Code: 13A04407

R13

B.Tech II Year II Semester (R13) Supplementary Examinations December 2016
ANALOG ELECTRONIC CIRCUITS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
  (a)   What are the different coupling schemes used in multistage amplifiers?
  (b)   Write the expression for bandwidth of multistage amplifier.
  (c)   What are the advantages of introducing negative feedback in amplifiers?
  (d)   List the four basic feedback amplifier topologies.
  (e)   What are the conditions for oscillation?
  (f)   Define piezoelectric effect.
  (g)   What are the merits of using push-pull configuration?
  (h)   What is crossover distortion?
  (i)   What is a clipper?
  (j)   What are the important applications of Schmitt trigger circuit?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2   A multistage amplifier is to be constructed using four identical stages, each of which has a lower cut-off frequency of 15 Hz and upper cut-off frequency of 30 kHz.
        (i) What will be the lower and upper cut-off frequencies of the multistage amplifier?
        (ii) If the midband voltage gain of each stage is 8.2, what will be approximate gain of multistage amplifier at 7.5 kHz and at 300 kHz?
OR
3   What are cascaded amplifiers? Explain in detail the calculation of gain and bandwidth of single and multistage amplifiers.

UNIT – II

4   (a)   The distortion in an amplifier is found to be 3%, when the feedback ratio of negative feedback amplifier is 0.04. When the feedback is removed, the distortion becomes 15%. Find the open and closed loop gain.
  (b)   Explain the effect of negative feedback on amplifier characteristics.
OR
5   Draw the circuit diagram which has voltage series feedback and find its gain, input impedance and output impedance.

UNIT – III

6   Draw the circuit diagram of Hartley oscillator and explain its operation. Also derive the expression for frequency of oscillation.
OR
7   Explain how conditions for oscillations are satisfied for RC phase shift oscillator and derive its frequency of oscillation.

UNIT – IV

8   For a class B amplifier providing a 20 V peak signal to a 16 ohms load and a power supply of V_{cc} = 30 volts. Determine input power, output power and efficiency.
OR
9   A complementary symmetry push-pull amplifier has capacitive load R_L = 8 ohms, supply volt = 24 volts. Calculate $(P_{ac})_{max}$, power dissipation of each transistor and efficiency.

UNIT – V

10   Draw the circuit diagram of Astable Multivibrator and derive the expression for on period and off period.
OR
11   Draw the circuit diagram of Schmitt trigger and explain its operation. Also derive the expressions of UTP and LTP.

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