Department of Electronics and Communication Engineering
National Institute of Technology, Srinagar-190006

Major Examination (04 -07- 2017)

Course: B. Tech (IT) **Semester:** 4th

Subject: Communication Systems **Maximum marks:** 60

NOTE: *Attempt any four questions.* **Duration:** 2hours

Q1 (a) Explain the need of quantization in detail. How quantization noise can be reduced?

(b) State and prove sampling theorem. How Aliasing can be avoided?

Q2 (a) Explain the demodulation of AM using envelope detector. How diagonal clipping can be avoided?

(b) How Quadrature Null effect (QNE) can be eliminated in DSB-SC?

Q3 (a) Explain the transmitter and receiver section of ASK. Also draw the constellation diagram.

Q4(a) Explain Phase Locked Loop (PLL) method for demodulation of FM signals. Mention its advantages over other demodulation techniques.

(b) Find the sampling rate of the following signals :

(i) Sinc (100t) (ii) $Sinc^2(100t)$ (iii) Sinc(100t) *Sinc(100t)

Q5 (a) Explain the need of Pre-emphasis and De-emphasis in FM.

(b) An FM signal is given by $s(t)=10\cos(2\pi 10^6 t+0.2\sin\pi 10^3 t)$.It is passed through cascaded frequency multiplier of having multiplying constant of 4 & 5respectively.Find all the parameters of FM at the output of each of the multiplier?