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Question Paper Code : 31355

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Third Semester

Electronics and Communication Engineering

EC 2205/EC 36/080290011 – ELECTRONIC CIRCUITS – I

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the function of the Q point?
2. What is thermal stability?
3. What is the advantage of Darlington amplifier?
4. Mention two important characteristics of CC circuit.
5. Define amplifier rise time.
6. Define bandwidth of an amplifier.
7. What is class C amplifier?
8. Define conversion efficiency.
9. Define ripple factor of a rectifier.
10. What is the function of a current limiting circuit?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the circuit of a voltage divider bias circuit. Explain its operation and discuss how it stabilizes against V_{BE} changes. (8)

(ii) Derive the stability factor of the voltage divider bias circuit. Compare the stability factor of fixed bias and voltage divider bias circuits with h_{FE} = 100, R_e = I Kohm, R_1 = 33Kohm and R_2 = 12 Kohms. (8)

Or

(b) (i) Explain the circuit of gate bias for providing stabilization of JFET. (8)

(ii) Sketch the bias circuit for enhancement MOSFETs and explain its operation. (8)

12. (a) Draw the circuit of a CE amplifier with coupling and bypass capacitors. With the help of its equivalent circuit, obtain the equation of the voltage gain, input and output impedance. (16)

Or

(b) Draw the circuit of a emitter coupled BJT differential amplifier and explain the operation of the circuit. Explain how the differential amplifier with a constant current stage improves the CMRR. (16)

13. (a) (i) Sketch the hybrid π model of the transistor and explain the function of each parameter in the model. (8)

(ii) Study the behavior of the CE amplifier with resistive load at high frequencies and obtain upper cut frequency and bandwidth. (8)

Or

(b) Draw the circuit diagram of a multi stage CE amplifier and obtain the frequency response of the circuit. (16)

14. (a) (i) Draw and explain the circuit of a direct coupled class A amplifier. Obtain its conversion efficiency. (8)

(ii) Draw the circuit of a transformer coupled class A amplifier and explain how conversion efficiency is improved using the circuit. (8)

Or

(b) (i) Draw the circuit of a Class B push pull amplifier circuit and explain its operation. Derive its conversion efficiency. (8)

(ii) Explain the operation of a complementary symmetry Class B amplifier and explain its advantages. (8)

15. (a) (i) Draw and explain the circuit of a full wave rectifier with resistive load. (8)

(ii) Explain the use of the C and LC filters for improving the performance of the circuit. (8)

Or

(b) (i) Describe the principle of operation of zener diode voltage regulator. (8)

(ii) Explain with diagrams, how power control is achieved using SCR. (8)
