Digital Audio Studies IDC30/IDC4U Exam Review

Basic Principles Of Sound

-How does sound work

-Sound waves travel through particles in the air expanding outwards in to your ear. The traveling wave vibrate hairs which send signals to your brain that recognize it as sound.

-What is frequency

-Measured in Hz(Hertz) or Cycles per second. As the frequency increases the pitch increases. The human hearing range is from 20 - 20 000 Hertz.

-What is amplitude

-The perceived volume.

-What is waveform

-A graphical representation of sound and sound waves.

-What is a transducer

-A device that takes one form of energy and converts it to another. For example a microphone converts acoustical energy into electrical energy.

Basic Principals Of Recording

-What is recording

-Capturing sound in any and every way.

-How has the medium progressed over time

-Phonograph, Wax discs, Gramophone, LP records, Magnetic tape, 4 track, 8 track, CD, MP3.

Digital Vs. Analogue

-Explain Analogue sound

-Totally un-compromised, completely natural, raw sound.

-Explain Digital sound

-Captured by using samples, taking the source and cutting up and deleting the useless information. This causes the sources overall fidelity, such as an .MP3 file to be compromised.

-Pros and Cons

-Analogue is natural and perfect, but hard to manipulate. Digital is quick and easy but takes small amounts of information out.

-Where is the world going, Why

- Digital formats. Very versatile and easy to use.

Midi

-What is it

-Instructions for sound. **NOT AUDIO!** Like a piano roll, for self playing pianos.

-How does it work

-It tells the computer exactly what note to play, when to play it, how long to play it and any other variable imaginable.

-What does it stand for

-Musical Instrument Digital Interface.

Multi-Tracking

-What is it

-Overlapping tracks and recording multiple things on top of each other.

-What is a DAW

-A program such as Garageband, Pro Tools, Q-Base, Logic Pro, or Fruity Loops. Something that records or creates loops or sounds that can be recorded.

-Destructive vs. Non-Destructive

-Destructive recording will delete regions if you record over them. Non-destructive recording mode lets you save every single region to your hard drive so that you can use it whenever you want.

Signal Flow

-Signifies

-Where the signal starts, where it's going and how it gets there.

-How does it work

-Follows a specific path determined by a source and an end path.

-What should you check first if there is a problem

-Start from the source and work your way to the end.

-What do you always have to consider when dealing with signal flow

-If something is being powered multiple times, it will result in a poor signal.

Studio

-Shure SM57 - A Dynamic, Cardioid, Mid-range frequency, Medium diaphragm microphone. Good for loud noises and source micing such as guitar cabinets or snare drums.

-AKG D112 - A Dynamic, Cardioid, Low range frequency, Large diaphragm microphone. Good for low frequency noises such as bass cabinets or bass drums.

-AT3035 - A Condenser, Large pick up pattern, Diverse frequency, Medium diaphragm microphone. Good for large areas like overheads or full bands.

-U5 DI/PRE - A direct input for instruments. Good for any instrument that doesn't need effects like bass guitar or microphone.

-Line6 Pod Pro Guitar module and pre amp - A rack mounted effects and distortion module. Good for any guitar that isn't clean.

-Presonus M80 Pre Amp - An 8 input XLR amplifier.

-Neutrik Patch Bay - A signal re-router.

-DIGI 002 - A device which converts analogue information to Digital.

Studio Jobs

-The Artist - Plays the music and hires the studio to make their record.

-Studio Musician - Plays the music and is hired by the artist to fill in parts.

-Producer - Produces the album and gives tips or pointers to the artist.

-Audio Engineer - Records the artist and edits the sessions.

-Maintenance Engineer - Fixes the equipment in the studio.

-Mastering Engineer - Polishes the sessions and adds all the final touches.

Microphones and Mic Techniques

-Types

- Dynamic
- Condenser
- Ribbon
- Phantom power is 48v and is used for condenser and some ribbon mics. Consult your manual before sending phantom power to ribbon mics. You could destroy them!

Good Musician - If you want good material get hired by good musicians. Hold auditions and pick the ones you like best.

Good Acoustics - Make sure your recording area and isolation booth sound good.
Good Mic - Buy microphones that are within your budget and that you have a use for.

Good Placement - Try and get the best placement out of the microphone and make sure it sounds good. Once you have started recording the instrument with that placement you can't stop unless you want to start from the beginning.

Guitar Cabinet Micing - Search for the cone of the speaker and place slightly off centre of the cone or in the centre depending on the type of cabinet and sound you are looking for.

Pro Tools

M - Powered - More options for hardware usage.

LE - Powered - Limited to 34 tracks and stereo recording.

HD - Powered - Unlimited tracks and 5.1 surround sound recording capability.

Plug Ins

Different plug-ins for different jobs. Plugins are attached to individual tracks to alter or change the raw sound in some way. Some main options are:

Compressors - Limit dynamic variations and boost signals
Gates - Limit low-level mic bleed that you may not want... lets louder signals through
Reverbs - Adds reverb to the track to simulate different spaces
Delay - Adds short bursts of delay to the sound which decay over a specified period of time
EQ - Equalization, allows the user to cut or boost parts of the frequency spectrum

RTAS - Stands for "Real-Time Audio Suite", alters the sound of the track in REAL TIME and NON-DESTRUCTIVELY, allowing the user to change settings of the plugins anytime during the session without compromising quality or the original source material.

Mixing/Critical Listening

You mix your session using plugins and faders.... the key is to RELY ON YOUR EARS for the right balance between instruments and sources.

Mastering

You **MASTER** a track by 'bouncing' the rough mix to a single stereo file, then setting up a mastering session to RECOMPRESS and RE-EQ the rough mix. This brings the overall loudness of the track up.

Thinking About the Big Picture

The last part of your review should focus on THE BIG PICTURE. Think about a situation where you are faced with a band you are told to **produce** a record for. What are ALL the things you need to consider? What details should be looked at? What MUST NOT be overlooked. Create a list of all the things a producer must consider to see a project from beginning to end, and consider what YOU might do about all of these points.

Consider: (this is not a complete list, feel free to add)

Pre-Production (Planning, testing)
Marketing
Style/Sound
Orchestration/Arrangements
Rehearsals
Mic Selection
Tracking Process
Environmental considerations for the artists
The 'sound' you're looking to create
Plan for afterwards (CD Packaging/art/vibe for the record)