

Mark Scheme

Summer 2024

GCE

Music Technology 9MT0/03

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

## 1. Clean Bandit (feat. Elley Duhé): *Don't Leave Me Lonely* (2022)

Question Number	Answer	Mark
<b>1a</b>	HF – allow boosts of 3dB or more LF – allow any cut of 3dB or more	<b>(2)</b>

Question Number	Answer	Mark
<b>1b</b>	Any four of: <ul style="list-style-type: none"> <li>• AutoTune/pitch <u>correction</u></li> <li>• Vocoder/harmoniser</li> <li>• Distortion/clipping/bit-crusher</li> <li>• Double-tracking/ADT/stereo widener/ping pong/<u>alternating</u> panning / additional vocals panned left and right</li> <li>• Stuttering/chopped samples/delay/looping/vocals sampled and re-triggered</li> <li>• Reversed samples</li> <li>• Pitch shift/transpose</li> <li>• Overdubbing/layered vocals/backing vocals <u>added</u></li> </ul>	<b>(4)</b>

Question Number	Answer	Mark
<b>1c i</b>	Any three of: <ul style="list-style-type: none"> <li>• Long reverb time / reverb time of 1.5 to 4 secs / large size</li> <li>• Medium/long/noticeable pre-delay (not "short pre-delay")</li> <li>• Mid-range tonality / dense / uses high frequency damping/low-passed/dark</li> <li>• Medium/high send level / wet / 20%-70% wet</li> <li>• Digital/convolution</li> <li>• Plate/cathedral/hall/chamber setting</li> <li>• Stereo</li> <li>• Reverb level is ducked by the vocal</li> <li>• Freeze/reverse reverb <u>at the end</u></li> </ul>	<b>(3)</b>

Question Number	Answer	Mark
<b>1c ii</b>	Reverb bypasses/reverb mutes/no reverb/dry	<b>(1)</b>

## 2. Glen Campbell: *Galveston* (1969)

Question Number	Answer	Mark
<b>2a</b>	<p>Drum kit = right (R)  High strings = left (L)  Lead vocal = centre (C)</p> <p>The other distractors do not best represent what is heard in the mix.</p>	<b>(3)</b>

Question Number	Answer	Mark
<b>2b</b>	<p>Any three of:</p> <ul style="list-style-type: none"> <li>• Increase mic distance</li> <li>• Use less sensitive mic/mic with higher maximum SPL/use dynamic mic</li> <li>• <u>Reduce</u> recording level/gain (not "turn mic down" or "decrease mic level")</li> <li>• Engage pad/attenuator</li> <li>• Angle the mic off-axis/change mic angle</li> <li>• Use compressor/limiter</li> <li>• Get players to play more quietly/less dynamically (not "use a mute")</li> </ul>	<b>(3)</b>

Question Number	Answer		Mark
<b>2c</b>	One mark is awarded for each point (max. 2), with a further mark for an explanation of each of the two points (max. 2).		<b>(4)</b>
	<b>Point (AO3)</b>	<b>Explanation (AO4)</b>	
	<ul style="list-style-type: none"> <li>• Natural reverb/ambient miking/room mics/room reverb/strings played in an acoustic space</li> <li>• Chamber reverb</li> <li>• Plate reverb</li> </ul>	<ul style="list-style-type: none"> <li>• Placing mics at a far distance/using omni mic</li> <li>• Use a reverberant space/large space/hall/space with reflective surfaces</li> <li>• Recorded track played back in a reverberant space (and re-recorded)</li> <li>• Signal fed to a metal sheet/vibrating metal</li> <li>• Uses transducers/pick-ups</li> </ul>	

### 3. Herbie Hancock: *Chameleon* (extract) (1973)

Question Number	Answer	Mark
<b>3a i</b>	Hiss/white noise	<b>(1)</b>
Question Number	Answer	Mark
<b>3a ii</b>	Any two of: <ul style="list-style-type: none"> <li>• Low pass/LPF/high cut</li> <li>• High shelf</li> <li>• Noise reduction/Dolby/RX/denoiser</li> </ul> Accept: band EQ/bell curve/graphic EQ	<b>(2)</b>
Question Number	Answer	Mark
<b>3b</b>	<ul style="list-style-type: none"> <li>• (Electric) guitar (not "acoustic guitar")</li> <li>• Clavinet/clav (not "electric piano")</li> </ul>	<b>(2)</b>
Question Number	Answer	Mark
<b>3ci</b>	Any two of: <ul style="list-style-type: none"> <li>• Sawtooth/pulse/square/harmonically rich waveform</li> <li>• Multiple oscillators/de-tuning/pulse width modulation/PWM/adjust fine tuning (don't allow sub-oscillator)</li> <li>• Set to low octave/ oscillators set to same octave/range</li> </ul>	<b>(2)</b>
Question Number	Answer	Mark
<b>3cii</b>	Any three of: <ul style="list-style-type: none"> <li>• Low pass/LPF/high cut filter</li> <li>• Low cut-off</li> <li>• Resonance used/resonant (not "slight resonance" or "low resonance")</li> <li>• Steep slope</li> <li>• Filter envelope/an ADSR is applied to filter cut-off</li> <li>• ADSR has short attack/medium decay/low sustain/short release</li> </ul>	<b>(3)</b>

#### 4. *Magic Dance* from *Labyrinth* soundtrack (1986)

Question Number	Answer	Mark
<b>4a</b>	<ul style="list-style-type: none"><li>• Conga/bongo (accept: djembe/hand drum/tamborim/timbale)</li><li>• Shaker/cabasa/maraca</li></ul>	<b>(2)</b>

Question Number	Answer	Mark
<b>4b</b>	<ul style="list-style-type: none"><li>• Distortion</li><li>• Pitch shift/octave shift</li></ul>	<b>(2)</b>

Question Number	Answer	Mark
<b>4c</b>	<p>Any six of:</p> <ul style="list-style-type: none"><li>• Use of sequencing/MIDI</li><li>• Quantised</li><li>• Velocity shaping</li><li>• Many synths/few live instruments</li><li>• Synth bass</li><li>• Synth pad/synth brass/less reliance on guitar chords</li><li>• Bright keyboard instruments/use of FM synthesis/e.g. DX7</li><li>• Use of drum machine / looping/repeating drum patterns</li><li>• Kick and snare loud in mix</li><li>• Frequent/novel use of samples/samples used between vocal phrases/as motion effects</li><li>• Samples hard/alternate panned (to cut through the busy mix)</li><li>• Short samples (due to limited memory)</li><li>• Gated reverb</li><li>• Long/wet/bright reverbs</li><li>• Bright EQ/exciter/thin bass</li></ul>	<b>(6)</b>

**5. TOTO: *Africa* (1982)  
BACALL & Malo (featuring Prince Osito): *Africa* (2016)**

Question Number	Answer	Mark						
5	<p><b>AO3 (5 marks)/AO4 (10 marks)</b></p> <p><b>Marking instructions</b></p> <p>Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below.</p> <p>Don't credit repeated points in italics.</p> <p><b>Indicative content guidance</b></p> <p>The indicative content below is not prescriptive, and candidates are not required to include all of it. Other relevant material may be credited. Relevant points may include:</p> <table><tr><th>AO3</th><th>AO4</th></tr><tr><th colspan="2">Capture, production approach &amp; music style:</th></tr><tr><td><p><b>TT:</b></p><ul style="list-style-type: none"><li>• Large format multitrack/analogue/tape</li><li>• Live-recorded tracks</li><li>• Synths played live/captured with DI</li><li>• Close-/multi-miked drum kit</li><li>• Vocals captured with condenser mic</li><li>• Percussion captured with condensers</li><li>• <i>Fade-out at end</i></li><li>• Double-tracked lead vox</li><li>• Laughter left in at start</li><li>• <i>Slower tempo than BM</i></li></ul><p><b>BM:</b></p><ul style="list-style-type: none"><li>• Cover version</li></ul> <ul style="list-style-type: none"><li>• DAW production</li><li>• Very few live instruments/heavily reliance on sequencing and virtual instruments</li><li>• Drops/builds</li><li>• Ending more abrupt/<i>no fade-out</i></li><li>• <i>Faster tempo than TT</i></li></ul></td><td><p><b>TT:</b></p><ul style="list-style-type: none"><li>• Tape saturation</li><li>• Likely 24 tracks</li><li>• Less rigid rhythmically</li><li>• Soft rock/rock anthem</li></ul> <ul style="list-style-type: none"><li>• Sounds bright</li><li>• Good transient response/clear transients</li><li>• Adding thickness</li><li>• Reflects relaxed approach</li><li>• Less urgent/groovy</li></ul><p><b>BM:</b></p><ul style="list-style-type: none"><li>• Samples parts of original</li><li>• Remixer must have used stem/acapella</li><li>• Same instrumental hook as original</li><li>• Has different verse/pre-chorus</li><li>• Tighter rhythms</li><li>• EDM/dance music backing</li><li>• Afrobeat/reggae/Jamaican/Caribbean influences</li><li>• Kick on every beat/4-to-the-floor</li><li>• Changes in pace/mood</li><li>• Can be beat matched to the following song</li><li>• For club/to dance to</li><li>• Vocals time-stretched</li></ul></td></tr></table>	AO3	AO4	Capture, production approach & music style:		<p><b>TT:</b></p> <ul style="list-style-type: none"><li>• Large format multitrack/analogue/tape</li><li>• Live-recorded tracks</li><li>• Synths played live/captured with DI</li><li>• Close-/multi-miked drum kit</li><li>• Vocals captured with condenser mic</li><li>• Percussion captured with condensers</li><li>• <i>Fade-out at end</i></li><li>• Double-tracked lead vox</li><li>• Laughter left in at start</li><li>• <i>Slower tempo than BM</i></li></ul> <p><b>BM:</b></p> <ul style="list-style-type: none"><li>• Cover version</li></ul> <ul style="list-style-type: none"><li>• DAW production</li><li>• Very few live instruments/heavily reliance on sequencing and virtual instruments</li><li>• Drops/builds</li><li>• Ending more abrupt/<i>no fade-out</i></li><li>• <i>Faster tempo than TT</i></li></ul>	<p><b>TT:</b></p> <ul style="list-style-type: none"><li>• Tape saturation</li><li>• Likely 24 tracks</li><li>• Less rigid rhythmically</li><li>• Soft rock/rock anthem</li></ul> <ul style="list-style-type: none"><li>• Sounds bright</li><li>• Good transient response/clear transients</li><li>• Adding thickness</li><li>• Reflects relaxed approach</li><li>• Less urgent/groovy</li></ul> <p><b>BM:</b></p> <ul style="list-style-type: none"><li>• Samples parts of original</li><li>• Remixer must have used stem/acapella</li><li>• Same instrumental hook as original</li><li>• Has different verse/pre-chorus</li><li>• Tighter rhythms</li><li>• EDM/dance music backing</li><li>• Afrobeat/reggae/Jamaican/Caribbean influences</li><li>• Kick on every beat/4-to-the-floor</li><li>• Changes in pace/mood</li><li>• Can be beat matched to the following song</li><li>• For club/to dance to</li><li>• Vocals time-stretched</li></ul>	15
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Synthesis, sequencing & sampling		
	<b>TT:</b> <ul style="list-style-type: none"> <li>• Analogue synthesis</li> <li>• Brass-like synth pads</li> <li>• Flute-like/panpipe lead sound</li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>• String-like pads</li> <li>• Sub drops/sub rises</li> <li>• Reverse cymbals/ambiences</li> <li>• Steel pan samples/software instrument</li> <li>• Finger click samples</li> <li>• Time-stretched vocals</li> <li>• Repeating/looped drum patterns</li> <li>• Patterns become shorter in rhythm/more complex at end of builds/before drops</li> <li>• Quantise</li> </ul>	<b>TT:</b> <ul style="list-style-type: none"> <li>• Layered saw waves</li> <li>• De-tuning of oscillators</li> <li>• Slow attack</li> <li>• Filter envelope</li> <li>• Sine wave plus white noise</li> <li>• Pitch bend used</li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>• Sample based/PCM</li> <li>• Saw/white noise</li> <li>• Sine waves</li> <li>• Riser/marks section changes</li> <li>• Transition effects</li> <li>• Enhances Caribbean feel</li> <li>• Pitch bend/drop-offs</li> <li>• Provides lighter sound for breakdown parts</li> <li>• Patterns drop in and out</li> <li>• EDM trait</li> <li>• Mechanical</li> </ul>
Mixing & processing:		
EQ/filtering	<b>TT:</b> <ul style="list-style-type: none"> <li>• Bright vocals/HF boost</li> <li>• Thin/bright acoustic guitar</li> <li>• <i>Narrower frequency response overall</i></li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>• Vocals bright/thin</li> <li>• <i>Lots more sub bass/wide frequency response</i></li> <li>• Low pass filtering in intro</li> <li>• High pass filtering at section changes</li> </ul>	<b>TT:</b> <ul style="list-style-type: none"> <li>• Helps cut through the mix</li> <li>• They don't need much body in a such a busy mix</li> <li>• <i>Some release formats couldn't have much sub bass/recording medium not as bright</i></li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>• More modern trend/better for layering</li> <li>• EDM is bass-heavy/works well on club sound systems</li> <li>• <i>No limitations in DAW</i></li> <li>• Sweeps up</li> <li>• Gives some motion/swell/good for crossfading from a preceding song</li> <li>• Resonant</li> <li>• Sweeps up</li> </ul>

			<ul style="list-style-type: none"> <li>Used for transition/motion</li> <li>Gives impression of music played on headphones</li> </ul>	
	Dynamic processing	<b>TT:</b> <ul style="list-style-type: none"> <li>Lighter (track) compression</li> <li>Fairly heavy master compression/limiting</li> <li><i>Gated (reverb) toms</i></li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>Kick/tracks heavily compressed</li> <li>Heavier limiting</li> <li><i>Gated (reverb) toms</i></li> </ul>	<b>TT:</b> <ul style="list-style-type: none"> <li><i>More dynamic range</i></li> <li><i>Multi-band</i></li> <li><i>Credit technical description of multi-band limiting</i></li> <li><i>High perceived loudness</i></li> <li>Likely to a remastered version</li> <li><i>Allow technical description of gated reverb</i></li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>Pumping/sidechaining other elements</li> <li>Transient shaping/extra punch added</li> <li>More centre-panning of vocals in chorus</li> <li><i>Less dynamic range</i></li> <li><i>Multi-band</i></li> <li><i>Credit technical description of multi-band limiting</i></li> <li><i>Higher perceived loudness</i></li> <li>Maximum level/audibility for radio and club playback</li> <li><i>Allow technical description of gated reverb</i></li> <li>To match original song</li> </ul>	
	Pan & stereo field	<b>TT:</b> <ul style="list-style-type: none"> <li>Percussion panned in opposition</li> <li>Gong/wind chimes hard right</li> <li>Lead synths in opposition</li> <li>Backing vocals off-centre/mid left in verse</li> <li>More centre-panning of vocals in chorus</li> <li>Toms pan across stereo field</li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>Tom panning more restricted</li> </ul>	<b>TT:</b> <ul style="list-style-type: none"> <li>Adds interest to sides/stereo width</li> <li>Better separation between vocal layers</li> <li>Limits stereo spread</li> <li>Enhances fill/stereo width</li> </ul> <b>BM:</b> <ul style="list-style-type: none"> <li>EDM/radio mixes tend to be panned less for better mono compatibility</li> </ul>	
	Effects	<b>TT:</b> <ul style="list-style-type: none"> <li>Distorted electric guitar</li> <li>Short/tight reverb</li> </ul>	<b>TT:</b> <ul style="list-style-type: none"> <li>Adds expression/sustain</li> <li>Focused vocal/snare/not too washy</li> </ul>	

	<ul style="list-style-type: none"> <li>• Longer/wetter reverb in chorus</li> <li>• Delay on lead vocal</li> </ul> <p><b>BM:</b></p> <ul style="list-style-type: none"> <li>• Heavy reverbs</li> </ul> <ul style="list-style-type: none"> <li>• Some vocal parts have ADT</li> <li>• Vcoded lead vocal</li> <li>• Cleaner electric guitar</li> </ul>	<ul style="list-style-type: none"> <li>• More layered</li> <li>• Slapback/no feedback/single repeat</li> <li>• Low send level</li> <li>• Subtle texturing effect</li> </ul> <p><b>BM:</b></p> <ul style="list-style-type: none"> <li>• Euphoric/more layered</li> <li>• Emphasis certain lyrics/sections/becomes more layered or stereo</li> <li>• Done artificially</li> </ul> <ul style="list-style-type: none"> <li>• Forms an interesting lead melody</li> <li>• Less aggressive sound/suits the relaxed breakdowns</li> </ul>
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Level	Mark	Descriptors
0	0	NO REWARDABLE MATERIAL
1	1-3	<p>VERY LIMITED</p> <ul style="list-style-type: none"> <li>• A very limited response with little credit-worthy content</li> <li>• Few AO3 points with no AO4 explanation</li> <li>• Many inaccuracies may be present</li> </ul>
2	4-6	<p>LIMITED KNOWLEDGE/LIMITED SCOPE</p> <ul style="list-style-type: none"> <li>• A limited response - principally AO3 points, with some basic AO4 explanation rather than explaining parameters and/or the effect for each feature</li> <li>• Some inaccuracies may be present</li> </ul>
3	7-9	<p>CLEAR/GENERAL, WITH LIMITED EXPLANATION</p> <ul style="list-style-type: none"> <li>• Some valid technical detail for AO3, but with limited explanation for AO4</li> <li>• There are general points about technology and eras that could be applied to <b>any song</b></li> <li>• Limited and/or general discussion of processors</li> <li>• Few inaccuracies are present</li> </ul>
4	10-12	<p>DETAILED, WITH MODERATE EXPLANATION</p> <ul style="list-style-type: none"> <li>• Responses are moderately detailed, with most AO3 points accompanied by a functional AO4 explanation</li> <li>• Points about technology are <b>applied to the specific songs</b></li> <li>• Parameters are discussed, with detail about the processors</li> <li>• Information is largely accurate</li> <li><b>OR</b></li> <li>• A highly detailed, sophisticated response, but with limited scope</li> </ul>
5	13-15	<p>SOPHISTICATED/DETAILED, WITH MOST/ALL POINTS EXPLAINED</p> <ul style="list-style-type: none"> <li>• Responses are <b>sophisticated</b> and <b>detailed</b>, with most/all AO3 points explained for AO4</li> <li>• Discussion of parameters is <b>applied to specific instruments/time references</b> within the songs</li> <li>• There is a <b>wide scope</b> that is not limited to one or two aspects of production</li> <li>• Information is accurate for the vast majority of the response</li> </ul>

## 6. Keane: *Atlantic* (2006)

Question Number	Answer	Mark	
6	Don't credit repeated points in italics.	20	
	<b>A03 - song specific</b>		<b>A04 - song specific</b>
	(Throughout) <ul style="list-style-type: none"><li>• <i>Tape/analogue delay</i> (atmospheric sounds)</li><li>• Multiple delays layered/variety of delay times</li><li>• Used in the fade out/outro</li><li>• <i>High feedback/heavy delay</i></li><li>• Some note 16<sup>th</sup> repeats</li> <li>• <i>Panning used</i></li></ul>		<ul style="list-style-type: none"><li>• <i>Swirling/resonant/layered sound/atmospheric</i></li><li>• <i>Pitch bends/changes</i></li><li>• <i>Lo-fi</i></li><li>• Thicker texture</li> <li>• <i>Transition effect</i></li><li>• <i>Rhythmic effect</i></li><li>• <i>Overloads tape</i></li><li>• <i>Saturation/soft clipping/distortion</i></li><li>• <i>Regeneration/becomes more intense/lasts longer</i></li><li>• <i>Self-oscillation/over 100%</i></li><li>• <i>Loss of frequencies/filtered</i></li><li>• <i>Manually panned/pan automated</i></li><li>• <i>Adds stereo interest</i></li></ul>
	(Drum entry 0:20) <ul style="list-style-type: none"><li>• Delay on drums/snare (must be linked to section)</li><li>• Slap back</li><li>• <i>Slap back has a relatively short delay time</i></li> <li>• <i>Slap back has a single repeat/no feedback</i></li> <li>• Panned slightly left</li></ul>		<ul style="list-style-type: none"><li>• Adds sustain to snare</li></ul>
(1:03 onwards) <ul style="list-style-type: none"><li>• Vocal delay</li><li>• Few repeats (accept single repeat/tap)</li><li>• Low/medium feedback</li><li>• Strong first repeat</li><li>• 8<sup>th</sup> note / 400-600ms</li><li>• Low/medium wet</li><li>• <i>Tape/analogue delay</i></li></ul>	<ul style="list-style-type: none"><li>• <i>Adds space/dimension/expression to vocal</i></li><li>• <i>Fills gaps in slow tempo song</i></li><li>• <i>Adds rhythm</i></li> <li>• <i>Lo-fi</i></li><li>• <i>Loss of frequencies/filtered</i></li></ul>		

	(e.g. 1:15 onwards) Tape pitch/speed changed	<ul style="list-style-type: none"> <li>• <i>Interesting pitch effect</i></li> <li>• <i>Transition effect</i></li> </ul>	
	(2:33 onwards) <ul style="list-style-type: none"> <li>• <i>Delay on hi-hat</i></li> <li>• High wet</li> <li>• 16<sup>th</sup> notes/short delay time</li> <li>• Medium/high feedback</li> <li>• Feedback increases</li> <li>• Feedback automated</li> <li>• (2:43) Filtered</li> <li>• Filter cut-off decreases</li> <li>• Resonance increases</li> <li>• <i>Panning used</i></li> </ul>	<ul style="list-style-type: none"> <li>• Adds rhythm/complex/intense/mechanical</li> <li>• Makes layers build up/adds texture</li> <li>• <i>Regeneration/becomes more intense/lasts longer</i></li> <li>• <i>Self-oscillation</i></li> <li>• Sounds becomes dull/LPF</li> <li>• Gives illusion of pitch variations</li> <li>• Adds variation to repeats</li> <li>• <i>Transition effect</i></li> <li>• <i>Manually panned/pan automated</i></li> <li>• <i>Adds stereo interest</i></li> </ul>	
	(2:47 onwards) <ul style="list-style-type: none"> <li>• <i>Delay on hi-hat/snare</i></li> <li>• Only on certain parts of the bar/on beat 4/not on beat 2</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Adds space/dimension</i></li> <li>• <i>Fills gaps in slow tempo song</i></li> <li>• <i>Adds rhythm</i></li> <li>• <i>Adds variety</i></li> </ul>	
	<b>A04 – impact of the technology (max 15 marks)</b> <ul style="list-style-type: none"> <li>• 1940s/1950s/1960s/1970s</li> <li>• Analogue early on</li> <li>• Mono early on</li> <li>• <b>Tape machines</b>/tape loops/<b>tape delay</b></li> <li>• Space Echo/Copypat/Echorec/Echoplex/EchoSonic</li> <li>• Popular in science fiction soundtracks</li> <li>• Used by electroacoustic composers e.g. Stockhausen</li> <li>• <i>Creates swirling/resonant/layered/trippy sounds</i></li> <li>• Lo-fi</li> <li>• Delay time/rhythms controlled by tape speed/selecting heads</li> <li>• Difficult to achieve accurate delay times/no tempo sync</li> <li>• Reverse delays</li> <li>• Tape speed change gives interesting pitch effects</li> <li>• Overloading tape (with feedback)</li> <li>• Regeneration/becomes more intense/lasts longer</li> <li>• <i>More than 100% feedback gives infinite/regenerating delays</i></li> <li>• Saturation/soft clipping/pleasing distortion</li> <li>• Restricted high end/warm sound</li> <li>• Degrades over time so there are pitch/frequency response imperfections</li> <li>• Erase head could be taken out (sound on sound)</li> <li>• e.g. dub/reggae/punk/electronica/prog rock use tape delay</li> <li>• Modulated effects/chorus/flange/phaser</li> </ul>		

	<ul style="list-style-type: none"> <li>• <b>Slap back delay</b></li> <li>• e.g. rock and roll / Elvis</li> <li>• Most widely used on vocals</li> <li>• <i>Slap back has a relatively short delay time/80-150ms</i></li> <li>• <i>Slap back has a single repeat/no feedback</i></li> <li>• Slap back typically has a high send/wet level/loud repeat</li> <li>• Slap back gives a doubling/layered effect <u>without affecting the clarity of the music</u></li> <li>• <b>Oil can delay/drum delay</b></li> <li>• <i>Late 1950s/1960s</i></li> <li>• <u>Oil can delay</u> built into Gibson/Fender guitar amps</li> <li>• <i>More compact than tape delay</i></li> <li>• Drum delay example is Binson/Echorec</li> <li>• Drum delay used by Pink Floyd</li> <li>• <b>Bucket brigade/BBD delay</b></li> <li>• <i>Late 1960s /1970s</i></li> <li>• <i>Solid state</i></li> <li>• <i>More compact than tape delay</i></li> <li>• <i>Guitar delay pedals in this era</i></li> <li>• Used in karaoke machines</li> <li>• Only can manage short delays/automatic double-tracking/ADT common</li> <li>• Memory Man/Boss DM2</li> <li>• Uses capacitors</li> <li>• Easily overloads/limited dynamic range</li> <li>• <i>Saturation/soft clipping/pleasing distortion</i></li> <li>• <i>Restricted high end/warm sound</i></li> <li>• Noisy/clock noise</li> <li>• <i>More than 100% feedback gives infinite/regenerating delays</i></li> <li>• <b>Digital delay/DDL</b></li> <li>• <i>1970s/1980s</i></li> <li>• <i>Solid state</i></li> <li>• <i>More control over delay patterns/repeat volumes/multi-tap</i></li> <li>• <i>More accurate delay times / tempo/beat sync/tap tempo / more accurate copy of original signal</i></li> <li>• <i>Stereo/panned/ping-pong delay</i></li> <li>• <i>Stereo delay has different delay times/note values for each channel</i></li> <li>• <i>Stereo delay used for automatic double tracking/ADT</i></li> <li>• <i>Filtering/low pass/high pass</i></li> <li>• <i>Reverse delays</i></li> <li>• Outboard unit/rack unit</li> <li>• <i>More than 100% feedback gives infinite/regenerating delays</i></li> <li>• <i>Guitar delay pedals in this era</i></li> <li>• Used as a layering effect on guitars</li> <li>• E.g. The Edge/U2</li> <li>• <i>MIDI control/automation</i></li> <li>• <i>Presets can be stored</i></li> <li>• <i>Digital delays are used to create reverb</i></li> <li>• <i>Modulated effects/chorus/flange/phaser</i></li> </ul>	
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	<ul style="list-style-type: none"> <li>• <i>Resonant/metallic delay on drums/vocals (in e.g. EDM)</i></li> <li>• <i>This uses very short delay times with feedback</i></li> <li>• <b>Plug-ins/DAW</b> (repeat of digital/DDL)</li> <li>• <i>1990s/2000s</i></li> <li>• <i>Emulation/convolution of earlier types or digital delay</i></li> <li>• <i>More control of delay patterns/repeat volumes/multi-tap</i></li> <li>• <i>More accurate delay times</i></li> <li>• <i>Tempo/beat sync/tap tempo</i></li> <li>• <i>Stereo/panned/ping-pong delay</i></li> <li>• <i>Award stereo delay parameter setting e.g. different delay times/note values for each channel</i></li> <li>• <i>Stereo delay used for automatic double tracking/ADT</i></li> <li>• <i>Stereo delays give wider sound/more dimension/more space for other instruments in mix</i></li> <li>• <i>Filtering/low pass/high pass</i></li> <li>• <i>MIDI control/automation</i></li> <li>• <i>Presets can be stored</i></li> <li>• <i>More than 100% feedback gives infinite/regenerating delays</i></li> <li>• <i>Freeze/infinite sustain</i></li> <li>• <i>Delay is used to create reverb/modulated effects/chorus/flange/phaser</i></li> <li>• <i>Resonant/metallic delay on drums/vocals (in e.g. EDM)</i></li> <li>• <i>This uses very short delay times with feedback</i></li> </ul> <p>Allow credit for linking an artist/genre to a specific technology/production approach (max 1 per delay type)</p> <p>Max 1 on linking a decade to a technology</p>	
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