[06 – 2203]

II/IV B.E. DEGREE EXAMINATION.

Second Semester

Electrical and Electronics Engineering

ANALOG ELECTRONIC CIRCUITS

(Common with Electronics and Communication Engineering and EIE)

(Effective from the admitted batch of 1999–2000 and

after batches)

Time : Three hours   Maximum : 70 marks

Question no. 1 is compulsory.

Answer any FOUR questions from the remaining.

All questions carry equal marks.

1.　(a)　What is the need of a difference amplifier?

　　(b)　What is the effect of—ve feedback on gain?

　　(c)　Write the advantages of crystal oscillators.

　　(d)　What are the advantages of push pull amplifier?

7. (a) Draw the block diagram of operational amplifier. Explain in detail.

   (b) A differential amplifier has a differential gain (A_d) of 100, the input voltages applied are $V_1 = 1$ mV and $V_2 = 0.9$ mV.

   Calculate the output voltage for

   (i) CMRR = 100

   (ii) CMRR = 1000

   (iii) CMRR = 10000.

8. (a) Describe the logarithmic amplifier with neat sketches.

   (b) Design a weighted summer using Op-Amp that provides $V_0 = 2V_1 + V_2 - 4V_3$.

(e) What is the need of heat sinks in power amplifiers?

(f) List the ideal characteristics of Op-Amp.

(g) What is CMRR? Define.

2. (a) With neat diagram, explain the working of 2-stage RC coupled amplifier

(b) Explain high frequency operation of FET and derive the expression for gain bandwidth product with necessary diagrams.

3. (a) Find the input and output resistance of a amplifier that employs voltage series feedback.

(b) An amplifier with —ve feedback has a voltage gain of 120. It is found that without feedback, an input signal of 60 mV is required to produce a particular output, where as with feedback the input signal must be 0.5 V to get the same output. Find the A_V and β of the amplifier. (4)

(c) Mention the advantages of – ve feedback. (3)

4. (a) What are the types of LC tuned oscillators Explain any one with neat figure and with necessary equations.

   (b) In a Harpits oscillator $L_1 = 5\mu H$, $L_2 = 15\mu H$ and $C = 0.01\mu F$. Calculate :

      (i) Frequency of oscillations

      (ii) If 'C' is doubled, find the new frequency.

5. (a) Explain about class AB power amplifier with neat sketches.

   (b) Calculate the harmonic distortion components of an output signal having fundamental amplitude of 2.5 V, 2nd harmonic amplitude of 0.25V and 3rd harmonic amplitude 0.1 V and 4th harmonic amplitude 0.05V and also calculate the total harmonic distortion for the amplitude component given above.

6. (a) What is the use of using transformers in a tuned circuit?

   (b) What is meant by stragger tuning? Explain.

   (c) What are the differences between single and stragger tuning?

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