

(3 Hours)

[Total Marks : 80]

- N.B. : 1. Question **One** is **Compulsory**.
 2. Solve any **Three** out of remaining.
 3. **Draw** neat and **clear** diagrams.
 4. Assume suitable **data** if required

Q.1. Attempt the following

- a) Draw and explain block diagram of op-amp 5
- b) Compare BJT and FET 5
- c) Justify that JFET can be used as voltage variable resistor 5
- d) What are the drawbacks in Delta Modulation? How to overcome them? 5

Q.2. A. Explain Balanced modulator for DSB signal. 10

B. Explain block diagram of PLL. 10

Q.3. A. Explain op-amp as inverting and non-inverting Amplifier. 10

B. Write short note on generation of FM by Armstrong method. 10

Q.4. A. What is modulation index for AM and FM. An AM signal has a total power of 48 Watts with 45% modulation. Calculate the power in the carrier and the sidebands. 10

B. Explain Super-heterodyne receiver along with waveforms for each stage. 10

Q.5. A. What is multiplexing in Communication system? Explain TDM in detail. 10

B. Explain generation of PAM. 10

Q.6. Write Short note (any two) 20

- a) Zero Crossing Detector
- b) Construction of n channel FET.
- c) Characteristics of op-amp.
