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## Mark Scheme (Results)

Summer 2022

Pearson Edexcel GCE  
In Music Technology (8MT0)  
Paper 4 Producing and analysing

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Summer 2022

Question Paper Log Number

Publications Code 8MT0\_03\_2206\_MS

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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.

**Component 4: Producing and analysing 8MT0 04 2022 - Mark scheme**

Question number	Answer	Mark
1(a)(i)	<p>C 1/4</p> <p>1/2 is not correct because the kick would play only on beat 1 and 3</p> <p>1/4 dotted is not correct because the kick might be moved to one of the 1/8 notes before the beats.</p> <p>1/8 is not correct because the kick may be moved to any of the 1/8 notes in the bar.</p>	(1)

Question number	Answer	Mark
1(a)(ii)	<p>Any from:</p> <p>House, Disco, Reggae, Trance</p>	(1)

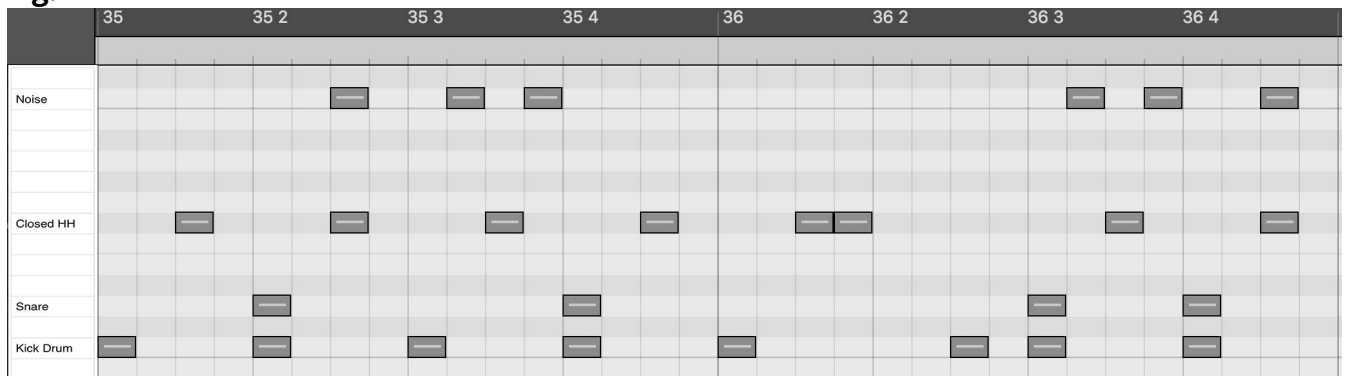
Question number	Answer	Mark
1(b)	<p>'MS q1.wav' shows the edit for full marks.</p> <p>Drums are in time throughout/correct pattern used. (1)</p> <p>There are no glitches/changes in level. (1)</p> <p>The early kick drum at the end of bar 18 must be removed completely without cutting the synth drum. (1)</p> <p>The cymbal from bar 21 has not been copied and the hi-hat at the end of bar 19 remains. (1)</p> <p>If the drums are not soloed/incomplete/metronome left on, only assess timing. Max 2.</p>	(4)

Question number	Answer	Mark
1(c) (i)	Gated reverb	(1)

Question number	Answer	Mark
1(c) (ii)	<p>High Pass (1)</p> <p>Sweeping / increasing cut off (1)</p> <p>Resonant (1)</p>	(2)

Question number	Answer	Mark
1 (d)	<p>Fig. 1 shows correct pattern.</p> <p>1 mark for each correct rhythm:            Noise (1)            Closed HH (1)            Snare (1)            Kick drum (1)</p> <p>Bar 37 copied with no timing errors (1)            No glitches from cuts in b29 or b17 (1)            Reverse successfully applied (1)            Only applied during bar 17 (1)</p> <p>If the drums not soloed/metronome left on, then assess what can be heard clearly, max 2.</p>	<b>(4)</b>

**Fig. 1**



Question number	Answer	Mark
2(a) (i)	Saw / sawtooth (1)	(1)

Question number	Answer	Mark
2(a) (ii)	Two / three / four	(1)

Question number	Answer	Mark
2(b)	<p>'MS q2.wav' shows the correct timbre and octave for full marks.</p> <p>Synth brass sound (1)  Correct octave/pitches throughout (1)  No effects (1)  Bright timbre with high cutoff on LPF and no/little resonance (1)</p> <p>If the keyboard is not soloed/metronome left on, then assess what can be heard clearly, max 2.</p>	(4)

Question number	Answer	Mark
2(c)	<p>'MS q2.wav' shows the correct volume ramp for full marks.</p> <p>Synth is audible at the start of the chord (1)  Volume rises smoothly through bar 25 (1)  Volume at end of bar 25 is the same as the original/no changes in volume elsewhere in piece/no glitches (1)</p> <p>If the keyboard is not soloed/metronome left on, then assess what can be heard clearly, max 1.</p>	(3)

Question number	Answer	Mark
2(d) (i)	<p>Any two from:</p> <p>Thicken the sound.  Add stereo width.  To add movement to static/lifeless electronic sounds.  Mask tuning issues in analogue synthesisers.</p>	(2)

Question number	Answer	Mark
<b>2(d) (ii)</b>	LFO/modulation (1) cycle time/frequency/Hz (1) how fast the vibrato/modulation is (1)	<b>(2)</b>

Question number	Answer	Mark
3(a)	<p><b>C Stuttering</b></p> <ul style="list-style-type: none"> <li>- beat matching is incorrect because this alters the timing of one piece of audio to match another.</li> <li>- slicing is incorrect because this divides a single audio clip into segments</li> <li>- time stretch is incorrect because this lengthens or shortens a slice of audio</li> </ul>	<b>(1)</b>

Question number	Answer	Mark
3(b)	<p>'l' copied from bar 26 (1)  Correct timing / no glitches (1)  Three repetitions (1)</p>	<b>(3)</b>

Question number	Answer	Mark
3(c)	<p>Any three from:</p> <ul style="list-style-type: none"> <li>Lo-fi (1)</li> <li>Crunch/distortion (1)</li> <li>Adds (digital) artefacts (1)</li> <li>Sounds like early digital audio equipment/games/samplers (1)</li> <li>Reduces bit depth of signal (1)</li> <li>Any mention of values e.g. reduces bit depth to 8 bit (must be lower than 16 bit) (1)</li> <li>Reduces sample rate (1)</li> <li>Downsampling (1)</li> <li>Quantisation noise (1)</li> <li>Reduces signal to noise ratio (1)</li> <li>Reduces dynamic range (1)</li> <li>Aliasing (1)</li> </ul>	<b>(3)</b>

Question number	Answer	Mark
3(d)	<p>Bit-crusher or distortion effect used (1)  Only present on the 5 repeats of the word 'wanna' (1)  No glitches or level change (1)  Clean vocal is still distinguishable and low level digital quantisation noise present (1)</p> <p>Max 1 if clearly distortion not bit-crushing.  Max 2 if not soloed/metronome left on/other effects added.</p>	<b>(4)</b>



Question number	Answer	Mark
3(e) (i)	X axis: Frequency (1) / Hz or Hertz (1) Y axis: Level / gain / cut & boost (1) / dB or decibels (1)	(4)

Question number	Answer	Mark
3(e) (ii)	Band (1) pass (1) OR Combination of low and high (1) pass (1)	(2)

Question number	Answer	Mark
3(e) (iii)	20Hz is lower end of human hearing range (1). 20kHz is upper end of hearing range. (1) Most audio systems do not reproduce frequencies above (1) or below (1) this range.	(2)

Question number	Answer	Mark
4(a)	Pitch bend (1) Accept Portamento / glide / slew (1)	(1)

Question number	Answer	Mark
4(b) (i)	Low frequencies have less directional information than mid range and high frequencies. (1) Bass frequencies have high power (1) Mix would sound empty if one side of stereo image has no bass (1) Share power equally on both sides (1) Club systems with large high powered bass speakers would not sound good with bass panned to one side. (1) Vinyl will not play properly if there is more bass on one channel than the other, needle gets bounced out of groove (1) Expensive vinyl cutting heads can get damaged by uneven left and right signal levels (1)	(3)

Question number	Answer	Mark
4(b) (ii)	<p><b>D Kick drum</b>  It is not backing vocal because panning is used to create separation.  It is not grand piano because it is recorded in stereo with two microphones.  It is not hi-hat because it is panned off to one side to reflect listener's or performer's perspective.</p>	(1)

Question number	Answer	Mark
5 (a)	<p>'MS q5.wav' shows the correct reverb.   Gated reverb used as in b33 / same length (accept short room with quick release) (1).  Applied to snare drum only (1).  Same reverb level as bar 33. (1)</p>	(3)

Question number	Answer	Mark
5 (b)	<p><b>Vocal pitch bar 35</b>  Listen from 1:07</p> <p>Clean version of 'I feel alive' used (1)  Correct rhythm (1) (no marks if no pitch shift applied)  First note 'I' pitched correctly (1)  Second note 'feel' pitched correctly (1)  Third note 'a -' pitched correctly (1)  Fourth note ' - live' pitched correctly / unchanged (1)</p> <p>Glitches/clicks/artefacts present, max 4.</p>	(6)

Question number	Answer	Mark
5 (c)	<p><b>Vocal 1/4 note delay</b>  Timing should be clear at bar 25.</p> <p>Quieter than dry signal (1)  Three repeats (1)  Correct delay time, applied to the whole vocal (1)</p> <p>Glitches/clicks present, max 2.</p>	(3)

Question number	Answer	Mark										
5(d)	<table border="1" data-bbox="320 226 1275 741"> <thead> <tr> <th data-bbox="320 226 437 259">mark</th> <th data-bbox="437 226 1275 259"><b>Balance the mix</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="320 259 437 327">3</td> <td data-bbox="437 259 1275 327">Vocals are most prominent. All parts clearly audible. Drums and bass blend effectively.</td> </tr> <tr> <td data-bbox="320 327 437 394">2</td> <td data-bbox="437 327 1275 394">Most tracks are balanced but there is some masking e.g. kick drum below bass, keyboards dominate vocal</td> </tr> <tr> <td data-bbox="320 394 437 696">1</td> <td data-bbox="437 394 1275 696">One track barely audible OR One track extremely dominant OR Additional tracks OR Levels of tracks are erratic OR One or more tracks partially present</td> </tr> <tr> <td data-bbox="320 696 437 741">0</td> <td data-bbox="437 696 1275 741">Not all tracks present</td> </tr> </tbody> </table> <p data-bbox="405 786 1225 819">Ignore previously assessed work, e.g. bit-crusher/delay level.</p>	mark	<b>Balance the mix</b>	3	Vocals are most prominent. All parts clearly audible. Drums and bass blend effectively.	2	Most tracks are balanced but there is some masking e.g. kick drum below bass, keyboards dominate vocal	1	One track barely audible OR One track extremely dominant OR Additional tracks OR Levels of tracks are erratic OR One or more tracks partially present	0	Not all tracks present	<b>(3)</b>
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Question number	Answer	Mark		
5(e)	<table border="1"> <tr> <td data-bbox="320 226 435 259">mark</td> <td data-bbox="435 226 1275 259"><b>Production of final mix</b></td> </tr> </table>	mark	<b>Production of final mix</b>	
	mark	<b>Production of final mix</b>		
	3	Music and reverb/bass/delay tail not cut off at start and end. Up to 1 second of silence at start and end. Output has no distortion and level is not noticeably quiet		
	2	Beginning and end of mix does not cut out. The beginning and / or end have more than 1 second of silence OR Mix output noticeably quiet OR Compressed OR Slightly distorted OR Bass tail, delay tail or reverb cut at end		
	1	Obviously chopped start or end OR Mix output is unacceptably low or too high (distorted) OR Excessive compression OR metronome left on, OR any part is noticeably out of sync / out of tune / missing. OR any additional intrusive processing / panning  Ignore previously assessed work e.g. drums out of sync due to q1 edits, vocal pitches.		
0	No mix present			

(3)

Question number	Indicative content	Mark
6	<p style="text-align: center;"><b>AO3 (4 marks)/AO4 (12 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>Responses that demonstrate <b>only</b> AO3 without any AO4 should be awarded marks as follows:</p> <ul style="list-style-type: none"><li>• Level 1 AO3 performance: 1 mark</li><li>• Level 2 AO3 performance: 2 marks</li><li>• Level 3 AO3 performance: 3 marks</li><li>• Level 4 AO3 performance: 4 marks</li></ul> <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 not suggested below must also be credited. Relevant points may include:</p>	<b>(16)</b>

A03	A04
<b>Near field</b>	
<p>Near field monitors. Two-way speaker design. Bass (woofer) and treble (tweeter). Closed box design.</p>	<p>Accurate mid and high frequencies. Bass frequencies - steep roll off below 100Hz. Crossover filters lower frequencies to bass driver and higher frequencies to treble driver. Crossover frequency 2kHz. Accept 1.5 to 3 kHz. 18cm bass driver. Soft dome treble driver. Detailed / accurate transients. Closed box gives more accurate frequency response in low mids and bass. Used for critical mix decisions. These would be used instead of the full range speakers to simulate the domestic listening environment.</p>
<p>Near field speakers positioned to be at ear level.</p>	<p>Sound is heard on axis. Less HF if off axis.</p>
<p>NF placed on bridge of desk.</p>	<p>Could cause unwanted vibrations. Unwanted vibrations affect transmission of low frequencies. Speaker stands could reduce vibrations. Foam pads could reduce vibrations.</p>
<p>NF Speakers placed on side.</p>	<p>Tweeters on outside. Designed to be placed on side as shown to provide accurate stereo image.</p>
<p>NF speakers quite close together</p>	<p>Standard practice is for speakers and chair to form the corners of an equilateral triangle / distance between speakers = distance from speakers to ears. Could affect stereo image.</p>

Question number	Answer	Mark										
	<table border="1"> <thead> <tr> <th data-bbox="306 342 671 398">Full range</th> <th data-bbox="671 342 1171 398"></th> </tr> </thead> <tbody> <tr> <td data-bbox="306 398 671 797"> Full range speakers.  Two bass drivers in each.  One treble speaker in each.  Two ports </td> <td data-bbox="671 398 1171 797"> 30 – 40 cm bass drivers.  Horns for treble.  Full range speakers / extended low frequency response.  Capable of very high SPL/loud.  Ports enhance bass transmission.  Ports can lead to exaggerated bass at some frequencies/uneven bass response.  Use these as an alternative to the near fields/not used at the same time as the near fields. </td> </tr> <tr> <td data-bbox="306 797 671 949"> FR speakers built into wall. </td> <td data-bbox="671 797 1171 949"> Minimises vibrations/structural support.  Cavity in walls filled with sound absorbing material. </td> </tr> <tr> <td data-bbox="306 949 671 1084"> FR speakers angled down to point at mixing position. </td> <td data-bbox="671 949 1171 1084"> Sound on axis. </td> </tr> <tr> <td data-bbox="306 1084 671 1252"> Positioned so seat is at one point of equilateral triangle. (FR)  Height adjustable chair. </td> <td data-bbox="671 1084 1171 1252"> Best stereo image.  No phase issues.  High frequencies are directional so need to align head with the sweet spot. </td> </tr> </tbody> </table>	Full range		Full range speakers. Two bass drivers in each. One treble speaker in each. Two ports	30 – 40 cm bass drivers. Horns for treble. Full range speakers / extended low frequency response. Capable of very high SPL/loud. Ports enhance bass transmission. Ports can lead to exaggerated bass at some frequencies/uneven bass response. Use these as an alternative to the near fields/not used at the same time as the near fields.	FR speakers built into wall.	Minimises vibrations/structural support. Cavity in walls filled with sound absorbing material.	FR speakers angled down to point at mixing position.	Sound on axis.	Positioned so seat is at one point of equilateral triangle. (FR) Height adjustable chair.	Best stereo image. No phase issues. High frequencies are directional so need to align head with the sweet spot.	
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<b>Acoustic/environment</b>	
Acoustically treated room. Absorbing materials.	Reduce room ambience. Reduce unwanted reflection of mid range and high frequencies through.
Angled walls.	Reduces room nodes. Reduces standing waves. Reduces flutter echo.
Angled corners for bass trapping. Absorbing panel on wall above window.	Bass traps reduce low frequencies. Surface has many small perforations/narrow slits to allow sound to enter.
Wooden floor. Large window. Ceilings and walls.	Reflective surfaces introduce acoustic problems. Hard surfaces will reflect mid and high frequencies. If surfaces are of a soft material the impact of this is reduced. Sound reflects off desk causing some inaccuracy.
Air conditioning vents.	May introduce unwanted noise.



<b>Mixing desk</b>	
Controls monitoring level.	Routing of signals to outputs. Soloing channels. Patch bay used for different routing configurations.
VU meters.	Displays levels.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–4	<ul style="list-style-type: none"> <li>• Demonstrates limited knowledge and understanding of production techniques/technology used, some of which may be inaccurate or irrelevant. (AO3)</li> <li>• Shows limited analysis and deconstruction of production techniques/technology used with unsuccessful attempts at chains of reasoning. (AO4)</li> <li>• Makes limited evaluative and/or critical judgements about the production techniques/technology used. (AO4)</li> <li>• Makes an unsupported or generic conclusion, drawn from an</li> </ul>
Level 2	5–8	<ul style="list-style-type: none"> <li>• Demonstrates knowledge and understanding of production techniques/technology used, which are occasionally relevant but may include some inaccuracies. (AO3)</li> <li>• Shows some analysis and deconstruction of production techniques/technology used with simplistic chains of reasoning. (AO4)</li> <li>• Makes some evaluative and/or critical judgements about the production techniques/technology used. (AO4)</li> <li>• Comes to a conclusion partially supported by an unbalanced argument with limited coherence. (AO4)</li> </ul>
Level 3	9–12	<ul style="list-style-type: none"> <li>• Demonstrates clear knowledge and understanding of production techniques/technology used, which are mostly relevant and accurate. (AO3)</li> <li>• Shows clear analysis and deconstruction of production techniques/technology used with competent chains of reasoning. (AO4)</li> <li>• Makes clear evaluative and critical judgements about the production techniques/technology used. (AO4)</li> </ul>
Level 4	13–16	<ul style="list-style-type: none"> <li>• Demonstrates detailed knowledge and understanding of production techniques/technology used, which are relevant and accurate (AO3)</li> <li>• Shows detailed and accurate analysis and deconstruction of production techniques/technology used, with logical chains of reasoning on occasion. (AO4)</li> <li>• Makes detailed and valid evaluative and critical judgements about the production techniques/technology used. (AO4)</li> <li>• Comes to a conclusion, largely supported by a balanced argument. (AO4)</li> </ul>

