Code: 13A04407 **R13**

B.Tech II Year II Semester (R13) Regular Examinations May/June 2015

ANALOG ELECTRONIC CIRCUITS

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory question)

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are the different coupling schemes used in multistage amplifiers?

(b) What is the difference between cascade and cascode amplifier?

(c) What are the different types of feedback amplifier topologies?

(d) What are the advantages of negative feedback in amplifiers?

(e) Define oscillator and give the types of oscillators.

(f) What are the conditions required for a circuit to work as an oscillator?

(g) Why heat sink is necessary in case of power transistor?

(h) Compare and contrast between class A and Class B amplifiers.

(i) Define linear and non-linear circuits.

(j) Define Multi-Vibrators and list types of Multi-Vibrators.

PART – B

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

UNIT – I

2 Derive the input impedance, output impedance, voltage gain and current gain for common emitter amplifier by using exact and approximate analysis.

(OR)

3 Draw the circuit diagram of two stage RC coupled transistors amplifier. Explain the operation and calculate the mid frequency range and low frequency range.

UNIT – II

4 (a) A voltage series negative feedback amplifier has a voltage gain without feedback of A = 50, input resistance R_i = 2 kΩ, output resistance R_O = 15 kΩ and feedback ratio of 0.01. Calculate the voltage gain, input resistance and output resistance of the amplifier with feedback?

(b) Explain the concept of feedback with block diagram.

(OR)

5 Derive the expression for input impedance and output impedance for the current series and current shunt feedback amplifiers.

UNIT – III

6 Show that the gain of wein-bridge oscillator using BJT amplifier is at least 3 for oscillations to occur.

(OR)

7 (a) With neat diagram explain the operation of LC oscillator.

(b) Derive the frequency of oscillation for Hartley oscillator.

UNIT – IV

8 (a) Draw the circuit diagram of class-A power amplifier with transformer coupled. Explain operation and calculate the efficiency.

(b) Show that in class-B push pull amplifier the maximum conversion efficiency is 78.5%.

(OR)

9 (a) For a class B amplifier driven from a 24 V power supply and driving a 8 Ω load, compute: (i) Input D.C. power. (ii) Output power. (iii) Conversion efficiency, if the peak to peak output voltage across the load resistance is 22 V maximum.

(b) Compare the series fed and transformer coupled class - A power amplifiers. Why is the conversion efficiency doubled in transformer coupled class - A amplifier?

UNIT – V

10 (a) A symmetrical square wave of ± 5 V at a frequency of 5 KHz is applied to a high pass RC circuit with a cutoff frequency of 20 KHz. Sketch the steady state input and output voltage waveforms. Calculate the steady state output voltage level.

(b) Explain how RC low pass filter act as integrator and high pass filter act as a differentiator.

(OR)

11 (a) Explain about negative and positive clamper with example.

(b) State and prove clamping circuit theorem.

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