

USELT05 - Electronics Paper-I (Power Amplifier, Oscillators and Power Supplies)

P. Pages : 2

Time : Three Hours



GUG/S/19/11604

Max. Marks : 50

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and well labelled diagram wherever necessary.
 3. Use of log table / calculator is allowed.

1. Either
- a) State differences between voltage and power amplifiers. 3+3+
Draw circuit diagram of a Class - A power amplifier with resistive load and show that its maximum efficiency is 25%. 4

OR

- b) Draw circuit diagram of class - B push-pull power amplifier and explain its working. 6+1+
What is crossover distortion ? 3
How is it eliminated ?

2. Either
- a) State Barkhausen criterion for oscillation. 2+6+
Draw the circuit diagram of a phase shift oscillator and explain its working. 2
State its advantages.

OR

- b) What is tank circuit ? Explain its working. 3+6+
Explain the working of Colpitts oscillator. 1
State formula for its frequency.

3. Either
- a) Differentiate between unregulated and regulated power supplies. 3+7
Explain the working of regulated DC power supply with the help of block diagram.

OR

- b) Explain the construction and working of series pass regulator. 6+2+
How is short circuit protection provided in it ? 2
Differentiate between series and shunt regulator.

4. Either
- a) State advantages of three terminal IC regulator. 3+7
Draw the circuit diagram of regulated dual power supply using three terminal regulator IC 78XX and IC 79XX series. Explain its working.

OR

- b) State advantages of IC voltage regulator over discrete regulator. 3+7
Draw functional block diagram of voltage regulator LM317. Explain it.

5. Attempt **any ten**. 1x10

- a) What is heat sink ?
- b) State any two advantages of transformer coupling.
- c) Define efficiency of power amplifier.
- d) What is an oscillator ?
- e) State frequency formula for Wien bridge oscillator.
- f) Define feedback factor.
- g) What is power supply ?
- h) Define load regulation.
- i) Draw the Zener diode characteristics.
- j) Name the pins of three terminal IC 79XX series regulators.
- k) What is meaning of dual power supply ?
- l) What is regulated output provided by IC regulator 7906.
