

DAT330 – Principles of Digital Audio
Cogswell Polytechnical College
Spring 2009

Assignment #2
Due 03/18/09

1. What is a balanced and unbalanced connection? What are their main differences?

2. What are the type of leads and connectors used for the following digital interconnection formats:
 - a) AES3
 - b) S/PDIF 2
 - c) optical S/PDIF
 - d) optical ADAT
 - e) MADI

3. What are some of the common applications for the following formats:
 - a) AES3
 - b) S/PDIF
 - c) MIDI
 - d) optical ADAT
 - e) MADI

4. What is time code and what is it used for?

5. What time code formats are most commonly used in audio/music applications?

6. In a digital audio synchronization context, define the following:

- a) word clock
- b) master device
- c) slave device

7. Calculate the cable length d at 3 dB attenuation. Refer to the following websites

<http://www.sengpielaudio.com/calculator-cable.htm>

<http://www.tape.com/resource/impedance.html>

- a) $Z_{out} = 600 \Omega$, $C = 120 \text{ pF/m}$, $f_c = 16000 \text{ Hz}$
- b) $Z_{out} = 95 \Omega$, $C = 91.8 \text{ pF/m}$, $f_c = 16000 \text{ Hz}$
- c) $Z_{out} = 110 \Omega$, $C = 42.6 \text{ pF/m}$, $f_c = 16000 \text{ Hz}$

8. Calculate the treble cutoff frequency f_c of a cable.

- a) $Z_{out} = 110 \Omega$, $C = 120 \text{ pF/m}$, $d = 500 \text{ m}$
- b) $Z_{out} = 110 \Omega$, $C = 120 \text{ pF/m}$, $d = 2.4 \text{ m}$
- c) $Z_{out} = 110 \Omega$, $C = 42.6 \text{ pF/m}$, $d = 100 \text{ m}$