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Question Paper Code: 43404

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Electronics and Communication Engineering

14UEC304- ELECTRONIC CIRCUITS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Transistor biasing represents _____ conditions.
(a) a.c
(b) d.c
(c) both a.c. and d.c
(d) none of the above
2. The disadvantage of voltage divider bias is that it has _____.
(a) high stability factor
(b) low base current
(c) many resistors
(d) none of the above
3. Removing bypass capacitor across the emitter-leg resistor in a CE amplifier causes
(a) increase in current gain
(b) decrease in current gain
(c) increase in voltage gain
(d) decrease in voltage gain
4. The main characteristics of a Darlington Amplifier are
(a) High input impedance, high output impedance and high current gain
(b) Low input impedance, low output impedance and low voltage gain
(c) High input impedance, low output impedance and high current gain
(d) Low input impedance, low output impedance and high current gain
5. The upper or lower cut off frequency is also called _____ frequency
(a) resonant
(b) sideband
(c) 3 db
(d) none of the above

6. Write the relation between r_{bb}^l , $r_{b^l e}$ and h_{ie}
- (a) $r_{bb}^l = h_{ie} \cdot r_{b^l e}$ (b) $r_{bb}^l = r_{b^l e}$ (c) $r_{bb}^l = h_{ie}$ (d) $r_{bb}^l = h_{ie} + r_{b^l e}$
7. Where the Q-point located in Class-B amplifier?
- (a) at cut off (b) at saturation region
(c) at the center of dc load line (d) below cut off region
8. Class A power amplifier is sometimes called as
- (a) symmetrical (b) single-ended (c) reciprocating (d) differential
9. A tuned amplifier is used in _____ application.
- (a) radio frequency (b) low frequency
(c) audio frequency (d) none of the above
10. When transistors are used in digital circuits they usually operate in the
- (a) active region (b) breakdown region
(c) saturation and cutoff regions (d) linear region

PART - B (5 x 2 = 10 Marks)

11. What is thermal run away?
12. Compare the characteristics of CC and CE amplifier.
13. Write the reason for drop in gain at low and high frequency.
14. Draw a voltage series feedback circuit and mention its significance.
15. What is meant by heat sink?

PART - C (5 x 16 = 80 Marks)

16. (a) Briefly explain self-bias and also derive its stability factor. (16)
- Or
- (b) Explain the working principle of biasing of MOFET and its applications. (16)
17. (a) (i) Explain the three types of gain in Common Emitter (CE) amplifier in detail. (10)
- (ii) What are the various types of single stage amplifier? (6)

Or

- (b) Briefly explain the operation of a Darlington emitter follower and also derive an expression for its performance measures? (16)

18. (a) (i) What are the steps analyzed to carry out the upper cut off frequency of Bipolar Junction Transistor (BJT) amplifier. (10)
(ii) Discuss about the various waveforms of frequency response amplifier. (6)

Or

- (b) Derive gain, input and output impedance of common source JFET amplifier with neat diagram and equivalent circuit. (16)
19. (a) Discuss and explain the methods of evaluating second and total harmonic distortion. (16)

Or

- (b) (i) Draw the circuit diagram of push pull amplifier and explain its working. (10)
(ii) What is heat sink? How does it contribute to increase in power dissipation? (6)
20. (a) (i) Derive the Nyquist criteria for stability of feedback amplifiers. (8)
(ii) What is negative feedback? Explain its various types of negative feedback with its gain. (8)

Or

- (b) (i) Explain the working of large signal tuned amplifier with input and output waveforms. (10)
(ii) An amplifier has a voltage gain of 400, $f_1 = 50\text{Hz}$, $f_2 = 200\text{KHz}$ and distortion of 10% without feedback. Determine the amplifier voltage gain, lower 3dB frequency, upper 3dB frequency and distortion when a negative feedback is applied with feedback ratio of 0.01. (6)

