

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

P. Pages : 2

Time : Three Hours



**GUG/W/24/11578**

Max. Marks : 50

- Notes :
1. All questions are compulsory and carry equal marks.
  2. Draw neat and labelled diagram wherever necessary.

**Either:**

1. a) What is JFET? Explain construction and working of N-channel JFET? Draw the VI characteristic of JFET and explain. **10**

**OR**

- b) Explain the construction of N channel enhancement type MOSFET. What are the advantages of JFET over BJT? Draw the VI characteristic of UJT? Explain it. **10**

**Either:**

2. a) What is amplifier? Explain the classification of amplifier on the basis of biasing? With the help of circuit diagram explain the working of two stage RC coupled amplifier. **10**

**OR**

- b) What is feedback? Explain positive and negative feedback. Explain the working of phase shift oscillator State its advantages. **10**

**Either:**

3. a) Draw the circuit diagram of two stage difference amplifier and explain its working? Explain the need of two power supplies in difference amplifier. **10**

**OR**

- b) Draw the block diagram of operational amplifier and explain the function of each block. Define slew rate and CMRR. **10**

**Either:**

4. a) Draw the circuit diagram of inverting amplifier using operational amplifier and derive the expression for close loop gains. Explain the concept of virtual ground. **10**

**OR**

- b) Explain the working of summing amplifier using Op-Amp? What is zero crossing detector? Explain it using Op-Amp. **10**

5. Attempt **any ten** out of the following.

**1x10**  
**=10**

- a) Draw the circuit symbol of N-channel JFET.
- b) What are advantages of MOSFET over JFET?
- c) What is intrinsic standoff ratio?
- d) State the advantages of positive feedback.
- e) What are the advantages of transformer coupled amplifier over RC coupled?
- f) What is coupling of amplifier?
- g) Define closed loop gain of Op-Amp.
- h) State the advantages of Op-Amp over normal amplifier.
- i) What is common mode gain?
- j) What is unity gain amplifier?
- k) State the limitation of integration.
- l) What is sign changer?

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