SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E – E&C/ECE/EIE/ETCE
Title of the paper: Solid State Circuits – I/ Electronic Circuits - I
Semester: III Max.Marks: 80
Sub.Code: 418307-517307-518307-6C0035(06-07) Time: 3 Hours
Date: 30-04-2009 Session: AN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Define peak inverse voltage.

2. State the reason for connecting bleeder resistor in LC filter.

3. Write short notes on Q point.

4. Mention the advantages of self bias method.

5. Define CMRR.

6. What is the use of current source in emitter for a differential amplifier.

7. Draw the circuit of a transformer coupled class A amplifier.

8. Write the value of maximum efficiency in class B amplifier.

9. Why is CE configuration popularly used in intermediate stages of a cascaded amplifier?

10. How is β cutoff frequency related with a cutoff frequency?

PART – B (5 x 12 = 60)

Answer All the Questions

11. With a neat diagram, explain the operation of half wave rectifier and obtain the expression for form factor and peak factor.

(or)

12. Explain the operation of series voltage regulator and derive the expression for output voltage and load current.

13. Obtain the expression for input impedance, output impedance, voltage gain, current gain using h – parameters.

(or)

14. Explain the different methods of bias compensation.

15. Obtain the small signal model of JFET and derive the expression for voltage gain, output resistance and voltage gain.

(or)

16. For a n-channel JFET amplifier with self bias, the values of Vp = -3 Volts and I_{DSS} = 4mA. It is required to bias the circuit at I_D = 2mA using V_{DD} = 24volts. Assume r_d is very high as compared to R_d. Find (a) V_{gs} (b) g_m(c) R_s (d) R_d such that the voltage gain is at least 32dB with R_s bypassed with a very large capacitor C_s.

17. Explain in detail the various types of push-pull amplifier. Write its advantages and disadvantages.

(or)

18. Explain with a neat diagram the operation of class A amplifier. Obtain the expression for efficiency and find out its maximum efficiency.

19. Explain in detail Darlington Emitter follower and obtain the expression for current gain, voltage gain, input impedance and output impedance.

(or)

20. Draw the high frequency equivalent circuit of common emitter transistor amplifier and explain about the function of each component.