



GUG/W/14-1263A

S.Y. B.Sc. Semester – IV - B.Sc.24131 : Electronics - I

**(Power Amplifier, Oscillators and
Power Supplies)**

Paper - I

P. Pages : 4

Time : Three Hours

Max. Marks : 50

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

1. Either

- a) Draw the circuit diagram of class A transformer coupled power amplifier and explain its working. **5**
Explain importance of load matching in power amplifier **2**
A 4Ω speaker is to be connected to a power amplifier with $1.6\text{ k}\Omega$ internal impedance. Calculate the turn ratio of the matching transformer. **3**

OR

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- b) Explain how the power amplifier differs from a voltage amplifier. **4**
Draw the circuit diagram of push pull amplifier and explain its working. **6**

2. Either

- a) What is feedback ? State different types of feed back. **3**
Obtain Barkhausen's condition for oscillation. **3**
Draw the circuit diagram of Wien-bridge oscillator and explain its working. **4**

OR

- b) What is an oscillator ? **4+6**
What are the differences between amplifier and oscillator ?
Draw a circuit diagram of phase shift oscillator and explain its working.

3. Either

- a) State the disadvantages associated with unregulated power supply. Explain the concept of line regulation and load regulation. **2+**
Explain the working of zener diode shunt regulator **3+5**

OR

b) What is regulated power supply ? Draw its block diagram and explain the function of each block in brief. **7+3**
Explain the concept of short circuit protection in voltage regulator.

4. a) What is IC voltage regulator ? **3+**
State its advantages. **2+5**
Draw the functional block diagram of a basic IC voltage regulator.
Draw the block diagram of LM 317 voltage regulator. Explain working of each block.

OR

b) Explain the functional block diagram of three terminal fixed voltage IC regulator. **7+3**
Give its operating principle and salient features.
Draw the circuit diagram of +12V regulated power supply, using IC78XX.

5. a) Give the classification of power amplifiers. **2½**

b) Write short notes on Hartley oscillator. **2½**

- c) On what range of input voltage the Zener regulating circuit will maintain constant 10V across 1k Ω load resistance **2½**

Assume that

$$R_S = 500 \Omega$$

$$I_{Z(\min)} = 1\text{mA and}$$

$$I_{Z(\max)} = 10 \text{ mA}$$

- d) Explain the working of negative voltage regulator using IC79XX. **2½**
