

USELT03 - Electronics Paper-I : Unipolar Devices and Linear Integrated Circuits

P. Pages : 1

Time : Three Hours

**GUG/W/22/11578**

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 calculator/log table is allowed.

1. a) Explain the construction and working of N-channel JFET. 7+3
Differentiate between BJT and FET.
OR
 - b) Explain the construction and working of DE MOSFET. 7+3
State advantages of MOSFET.
2. a) Explain Class A, Class B and Class C amplifiers with suitable diagram. 6+4
Explain frequency response of transformer coupled amplifier.
OR
 - b) What is feedback? What type of feedback is used in oscillator? 2+8
Draw the circuit diagram and explain the working of Colpitts oscillator.
3. a) Draw the circuit diagram of difference amplifier and explain its working. 6+4
Explain the need of two power supplies in difference amplifier.
OR
 - b) Draw the block diagram of operational amplifier and explain the function of each blocks. 7+3
State the ideal characteristics of operational amplifier.
4. a) Explain the op-amp as a inverting amplifier with suitable circuit diagram. 6+4
Explain the concept of virtual ground in op-amp circuit.
OR
 - b) Draw the circuit diagram of integrator using op-amp and explain its working. 7+3
Explain the working of comparator with suitable diagram.
5. Solve **any ten** of the following: 10
 - i) State any two advantages of MOSFET.
 - ii) Differentiate between JFET and MOSFET.
 - iii) Draw the basic construction and symbol of UJT.
 - iv) State advantages of transformer couple amplifier.
 - v) What is negative feedback?
 - vi) State Barkhausen Criterion.
 - vii) What is operational Amplifier?
 - viii) Define CMRR.
 - ix) Define slew rate of op-amp.
 - x) What is unity gain amplifier?
 - xi) Draw the circuit diagram of op-amp as a adder and write the formula for its output voltage.
 - xii) Differentiate between comparator and zero crossing detector.
