Bachelor of Science (S.Y.B.Sc.) (Part-II) Fourth Semester

B.Sc. 24131 - Electronics Paper-I

(Power Amplifiers, Oscillators and Power Supplies)

P. Pages : 1 **GUG/W/18/1288**

Time : Three Hours * 1 0 0 1 * 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. a) Explain: **4+6**
i) Voltage Amplifier ii) Power Amplifier
Draw the circuit diagram of transformer couple class A amplifier and explain its working.

OR

b) Explain the working of class B push pull amplifier with suitable circuit diagram. **5+2**
What is cross over distortion? How does it can be removed? **+3**

2. a) Explain the construction and working of phase shift oscillator. **6+2**
State its advantages. **+2**
If value $R_1 = R_2 = R_3 = 10\,k\Omega$ and $C_1 = C_2 = C_3 = 1\mu F$, determine the frequency of phase shift oscillator.

OR

b) Draw the circuit diagram of transistor Colpitts oscillator circuit and explain its working. **7+3**
In Colpitts oscillator circuit, $C_1 = 1\mu F$, $C_2 = 2\mu F$ and $L = 10mH$. Find the frequency of oscillator.

3. a) Draw the block diagram of regulated power supply and explain each blocks. **7+3**
State the advantages of Regulated Power Supply.

OR

b) Define the following terms: **2+6**
i) Load Regulation ii) Line Regulation **+2**
Explain the working of Zener diode as a voltage regulator.
State its disadvantages.

4. a) Draw the functional block diagram of LM317 and explain each blocks. **7+3**
Write its salient features.

OR

b) Draw the circuit diagram of dual power supply using IC7805 and 7905 and explain. **7+3**
Differentiate between single power supply and dual power supply.

5. a) What is power transistor? Explain its need. **2½**

b) Explain Barkhausen criterion for oscillation. **2½**

c) What are the disadvantages of unregulated power supply? Draw the circuit diagram of unregulated dc power supply **2½**

d) State the advantage of three terminal IC voltage regulator. **2½**

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