

B.Sc. S.Y. Sem-III
B.Sc.23131 - Electronics Paper-I (Amplifiers)

P. Pages : 2
Time : Three Hours



GUG/S/19/1262
Max. Marks : 50

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

1. Either:-

- a) What is amplifier? 3+7
Explain transistor as an amplifier. Explain base-resistor biasing method and state its advantages and disadvantages.

OR

- b) Draw the hybrid equivalent circuit for CE amplifier. Derive the equation for current gain, input resistance and voltage gain, in terms of h - parameter. 3+7

2. Either:-

- a) Draw the circuit diagram of transformer coupled amplifier and explain its working. 7+3
Draw the frequency response and explain it with low, mid and high frequency range.

OR

- b) What is RC coupled amplifier? Explain. 4+6
Derive the expression for voltage gain at low and mid freq. range of RC coupled amplifier.

3. Either:-

- a) Draw the circuit diagram of differential amplifier and explain its working. 7+3
Define:
i) Slew rate
ii) Input Bias current
iii) CMRR.

OR

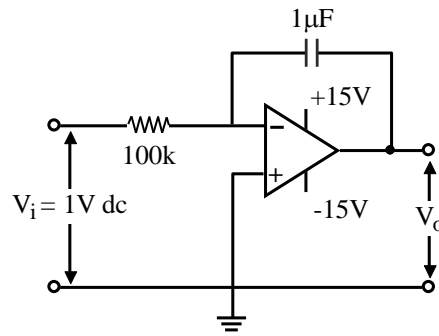
- b) Explain need of dual power supply in op-amp. 3+3+4
Explain the open loop gain and close loop gain of op-amp.
Define any four parameters of op-amp.

4. Either:-

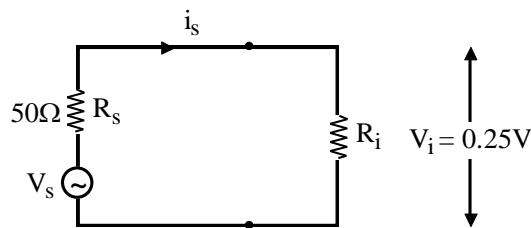
- a) Explain the op-amp as an inverting amplifier and derive expression for its gain with feedback. 7+3
Explain the concept of virtual ground.

OR

- b) What is voltage comparator? Explain op-amp as a voltage comparator. 5+5
 Calculate the output of the integrator shown in following figure, after 1 sec, 1.5 sec. and 2 sec Initial charge on capacitor being zero.



5. a) An amplifier has an input voltage V_i of 0.25V and draws 1 mA from the source; Shown in following figure. 2½



- i) Determine the O/P resistance of amplifier.
 - ii) What must be the open circuit voltage of source (V_S)?
- b) Differentiate the direct couple and RC couple amplifier. 2½
- c) Give characteristics of ideal op-amp. 2½
- d) Calculate the output voltage V_o . 2½

