Total No. of printed pages = 3

3 (Sem 3) ELE M1

2015

ELECTRONICS

(Major)

Paper : 3.1

(Linear Active Circuits)

Full Marks – 60

Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×7=7

(a) Write the full form of JFET.

(b) What is CMRR of an OPAMP ?

(c) Define h_{12}-parameter.

(d) What is the disadvantages of class A amplifier ?

(e) Write the expression for cut off frequency of a 1st order Butterworth filter.

[Turn over

(f) How will you define a distributed element ?

(g) What is the value of threshold voltage of a silicon diode ?

2. Write very short answer to the following : (any *four*) 2×4=8

(a) Discuss briefly about the parasitic capacitances in an RC-coupled amplifier.

(b) Discuss briefly about the push pull amplifier.

(c) Derive the expression of voltage gain of an OPAMP in its non-inverting modes of operation.

(d) Draw the circuit diagram of an amplifier using transistor in the C-B configurations.

(e) What is loadline ?

(f) What is band elimination ?

3. Write short answer to any *three* of the following : 5×3=15

(i) Draw the circuit diagram of a Schmitt Trigger using OPAMP and explain its working principle.

(ii) Discuss briefly about class AB power amplifier.

(iii) Draw the circuit diagram of an OPAMP substractor and discuss briefly about its working principle.

(iv) Explain about the two port representation of BJT with h-parameter.

(v) Design a monostable multivibrator using IC 555 timer and explain its working principle.

4. Answer the following : 10×3=30

(a) Explain the working principle of a JFET with necessary diagram and explain its working principle.

(b) Draw the circuit diagram of an amplifier in C-E configuration using voltage divider bias condition and explain the working principle of the circuit.

(c) Design a Wein Bridge Oscillator and discuss briefly about its working principle.

(d) Write short notes on :

(i) Band pass active filter

(ii) Phase-shift oscillator.