ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain the input and output characteristics of CE configuration and indicate various Regions.
b) For a germanium diode carrying 10mA the required forward bias is about 0.2V. Estimate the reverse saturation current and the bias voltage required for currents of 1mA and 10mA. [10+5]

2.a) Draw the circuit diagram of a full wave rectifier. Explain the operation of the circuit with relevant waveforms?
b) Discuss the h parameter equivalent circuit for a CE amplifier and derive the expressions for A_v and A_I. [8+7]

3.a) Explain the small signal model of CD MOSFET amplifier? Also derive the expression for amplification factor?
b) Draw and explain the drain characteristics of enhancement MOSFET. [10+5]

4.a) Explain the working of common emitter RC coupled amplifier.
b) Explain the operation of transformer coupled class-A power amplifier. [7+8]

5.a) Derive the voltage gain for balanced output differential amplifier.
b) Explain the operation of class-C power amplifier with neat circuit diagram. [7+8]

6.a) Draw the circuit of voltage series feedback amplifier and derive the expressions for input and output resistances.
b) Show that the gain of wein bridge oscillator must be atleast three for the oscillations to occur. [8+7]

7.a) The gain of an amplifier is decreased to 1000 with negative feedback from its gain of 5000. Calculate the feedback factor and the amount of negative feedback in dBs.
b) Show that gain of an inverting amplifier is $-R_f/R_i$.
c) Define the terms input offset current, slew rate and output offset voltage. [4+5+6]

8.a) Construct an op-amp differentiator circuit and explain.
b) Explain square wave generator using op-amp. [7+8]

---ooOoo---