Sem-III (Comp)
Electronic Circuits & Comm. Fundamentals
(CBGS & Revised)

18105116

QP Code : 30607

Time:-3 Hrs **Marks: 80**

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

Q. 1. A. Justify that JFET can be used as a Voltage Variable Resistor **5**

B. With neat diagram explain any one application of Zero-Crossing Detector **5**

C. With neat block diagram explain how PLL can be used to generate large number of frequencies from a single reference frequency. **5**

D. Explain with suitable example what do you understand by signal multiplexing? **5**

Q. 2 A. Derive an expression for trans-conductance for JFET. **10**

B. List down various parameters of Opamp along with their typical values for IC741. Also explain what the significance of CMRR and Slew Rate is? **10**

Q. 3 A. Explain how operational amplifier can be used for taking average of three signals. **5**

B. Explain fly wheel effect in Class C amplifier. **5**

C. Explain Nyquist criteria. **5**

D. Determine the magnitude of g_m for a JFET with $I_{DSS} = 8$ mA and $V_P = -4$ V at dc bias points $V_{GS} = -0.5$ V and also at $V_{GS} = -2.5$ V. **5**

Q. 4 A. Explain generation of SSB using phase shift method. **10**

B. Explain the use of PLL as FM detector. **10**

Q. 5 A. Explain super heterodyne receiver in detail along with the waveforms at each stage. **10**

B. Explain the concept of amplitude modulation. **10**

Q. 6 A. Write short note on generation of FM by Armstrong method. **5**

B. Mention important specifications of ADC and DAC required for communication. **5**

C. Explain the necessity and significance of modulation in communication. **5**

D. Compare n-channel and p-channel JFET with respect to their device features and voltage-current characteristics. **5**