24227

B. Tech. 5th Semester (F) Scheme (EEE)
Examination, December–2018

ANALOG ELECTRONIC CIRCUIT

Paper–EE-305-F

Time allowed : 3 hours]   [Maximum marks : 100

Note :   *First question is compulsory. Attempt five questions in all, selecting one question from each section.*

1.   (a)   Explain the effects of coupling and bypass capacitor in a circuit.

    (b)   What is an oscillator ? How does it differ from an amplifier ?

    (c)   Distinguish between Class -A, Class-B and Class-C operation of amplifiers.

    (d)   Differentiate between linear and non linear applications of operational amplifiers.   5×4

Section–A

2.   Define the lower cut-off frequency and upper cut-off frequency. Derive expression for these frequencies in terms of circuit components. Draw the frequency response curve of an R–C coupled amplifier.   20

3. (a) Differentiate between positive and negative feedback. How does negative feedback modify the gain of an amplifier ?　　10

   (b) What is the effect of unbypassed emitter lead resistance R_E on the gain of an amplifier ?　10

Section–B

4. (a) What are the Barkhausen condition of oscillations in electronic systems ? What are the factors which affect the frequency stability of an oscillator? 10

   (b) Explain how oscillations are initiated and sustained in an oscillator. Draw the ckt diagram of an R-C phase shift oscillator and briefly explain the principle of operation.　　10

5. Enumerate the advantages of R-C oscillators. Explain the working of an R-C phase shift oscillator and find the expression for its frequency of oscillation. Find the limit on the gain of amplifier used in this oscillator.　20

Section–C

6. (a) Explain how the position of Q-point varies in case of Class-A, B and C operation.　　10

   (b) Draw the circuit of a push-pull amplifier and

7. Draw the circuit diagram of an inverting amplifier using op-amp and derive the expression for its voltage gain. Explain the significance of virtual ground. Define CMRR of a differential amplifier. Realize a differentiator using op-amp.　　10

Section-D

8. Write note on –

   (i) Bridge amplifier

   (ii) Current to voltage converter

   (iii) Scale changer

   (iv) Phase shifter　　20

9. Write notes on :

   (i) Comparators

   (ii) Logarithmic Amplifier

   (iii) APC

   (iv) Waveform Generator.　　20