

Code: 9A02405

R09

B.Tech II Year II Semester (R09) Supplementary Examinations December/January 2015/2016

ANALOG ELECTRONIC CIRCUITS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Compare the small signal model of BJT and FET.
(b) For a CB transistor amplifier driven by a voltage source of internal resistance $R_s = 600\Omega$, the load impedance is a resistor $R_L = 1200\Omega$. The h -parameters are $h_{ib} = 22\Omega$, $h_{rb} = 4 \times 10^{-4}$, $h_{fb} = -0.98$ and $h_{ob} = 0.25 \mu A/V$. Compute the current gain A_i , the input impedance R_i , voltage gain A_v , overall voltage gain A_{vs} , overall current gain A_{is} , output impedance Z_o and power gain A_p .
- 2 Draw the hybrid – π model of a transistor and derive its parameters and explain its frequency response.
- 3 (a) Explain with diagrams of Feedback topologies.
(b) An amplifier has an open loop gain of 90. When a negative feedback of feedback factor 0.6 is applied to it, calculate the overall gain.
- 4 (a) Draw the circuit of FET RC phase shift oscillator and derive its frequency oscillations using its equivalent circuit.
(b) Design a Colpitts oscillator with voltage gain of 50 and frequency of oscillation is 25 kHz.
- 5 (a) Define about class A, class B, class AB and class C operation of power amplifiers.
(b) Design a class B power amplifiers to deliver 25 W to a load resistor $R_L = 8\Omega$, using transformer coupling. $V_m = V_{CC} = 25 V$. Assume reasonable data wherever necessary.
- 6 (a) Explain the response of the clamping circuit when a square wave input is applied under steady state conditions.
(b) Explain the effect of diode characteristics on clamping voltage.
- 7 Write short notes on:
(a) BJT as a switch.
(b) Latching phenomena in a transistor.
- 8 (a) Discuss the different methods of triggering a flip-flop. Explain the role of commutating capacitors in a binary circuit.
(b) Draw the circuit diagram of a fixed bias binary with speed up capacitors.
