Code No. 2052

FACULTY OF ENGINEERING

B.E. 2/4 (EE / Inst.) II – Semester (Main) Examination, May 2013

Subject: Electronic Engineering – II

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1. An amplifier with voltage gain of 60 db uses $\frac{1}{20}$ of its output in negative feedback. Calculate the gain with feedback in db. (3)

2. Compare positive and negative feedbacks. (2)

3. What are the factors to be considered for selection of an oscillator for a particular application? (3)

4. Why is crystal oscillator used in communication transmitters and receivers? (2)

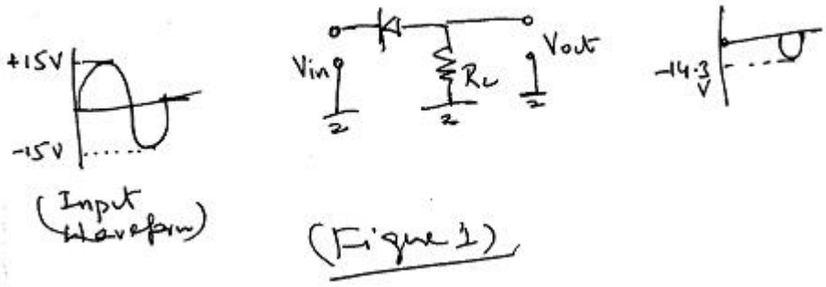
5. List out the applications of differential amplifier. (2)

6. A differential dc amplifier has a differential gain of 100 and a common mode gain of 0.01. What is its CMRR in db? (3)

7. Why a class A amplifier is cooler in the presence of signal than in the absence of signal? (2)

8. A power transistor operating in class A operation has zero-signal power dissipation of 8 Watts. If the ac power output is 2W, determine the collector efficiency and power rating of the transistor. (3)

9. Determine the peak output voltage for a positive series clipper circuit shown in Figure 1. The input signal is sinusoidal of peak value 15V and the barrier voltage for silicon diode is 0.7V and draw the transfer characteristics of this circuit. (3)



(Input Waveform) (Figure 1)

10. List out the applications of clamping circuits. (2)

PART – B (50 Marks)

11.(a) An amplifier with a gain of 60 db has an output impedance of 10 KΩ. It is required to modify its output impedance to 1 KΩ. What type of feedback has to be applied? Calculate the feedback factor? Also find the percentage change in the overall gain for a 10% change in the open-loop gain of the amplifier, (5)

(b) Prove the negative feedback in amplifiers increases the bandwidth and improves signal to noise ratio. (5)

12. Draw the circuit diagram of an R-C phase shift oscillator using a BJT and explain how the Barkhausen conditions are satisfied. Derive the expressions for its frequency of oscillations and the minium value of h_{fe} required for the BJT for the system to oscillate. (10)

…2.

13. Discuss the significance of drift compensation techniques and explain in detail about problems of dc amplifiers. (10)

14.(a) A class B push-pull amplifier is supplied with V_{cc} = 40 V. The signal swings the collector voltage down to V_{min} = 8 V. The dissipation in both transistors total 38 W. Determine the (i) total power input (ii) total power developed across the load (iii) power rating of each transistor and (iv) overall efficiency. (6)

(b) Discuss in detail about various types of distortions in amplifiers. (4)

15.(a) Explain in detail the operation of differentiating and integrating circuits using diode. (7)

(b) What are applications of high pass circuits? (3)

16. Derive the expression for frequency of oscillation for Colpitts oscillator with a neat diagram. (10)

17. Write short note on:
a) Clamping circuits (5)
b) D.C. Amplifiers (5)

****