Course No: ITGD3101 **Course Title: Modern Telecommunications** **Date: 10 / 11/ 2010** **No. of Questions: 3** **Time: 1 hour** **Using Calculator (YES)**	**University of Palestine** **Midterm Exam** **2nd quadmester** **2010/2011** **Total Grade: 100**	**Instructor Name: Dr. Anwar Mousa** **Student No.: _____** **Student Name: _____** **College Name: Faculty of Information Technology** **_____** **Dep. / Specialist: _____** **Using Dictionary (No)**

- ***Answer all Questions***

First Question	**No. of Branches (2)**	**(30/100)**

Q1 B1 **(15/30)**

For a signal whose spectrum is band-limited to *5500Hz*, what are the minimum sampling frequency (Nyquist rate) and the maximum sampling interval (if the signal is to be reconstructed exactly from its samples)?

Q1 B2 **(15/30)**

Determine the pulse transmission rate if the transmission bandwidth is 10KHz and the roll-off factor used for Nyquist criterion is 75%.

Second Question	**No. of Branches (2)**	**(30/100)**

Q2 B1 **(15/30)**

State three advantages of digital communications over analog.

Q2 B2 **(15/30)**

Explain how the compact disc achieves high fidelity voice pattern based on PCM.

Third Question	**No. of Branches (1)**	**(40/100)**

Q3 B1 **(25/25)**

A signal *m(t)* bandlimited to 10 kHz, is sampled at a rate 30% higher than the Nyquist rate. The maximum acceptable error in the sample amplitude (the maximum quantization error) is 0.6 % of the peak amplitude m_p. The quantized samples are binary coded. Find the minimum bandwidth of a channel required to transmit the encoded binary signal. If 24 such signals are time-division-multiplexed, determine the minimum transmission bandwidth required to transmit the multiplexed signal.

End of Questions

Good Luck