

(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
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|--|---|
| a) Explain the construction of n-channel JFET | 5 |
| b) List the ideal Characteristics of Op-amp | 5 |
| c) What is modulation in communication? What is the need for modulation? | 5 |
| d) 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
- | | |
|-------------------------|----|
| a) PLL | 10 |
| b) Op-amp as Comparator | 10 |
