Mark Scheme (Results)

November 2021

Pearson Edexcel GCE
Music Technology (9MT0)
Paper 3: Listening & Analysing

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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.

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1. Paloma Faith: *Crybaby*

Question Number	Answer	Mark
1a	**B 1/8** • 1/2 and 1/4 are incorrect as they would quantise the claps to longer note values than heard • 1/8 would correctly quantise the claps to quavers/8th notes • 1/8 triplet is incorrect as it would quantise the claps to shorter beat divisions than required	**(1)**

Question Number	Answer	Mark
1b	**B Disco** • Ambient is not appropriate as this style would have a larger reverb effect and a more complex/less regular kick drum pattern • Disco is most appropriate due to the characteristic drum rhythm with added handclaps and a melodic bass-line • Grunge is not appropriate as this style would typically feature electric guitars and acoustic drums • Hip-hop is not appropriate as it would have a more syncopated/less regular kick drum pattern	**(1)**

Question Number	Answer	Mark
1c	Any two of: • Claps have a more complex rhythm • (Lower) bass guitar line added • Backing vocal 'ooos' added • Piano becomes more prominent • Snares layered with claps • Tuned percussion/vibraphone added • Shaker/open hi-hat added	**(2)**

Question Number	Answer		Mark
1d	Reverb type	Hall/plate/cathedral/church	**(1)**
	Reverb time (in seconds)	Within the range of 1.5 to 3 secs	**(1)**
	Wet level %	Accept any value between 10-30	**(1)**

Question Number	Answer	Mark
1e	Any three of: • General compression comment e.g. reduces dynamic range/stops the master level clipping/makes the song louder • Increases loudness more than a single band compressor • Compresses in a number of frequency bands/compresses each band differently/uses frequency cross-overs • Lower frequency sounds have a higher ratio/lower threshold (or vice versa for higher bands) • Avoids mid/high frequencies sounding squashed/ avoids pumping • Can help improve instances of poor balance in a mix • Can change tonal balance/EQ of the master	**(3)**

2. Rick Wakeman: *Part I – The Warning*

Question Number	Answer		Mark
2a	(i) 0:02	Hiss/white noise	**(1)**
	(ii) 2:10	Drop-outs/damaged tape Allow: glitches/artefacts	**(1)**
	(iii) 4:54	Edit point/lack of crossfade	**(1)**

Question Number	Answer	Mark
2b	• Organ/Hammond (1) • Rhodes/Wurlitzer/electric piano/suitcase piano (1)	**(2)**

Question Number	Answer	Mark
2c	• Flange/phaser/wah/envelope follower/<u>auto</u> filter	**(1)**

Question Number	Answer	Mark
2d	• Resonant (1) • Cut-off mapped to envelope/ADSR (1) • Inverted envelope/inverted ADSR (1) • Any valid description of how the inverted envelope stages would affect the cut-off up to max 2, e.g. fast attack (1) causing the cut-off to sweep down rapidly at the start of each note (1). • Cut-off (manually) decreased towards the end of the section (1)	**(4)**

3. The Cardigans: *Erase/Rewind*

Question Number	Answer	Mark
3a	• Fuzz/non-harmonic/IMD/hard clipping	**(1)**

Question Number	Answer	Mark
3b(i)	**C 1/4**	**(1)**

Question Number	Answer	Mark
3b(ii)	**B 577ms** • 480ms is incorrect as it would give too fast a delay at 104 bpm • 577ms is correct as it would give a crotchet/¼-note delay at 104 bpm • 1s is incorrect as it would give too slow a delay time at 104 bpm/equals a minim delay time at 120 bpm • 1.15s is incorrect as it would give a minim/½-note delay at 104 bpm	**(1)**

Question Number	Answer	Mark
3b(iii)	• At 120 bpm the delay time would be 2 notes per second/500ms (1) • At 104 bpm the delay time needs to be slightly longer than 500ms (1) • Appropriate calculation e.g. 60,000/104 or milliseconds in a minute divided by the bpm value (1)	**(1)**

Question Number	Answer	Mark
3c	Any three of: • Moderate/heavy/limited dynamic range • Medium ratio/high ratio • Low threshold/medium threshold • Fast attack/smooth transients • (Breathing brought up by) high make-up gain • Choruses at same dynamic level as verses/stronger singing isn't any louder	**(3)**

Question Number	Answer	Mark
3d	Any three of: Mid frequency gain increased/boost (1) Mid boost is at middle of mid band/wide bandwidth/low Q (1) Low frequency/low mid gain decreased/low frequencies cut (1) High pass (1) High mids affected by compression/cut (1)	**(3)**

4. Marvin Gaye: *How Sweet It Is (To Be Loved By You)*

Question Number	Answer		Mark
4a	Tambourine	**R**	**(1)**
	Piano	**L**	**(1)**

Question Number	Answer		Mark
4b	One mark is awarded for the correct point, with a further mark for an explanation (to a maximum of 1 mark).		
	Point (AO3)	**Explanation (AO4)**	
	• Overloading of tape/mixer/clipping/ distortion (1)	• Drums too close to microphone/mic gain set too high (1) • Creates warm soft clipping/saturation (1)	**(2)**

Question Number	Answer		Mark
4c	One mark is awarded for each point to a maximum of three marks, with a further mark for an explanation of each of the three points. Answers might include:		
	Point (AO3)	**Explanation (AO4)**	
	• Equipment less noisy/digital rather than analogue	• Greater dynamic range/less unwanted noise	
	• More mics/tracks available	• Can be recorded in isolation/better separation of instruments in the mix	
	• Stereo capture	• Gives a pleasing stereo field/done with A-B/spaced omni/XY/coincident/M-S pairs.	
	• Combination of close/ambient mics	• Creates the desired blend between more isolated close mics and the ambience of the recording space/directional mics typically closer and omni mics further away.	
	• Sampled/software instrument/ sequenced piano lines more commonplace	• Opportunities to change the piano sound/no problems with spill or isolation/ability to quantise and correct mistakes.	
	Accept other reasonable responses		**(6)**

5. R.E.M: *Losing My Religion* (1991) and Lacuna Coil: *Losing My Religion* (2012)

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>5</td><td colspan="2">AO3 (5 marks)/AO4 (10 marks)
Marking instructions
Markers must apply the descriptors in line with the general marking guidance and the qualities outlined in the levels-based mark scheme below. Responses that demonstrate only AO3 without any AO4 should be awarded marks as follows:
• Level 1 AO3 performance: 1 mark
• Level 2 AO3 performance: 2 marks
• Level 3 AO3 performance: 3 marks
• Level 4 AO3 performance: 4 marks
• Level 5 AO3 performance: 5 marks

Indicative content guidance
The indicative content below is not prescriptive and candidates are not required to include all of it. Other relevant material not suggested below must also be credited. Relevant points may include:</td><td>15</td></tr>
<tr><td></td><td>AO3</td><td>AO4</td><td></td></tr>
<tr><td></td><td colspan="2">Capture & production approach:</td><td></td></tr>
<tr><td></td><td>REM:
• Acoustic/folk rock
• Pre-DAW/analogue/ digital multitrack tape
• Acoustic guitars/mandolin
• Strings/backing vocal/hand-claps added
• Single lead vocal
LC:
• DAW
• Heavy (gothic) rock/metal</td><td>REM:
• Light/uplifting/natural
• Emphasis on recording complete takes/minimal editing
• Less textural variation than LC

LC:
• Angry/harsh/powerful
• DAW production results in increased editing/processing
• LC has heavier drumming
• More cymbals/open hi-hats
• More instrumental layers and effects (linked to DAW)
• Electric guitars
• Dual lead vocal
• More backing vocals</td><td></td></tr>
</table>

Sequencing, sampling & synthesis			
Sequencing/sampling	**REM:** • No sampling or sequencing **LC:** • Has sampled/sequenced tracks *(don't credit repeat of opposite)* • Audio quantise • Allow: drum replacement	**REM:** • Sounds natural/human **LC:** • Tighter/mechanical rhythms • Audio quantise is stylistically appropriate • Drum hits have consistent timbre/strength	
Synthesis	**LC:** • Lead synth plays main hook • Pad and atmospheric sounds	**LC:** • Timbral/textural changes • More synthetic sounding • Pads fill in texture	
Mixing & processing:			
Dynamics	**REM:** • Light/moderate compression throughout **LC:** • Noticeable track compression • Drum transient shaping • Tighter noise gating • Aggressive/heavy mix compression	**REM:** • 'Open'/natural dynamics • Perceived master level is lower • More dynamic range **LC:** • Squashing/pumping • Snare and kick more isolated/snappy • Perceived master level is consistently louder • Less dynamic range *(don't credit repeat of opposite)*	
EQ	**REM:** • Natural sounding (vocal) EQ - not too bright • Bass guitar has good mid range clarity **LC:** • Notably bright/thinned vocal • Hyped' kick EQ (LF/HMF boosts) • Scooped mid on guitars	**REM:** • True-to-life/sounding a little dull • Bass guitar clear in mix/not too subby **LC:** • Obvious EQ gives a more exciting/aggressive sound • Kick EQ brings out thump/beater click elements • Kick EQ helps it cut through the mix • Dull/subby bass-line • Scooped guitar EQ makes room for vocals • Some elements are dull, possibly due to over-compression	

	Reverb & delay	**REM:** • Warm room/medium vocal reverb • Chamber/large snare reverb **LC:** • Long reverb times • Vocal delay	**REM:** • Sibilant reverb • Snare reverb gives power to the sound/fills in texture **LC:** • More wet/textured due to the reverb and delay added	
	Pan/stereo field	**REM:** • Opposition panning between mandolin and acoustic guitars/double-tracking **LC:** • Panned/double-tracked guitar • Automated panning	**REM:** • Uncluttered stereo field/clear positioning of tracks **LC:** • Less stereo separation of opposition panned elements (due to wetter effects) • Sounds move across the stereo field • Achieves motion	
	Distortion	**REM:** • Overloading tape/mixer **LC:** • Heavy/hard clipping distortion on guitars • Vocal distortion	**REM:** • Saturation/soft clipping/harmonic distortion **LC:** • Gritty/harsh (linked to distortion)	
	Pitch	**REM:** • No pitch correction **LC:** • Pitch correction *(don't credit repeat of opposite)*	**REM:** • Natural pitch variations • Not possible at time **LC:** • Sounds more processed/less human	

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• Demonstrates limited knowledge and understanding of production techniques used, some of which may be inaccurate or irrelevant (AO3). • Gives limited analysis and deconstruction of production techniques used with little attempt at chains of reasoning (AO4). • Makes limited comparisons between the two recordings, with little or no conclusion (AO4).
Level 2	4–6	• Demonstrates some knowledge and understanding of production techniques used, which is occasionally relevant but may include some inaccuracies (AO3). • Gives some analysis and deconstruction of production techniques used with simplistic chains of reasoning (AO4). • Makes some comparisons between the two recordings, reaching unsupported conclusions (AO4).
Level 3	7–9	• Demonstrates clear knowledge and understanding of production techniques used, which is mostly relevant and accurate (AO3). • Gives clear analysis and deconstruction of production techniques used, with competent chains of reasoning (AO4). • Makes clear comparisons between the two recordings, reaching partially supported conclusions (AO4).
Level 4	10–12	• Demonstrates detailed knowledge and understanding of production techniques used, which is relevant and accurate (AO3). • Gives detailed and accurate analysis and deconstruction of production techniques used, with logical chains of reasoning on occasion (AO4). • Makes detailed comparisons between the two recordings, reaching well supported conclusions (AO4).
Level 5	13–15	• Demonstrates sophisticated and accurate knowledge of production techniques used throughout (AO3). • Gives sophisticated and accurate analysis and deconstruction of production techniques used, with logical chains of reasoning throughout (AO4). • Makes detailed comparisons between the two recordings, reaching sophisticated conclusions (AO4).

6. Eric B. & Rakim: *Eric B. Is President*

<table>
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<tr><td>6</td><td colspan="2">AO3 (5 marks)/AO4 (15 marks)
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• Level 2 AO3 performance: 2 marks
• Level 3 AO3 performance: 3 marks
• Level 4 AO3 performance: 4 marks
• Level 5 AO3 performance: 5 marks

Indicative content guidance
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<tr><td></td><td>AO3 - song specific</td><td>AO4 - song specific</td><td></td></tr>
<tr><td></td><td>• Sounds sampled from other media (TV/vinyl etc)</td><td>• Creates interesting textures
• Not all samples have instruments isolated</td><td></td></tr>
<tr><td></td><td>• Low bit depth
• Low sample rate</td><td>• Gritty timbre</td><td></td></tr>
<tr><td></td><td>• Transposing samples to lower/higher pitch
• Pitch bend</td><td>• Interesting timbral/formant variations
• Gives scratching effect</td><td></td></tr>
<tr><td></td><td>• Audible clicks</td><td>• Loop/start and end points not set at zero crossing points
• Sounds like the start of vinyl scratch</td><td></td></tr>
<tr><td></td><td>• Short samples
• Tails cut</td><td>• To save memory</td><td></td></tr>
<tr><td></td><td>• Looped drum beat</td><td>• Provides a strong foundation for rap</td><td></td></tr>
<tr><td></td><td>• Drum loop fragmented</td><td>• Re-ordered to form new drum beats</td><td></td></tr>
<tr><td></td><td>• Samples don't pan</td><td>• Limitation of stereo field/sounds mono</td><td></td></tr>
<tr><td></td><td>• Lots of looping/repeating sections of samples rather than one-shot triggering</td><td>• Rhythmic repetition of words
• Mimics vinyl scratching</td><td></td></tr>
<tr><td></td><td>• Short loop lengths</td><td>• Extends/sustains sounds</td><td></td></tr>
<tr><td></td><td>• Reversed percussive sounds</td><td>• Soft attack/motion effect</td><td></td></tr>
<tr><td></td><td>• Some rap/vocal lines are sampled and</td><td>• Makes them easier to manipulate</td><td></td></tr>
</table>

	then re-triggered	• Rhythmic looping effects and transpositions	
	• Live vinyl scratching is sampled and then played back	• More possibility to synchronise with other parts/manipulate	
	• Some samples left unquantised	• Less mechanical/robotic	
	AO4 – impact of the technology • The earliest digital samplers were expensive workstations • Allow a hardware sampler name e.g. Fairlight, MPC, S900 • Samples stored on floppy disk • Samples were loaded and held in RAM • 8-bit sampling was used on computer sound chips in the 1980s • Digital sampling was used to create new sounds by instantly transposing/changing pitch • Sounds could easily be reversed • Sounds could be looped • Limited sample time in early samplers • Only short sounds could be sampled • Limited sample rate • Samples were not very bright/accurately sampled • Limited bit depth • Samples were gritty/noisy • Bit depth/sample rate reduced to increase sample time • Limited number of sounds in memory at one time • Some of the workstations did have graphic user interfaces with computer monitors • Otherwise, editing was fiddly on small screens • Hardware samplers at this time tended to be mono • Mono samples required half the amount of storage space of stereo ones • Equipment limitations at this time led to very short samples being triggered to provide exciting percussive textures • One-shot sampling was typically used to trigger percussive sounds • Artists began to sample the work of others, often without gaining copyright clearance • Urban artists especially liked to borrow from iconic recordings from their favourite artists/specific drum patterns • Examples include the 'Amen' breakbeat • Drum machines developed using sampling technology Drum machines had previously used analogue synthesis to create sounds • The inception of MIDI meant samplers that could be easily triggered via a sequencer • The Atari ST was a popular computer at the time as it was affordable and had a MIDI interface built in • Hardware samplers often had built-in effects/amplitude envelopes		

	• These hardware samplers often had 12-bit resolution • They gave noisy, slightly distorted sounds that became popular in some styles of electronic/dance music • A greater affordability/abundance of RAM/ROM led to a more realistic representation of acoustic instruments as samples • Sound modules/keyboards/synthesisers, digital pianos using sampling • Multi-sampling and velocity layering became common • Early hardware digital multi-track recorders used digital tape/hard disc but typically had no GUI, so it was difficult to create loops and trigger sounds musically • In the digital multi-track recorder era it was still typical for a sequencer and sampler to be synchronised to the digital multi-track recorder • 1997 saw a DAW technology revolution with the release of Cubase VST. This offered much more in terms of real-time/native processing • Software samplers/virtual instruments followed • Software samplers/virtual instruments have more flexibility in adding effects • Software samplers/virtual instruments layer multiple samples/have velocity layers • Ability to adjust level/pan and EQ of individual samples • Sampling workstations with pad triggers became popular with DJs • There was a propensity to look back to 8-bit and 12-bit sounds (and lower sample rates), which were gritty/less clinical than 16-bit/44.1kHz standard • In live performance there was a digital loop pedal craze/sophisticated live looping using Ableton and similar to achieve dramatic build of layers using limited instruments/voices	

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–4	• Demonstrates limited knowledge and understanding of production techniques/technology used, some of which may be inaccurate or irrelevant (AO3). • Applies limited analysis and deconstruction of production techniques/technology used in the recording with little attempt at chains of reasoning (AO4). • Makes limited connections between the production techniques/technology used in the recording and their wider impact (AO4). • Makes limited evaluative and/or critical judgements about the wider impact of the production techniques/technology used in the recording (AO4).
Level 2	5–8	• Demonstrates knowledge and understanding of production techniques/technology used, which are occasionally relevant but may include some inaccuracies (AO3). • Applies some analysis and deconstruction of production techniques/technology used in the recording, with simplistic chains of reasoning (AO4). • Makes some connections between the production techniques/technology used in the recording and their wider impact (AO4). • Makes some evaluative and/or critical judgements about the wider impact of the production techniques/technology used in the recording (AO4).
Level 3	9–12	• Demonstrates clear knowledge and understanding of production techniques/technology used, which are mostly relevant and accurate (AO3). • Applies clear analysis and deconstruction of production techniques/technology used in the recording which is mostly detailed, with competent chains of reasoning (AO4). • Makes valid connections between the production techniques/technology used in the recording and their wider impact (AO4). • Makes clear evaluative and critical judgements about the wider impact of the production techniques/technology used in the recording (AO4).
Level 4	13–16	• Demonstrates detailed knowledge and understanding of production techniques/technology used, which are relevant and accurate (AO3) • Applies detailed and accurate analysis and deconstruction of production techniques/technology used in the recording, with logical chains of reasoning on occasion (AO4). • Makes detailed and valid connections between the production techniques/technology used in the recording and their wider impact (AO4). • Makes detailed and valid evaluative and critical judgements about the wider impact of the production techniques/technology used in the recording (AO4).

Level	Mark	Descriptor
Level 5	17–20	• Demonstrates sophisticated and accurate knowledge and understanding of production techniques/technology used throughout (AO3). • Applies sophisticated and accurate analysis and deconstruction of production techniques/technology used in the recording and logical chains of reasoning throughout (AO4). • Makes sophisticated and valid connections between the production techniques/technology used in the recording and their wider impact (AO4). • Makes sophisticated and valid evaluative and critical judgements about the wider impact of the production techniques/technology used in the recording (AO4).