B.Sc.23131 - Electronics : Paper-I (Amplifiers)

P. Pages : 2
GUG/S/17/3336

Time : Three Hours
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0627
Max. Marks : 50

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

1. **Either**

a) What is amplifier ? Explain transistor as an amplifier.   **5+**
What is thermal runway ?   **5**
Define :
i) Input resistance
ii) Output resistance
iii) Voltage gain

OR

b) What are h-parameters? Explain them.   **5+**
Derive equations for h_{ie} and h_{re} in CE- Transistor amplifier.   **5**

2. **Either**

a) Draw the ckt diagram of RC coupled amplifier and explain its working.   **5+**
What is distortion ? Explain frequency and phase distortion.   **5**

OR

b) With circuit diagram explain the working of direct coupled amplifier. State advantages and disadvantages.   **5+**
Explain Graphically class-A, class-B class-C and class-AB amplifier.   **5**

3. **Either**

a) State the drawbacks of RC-coupled and direct coupled amplifiers. How are they overcome?   **5+**
Draw the circuit diagram of differential amplifier and explain its working.   **5**

OR

b) Draw the block diagram of operational amplifier and explain the function of each block ?   **5+**
Define :   **5**
i) Input bias current   ii) Input off-set voltage
iii) Open loop gain   iv) CMRR
v) Slew rate

4. **Either**

a) Explain the working of op-Amp as a non inverting amplifier and derive an expression for its gain. **5+5**
Explain op-Amp as an inverting adder.

OR

b) Explain op-Amp as an integrator. Prove that $V_0 = -\dfrac{1}{RC}\int V_{in}.dt$ **5+5**

Explain the working of comparator using op-Amp.

5. a) What is stability factor ? Explain its importance. **2½**

b) Draw the frequency response curve of transformer coupled amplifier and explain. **2½**

c) State the characteristics of ideal op-Amp. **2½**

d) Explain the concept of virtual ground. **2½**

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