

S.Y.B.Sc. (With Credits)-Regular-Semester 2012 Sem IV  
**B.Sc.24131 - Electronics : I**  
**(Power Amplifier, Oscillators and Power Supplies) Paper-I**

P. Pages : 2

Time : Three Hours



**GUG/W/16/5602**

Max. Marks : 50

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

**Either**

1. a) Explain how power amplifiers differs from voltage amplifier. 4+  
Draw the circuit diagram of transformer coupled class A power Amplifier and explain its working. State the expression for its efficiency. 6

**OR**

- b) Define power transistor. 2+  
Draw the circuit diagram of complementary symmetry power amplifier with two power supplies and explain its working state its two advantages. 6+  
2

**Either**

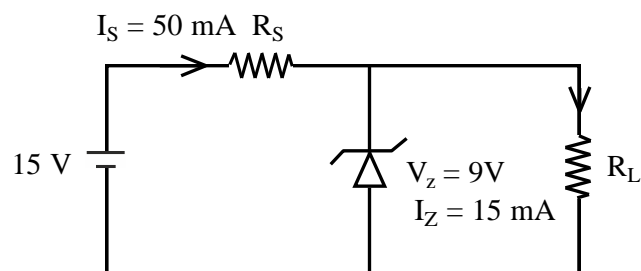
2. a) State the Barkhausen's condition for sustained oscillations. 2+  
Explain the construction and working of transistor Hartley oscillator with necessary circuit diagram. 8

**OR**

- b) Explain the working of LC tank circuit. 3+  
Explain the working of phase shift oscillator with the help of circuit diagram. Also state the expression of output frequency. 7

**Either**

3. a) What is meant by voltage regulation? 6+  
Explain the working of zener diode voltage regulator. 4  
In the following circuit find series resistance  $R_s$ .



**OR**

- b) Explain the working of transistor series pass regulator with the help of circuit diagram. 7+  
Explain the short circuit protection in series pass regulator circuit. 3

**Either**

4. a) Draw and explain the functional block diagram of LM317 voltage regulator. **5+**  
Explain the use of IC LM317 as an adjustable voltage regulator. **5**

**OR**

- b) State the advantages of 3-terminal fixed IC regulators. **3+**  
Explain the construction of dual power supply of  $\pm 12\text{V}$  using IC 7812 and 7912. **7**
5. a) Explain class A power amplifier. **2½**
- b) Compare amplifier and oscillator. **2½**
- c) Explain load and line regulation with respect to voltage regulators. **2½**
- d) Draw the circuit diagram of -15V voltage regulator using 3-terminal fixed voltage IC. **2½**

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