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**Question Paper Code: 43404**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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  $10^{\circ}C$  rise in temperature?  
(a) doubles                      (b) remains same                      (c) reduces                      (d) triples
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 these
3. If the differential voltage gain and common mode voltage gain of a differential amplifier are  $48dB$  and  $2dB$  respectively, then common mode rejection ratio is  
(a)  $24dB$                       (b)  $25dB$                       (c)  $46dB$                       (d)  $50dB$
4. Which type of amplifier has moderate input and output impedance?  
(a) CE                      (b) CB                      (c) CC                      (d) None
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  $r_{bb'}$ ,  $r_{b'e}$  and  $h_{ie}$   
(a)  $r_{bb'} = h_{ie} - r_{b'e}$                       (b)  $r_{bb'} = r_{b'e}$                       (c)  $r_{bb'} = h_{ie}$                       (d)  $r_{bb'} = h_{ie} + r_{b'e}$

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 C amplifiers are used as
- (a) AF amplifiers (b) detectors (c) R.F. amplifiers (d) none of these
9. The basic purpose of applying negative voltage feedback is to
- (a) increase voltage gain (b) reduce distortion  
(c) keep the temperature within limits (d) none of these
10. What happened to noise with negative feedback?
- (a) increases (b) decreases  
(c) no change (d) increases then decreases

PART - B (5 x 2 = 10 Marks)

11. Give the advantages of self-biasing.
12. Draw the circuit diagram of emitter coupled differential amplifier
13. What is a multistage amplifiers? Discuss the low frequency response of an amplifier.
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) What is meant by transistor biasing? Describe various methods used for transistor biasing? State the advantages of voltage divider bias. (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) Analyze the FET models at high frequencies. (16)

Or

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

19. (a) Briefly explain complementary push pull Class-B amplifier, also derive its efficiency. (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) Compare the four types of feedback topologies with respect to basic amplifier,  $R_{if}$  and  $R_{of}$ . Draw example circuit for each type of feedback. (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,  $f_1 = 50\text{Hz}$ ,  $f_2 = 200\text{KHz}$  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)

