B. Sc. (With Credits)-Regular-Semester 2012 Sem IV

B.Sc.24131 Electronics-I : Paper- I (Power Amplifier, Oscillators and Power Supplies)

P. Pages : 3

Time : Three Hours   Max. Marks : 50

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

1. Either

a) Explain the working of class-B push-pull **10** power amplifier.
   What is cross-over distortion? How is it overcome?

OR

b) Define and explain the following terms **10** related to power amplifier:
   i) Collector efficiency
   ii) Distortion
   Draw circuit diagram of transformer coupled class-A power amplifier and explain its working.

2. Either

   a) State Barkhausen's conditions for **10** oscillation. Explain the operation of a LC tank circuit with neat diagram.
Draw the circuit diagram of a Hartley oscillator and explain its working.

<div align="center">**OR**</div>

   b) Draw circuit diagram of phase shift oscillator **10** and explain its working.
In a phase shift oscillator, using three RC sections, the values of C and R are $1\mu F$ and 10Ω respectively. Determine the resonant frequency of oscillations.

3. Either

   a) Give the difference between unregulated **10** and regulated power supplies.
Draw the circuit diagram of series pass regulator and explain its working.

<div align="center">**OR**</div>

   b) Draw the circuit diagram of zener regulator **10** and explain its working.
A 10V zener diode is used in zener shunt regulator. If DC input voltage of 30V and maximum load current to be supplied to load is 50mA. Calculate the value of series resistor and wattage of zener diode.

4. Either

   a) State advantages of three terminal voltage **10** regulator.
      Draw block diagram of IC 78XX and explain each block.

OR

   b) Draw the circuit diagram of voltage **10** regulator using LM317 and explain its working.
      Explain negative voltage regulated power supply using IC 79XX series.

5. a) Draw the circuit diagram of complementary **2½** symmetry power amplifier.

   b) State advantages of Wein bridge oscillator **2½** over phase shift oscillator.

   c) Explain short circuit protection in power **2½** supply.

   d) Draw circuit diagram of dual power supply **2½** using IC 78XX and 79XX.

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