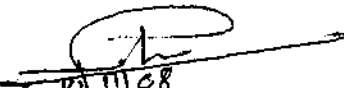


National Institute of Technology, Rourkela-08
End semester Examination-2008, Session: 2008-09, Autumn Semester
Programme: B.Tech, Semester: 5th Group/ Dept. Code: ---EC-311
Course name: Communication System, Duration of Examination: 03:00 hrs

Question no.	Answer any five questions. Fig. at the right hand margin indicates the marks. All part of a question should be answered at a single place.	Full Mark:50
1	(a) State and prove Parseval's theorem. (b) Find the Fourier transform of $\sin \omega_0 t$. Compare with the transform of $\cos \omega_0 t$.	05 05
2	(a) Find the distribution function $F(x)$, if the probability density function is defined as, $f(x) = \begin{cases} x e^{-x^2/2} & x \geq 0 \\ 0 & x < 0 \end{cases}$ (b) Explain the process of SSB generation with the help of a block diagram.	05 05
3	(a) Explain the indirect method of frequency modulation generation with the help of a diagram. (b) Compare the process of A.M with F.M.	05 05
4	(a) Explain the process of PCM and draw a PCM based communication system. (b) Derive an expression for quantization noise. Also derive the SNR of a PCM system.	05 05
5	(a) If the spectral range of a band pass signal is extends from 20 to 82kHz. Find the acceptable range of sampling frequency f_s . (b) The signal $v(t) = \cos \omega_0 t + \cos 8\omega_0 t$ is sampled by using natural sampling, (i) determine the minimum sampling rate f_s . (ii) Sketch $v_s(t) = S(t)v(t)$, if $S(t)$ is a train of pulse having a unit height.	05 05
6	Write short notes on the following (i) Differential pulse code modulation (ii) Noise figure (iii) Equivalent noise temperature of a two-port cascade system. (iv) BPSK System (v) Autocorrelation	02 02 02 02 02


Signature of the paper setter
Name: Prof. Prasant Kumar Sahu