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Question Paper Code : X 60443

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Third Semester

Electronics and Communication Engineering

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

(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define three stability factors.
2. Why is temperature compensation required ?
3. Draw the h-parameter equivalent circuit for common emitter amplifier.
4. State Miller's theorem.
5. What is meant by Miller effect ?
6. How do you calculate the bandwidth of a signal ?
7. What is class C amplifier ?
8. Define conversion efficiency.
9. Prove that the ripple factor of a half wave rectifier is 1.21 and that of a full wave rectifier is 0.482.
10. Write the expression of ripple factor for capacitor input filter.

PART – B

(5×16=80 Marks)

11. a) i) Derive the stability factor for voltage divider bias. (8)
ii) For the circuit in Figure 1, draw the AC load line and determine the maximum output swing without distortion. (8)

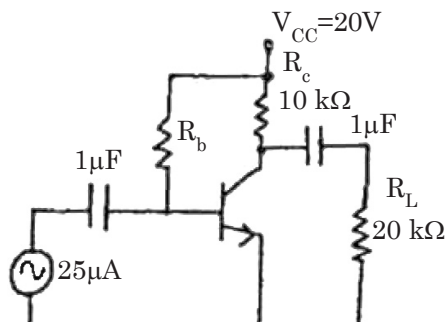


Figure 1

(OR)



- b) i) Discuss the various stabilization techniques of Q – point in a transistor. (8)
ii) Discuss in detail about the various bias compensation techniques. (8)
12. a) i) Explain with circuit diagram the boot strapped Darlington emitter follower. (8)
ii) A CC amplifier is fed with voltage source V_s of internal resistance $R_s = 800$ ohm. The load resistance $R_L = 1600$ ohm. The CE hybrid parameters are $h_{ie} = 1000$ ohm; $h_{re} = 2.2 \times 10^{-4}$; $h_{fe} = 55$; $h_{oe} = 23 \mu A/v$. Compute voltage gain, current gain, input resistance, output resistance using approximate analysis. (8)
- (OR)
- b) Draw the small signal hybrid model of CE amplifier and derive the expression for its A_p , A_v , R_i and R_o . (16)
13. a) Show that the maximum efficiency of transfer coupled amplifier is 50%. Discuss the advantages and disadvantages of transfer coupled class A amplifier. (10+6)
- (OR)
- b) With a neat circuit diagram explain the working of class B push-pull power amplifier. What are its advantages and disadvantages ? (10+6)
14. a) Explain the working of complementary symmetry class B push pull amplifier. What are its merits, demerits and applications ?
- (OR)
- b) Derive the expression for efficiency of class A audio power amplifier. Describe in detail about its working principle with neat diagrams. (16)
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)
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