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Question Paper Code: 43404

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. What happens to I_{co} for every 10^oC rise in temperature?

   (a) doubles (b) remains same (c) reduces (d) triples

2. Which type of biasing circuit is called constant current source?

   (a) Base bias (b) Emitter bias
   (c) Self bias (d) Collector feedback bias

3. The current gain for the Darlington connection is _____

   (a) $\beta_1.(\beta 2/2)$ (b) $\beta_1.\ \beta_2$ (c) β_1/β_2 (d) $\beta_1.(\ \beta_2\text{-}1)$

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. There is a _____^{o} phase inversion between gate and source in a source follower.

   (a) 0 (b) 90 (c) 180 (d) None of the above

7. The maximum collector efficiency of class B operation is

(a) 50% (b) 90% (c) 60.5% (d) 78.5%

8. Class A power amplifier is sometimes called as

(a) symmetrical (b) single-ended (c) reciprocating (d) differential

9. The gain of an amplifier with feedback is known as _____gain

(a) Resonant (b) Open loop (c) Closed loop (d) None of the above

10. A tuned amplifier uses _____ load

(a) resistive (b) capacitive (c) LC tank (d) inductive

PART - B (5 x 2 = 10 Marks)

11. What is transistor biasing?

12. Why common emitter configuration is mostly used?

13. State various capacitances in the hybrid model?

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) For the transistor amplifier shown in Figure 1, V_{cc} = 12V, R_1 = 8$k\Omega$, R_2 = 4$k\Omega$, R_C = 1$k\Omega$, R_E = 1$k\Omega$ and R_L = 1.5$k\Omega$. Assume V_{BE} = 0.7V.

(i) Draw the d.c load line (ii) determine the operating point. (16)

Or

(b) Explain the working principle of biasing of MOFET and its applications. (16)

17. (a) Draw the small signal equivalent circuit of FET, also derive the expression for voltage gain, input impedance and output impedance of CS, CD and CG amplifiers. (16)

Or

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

18. (a) Explain and derive the low frequency response of BJT amplifier. (16)

Or

(b) Derive gain, input and output impedance of common source JFET amplifier with neat diagram and equivalent circuit. (16)

19. (a) With a circuit diagram, explain the performance of Class B amplifier and derive the expression of efficiency of Class B amplifier. (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) Enumerate the effects of negative feedback on the various characteristics of the amplifier. (16)

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, $f_1 = 50Hz$, $f_2 = 200KHz$ 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)