

Q. P. Code: 35354

(3 Hours)

[Total Marks : 80]

- N.B. : 1. Question **ONE** is **Compulsory**.
 2. Solve any **THREE** out of remaining.
 3. **Draw** neat and **clean** Diagrams.
 4. Assume suitable **data** if required

- Q.1. Attempt the following
- Explain the construction of n-channel JFET 5
 - List the ideal Characteristics of Op-amp 5
 - What is modulation in communication? What is the need for modulation? 5
 - Compare TDM and FDM 5
- Q.2. A. Explain Barkhausen Criteria for Oscillation. Calculate the frequency of oscillations of Colpitt's oscillator with $C_1 = C_2 = 500 \text{ pF}$ and $L = 1 \text{ mH}$ 10
- B. Derive the equations for Z_i, Z_o, A_v for common source configuration using voltage divider network 10
- Q.3. A. Explain how op-amp can be used as averaging amplifier in inverting configuration 10
- B. Explain generation of SSB using phase shift method. 10
- Q.4. A. Explain Superheterodyne receiver in detail and show waveforms at each stage 10
- B. State and prove Sampling theorem for Low pass Signal. 10
- Q.5. A. Discuss Delta Modulation and Adaptive Delta Modulation 10
- B. Write short note on TDM-PCM System 10
- Q.6. Write Short note on
- PLL 10
 - Op-amp as Comparator 10
