



Pearson
Edexcel

Mark Scheme (Results)

Summer 2023

Pearson Edexcel GCE
Music Technology (8MT0)
Paper 04: Producing and Analysing

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2023

Question Paper Log Number 66078

Publications Code 8MT0_04_2306_MS

All the material in this publication is copyright

© Pearson Education Ltd 2023

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.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom

Question Number	Answer	Mark
1a Type 3	<p>The kick drum is dull in bars 2-5 because it has a low pass filter on it.</p> <p><i>Bright is not correct because there is less high frequency content</i></p> <p><i>Distortion is not correct because there is no clipping</i></p> <p><i>Band (pass filter) is not correct because this would remove low and high frequency content</i></p> <p><i>High (pass filter) is not correct because this would remove low frequency content</i></p>	(2)

Question Number	Answer	Mark
1b audio examiner	<p>High pass filter applied to the drums (1)</p> <p>Low frequency content completely removed leaving hi hats and percussion untouched . (1)</p> <p>Filter only applied in bars 2-5 without glitches (1)</p> <p>Drums not soloed mark what can clearly be heard max 1.</p>	(3)

Question Number	Answer	Mark
1c audio examiner	<p>Phaser applied to cymbal in bar 17 and nowhere else, without wide panning or autopanning (1)</p> <p>Phaser has fast rate similar to bar 9 (1)</p> <p>Similar depth/amount to bar 9 (1)</p> <p>Max 1 if copied from bar 9 with additional drums.</p> <p>Max 2 if glitches.</p> <p>Drums not soloed, or not in stereo - mark what can clearly be heard max 2.</p>	(3)

Question Number	Answer	Mark
1d Type 4	C is correct A is not correct because it is out of time (early in beat 3) B is not correct because there is an extra hit during beat 2 and out of time during beat 3 D is not correct because there is an extra hit during beat 2.	(1)

Question Number	Answer	Mark
2a(i) Type 2	Direct inject (1) Direct input (1)	(1)

Question Number	Answer	Mark
2a(ii) Type 1	Removes hum (not noise) (1) 50Hz/60Hz/low frequency (1) Earth loop/ground loop (1) Breaks the connection to earth/ground (1) Safe because both connected pieces of equipment still have their own independent earth (1)	(2)

Question Number	Answer	Mark
2a(iii) Type 1	Reduces noise/interference/better signal to noise ratio (1) Shielded cable (1) Twisted pair (1) carrying two identical signals (1) Out of phase signals / opposite polarity (1) Differential amplifier (1) cancels noise at end of cable run (1) Impedance matching (1) Source and Load impedance the same (1)	(4)

Question Number	Answer	Mark
2a(iv) Type 2	XLR/cannon (1) TRS/stereo jack (1) Bantam (1)	(2)

Question Number	Answer	Mark
2b Type 1	<p>One mark is awarded for each method to a maximum of two marks, with a further mark for an explanation of each of the two points.</p> <p>Use a guitar amp simulator (1) to add distortion/harmonics/bite/grit/speaker/cab character (1) Reamp (1) to add distortion/harmonics/bite/grit/speaker/cab character (1) Add EQ (1) to make the sound brighter/add mid range/presence/less bright to replicate sound of speaker (1) Add reverb (1) to give a sense of space/ambience (1) Add delay (1) to give sense of space/add rhythmic layers (1) Add chorus (1) to give width/depth (1) Compression (1) evens out peaks/powerful/punchy (1)</p> <p>Accept any other effects with suitable reason.</p> <p>Not just 'add effects'</p>	(4)

Question Number	Answer	Mark
3a audio examiner	<p>Square wave (1) Detune added, suitable amount (1) Correct filter setting (1) Correct octave (both oscillators) (1)</p> <p>Max. 3 if glitches, or if envelope has an intrusively long/short attack or release, or effects added. *ignore low sustain on envelope affecting long notes bars 9, 18 – 21</p> <p>If bass not Soloed/metronome present, mark what can be clearly heard Max. 2</p>	(4)

Question Number	Answer	Mark
3b(i) Type 2	<p>Sine (1) Triangle (1) Sawtooth/ramp (1) Pulse/PWM (1) Noise (1)</p>	(2)

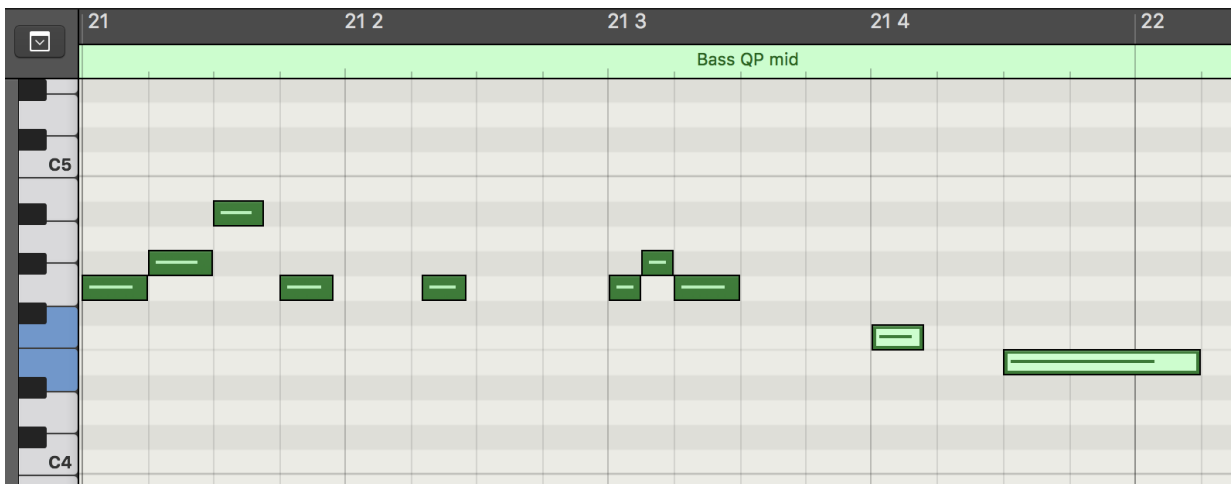
Question Number	Answer	Mark
3b(ii) Type 1	<p>Electronic components/oscillators sensitive to heat (1) Sensitive to humidity (1) Heat/humidity changes resistance (1), capacitance (1), voltage (1), current (1). Pitch is proportional to voltage / current (1). Analogue oscillators do not stay in tune over range of keyboard (1) Power variations such as batteries, power surges, outputs in different countries (1) Reference to oscillators not digitally controlled (1) Reference to volts per octave/Hz per volt (1)</p>	(2)

Question Number	Answer	Mark
3c audio examiner	<p>Slide downwards present with correct pitch at start of bar 9 (1) Slide is smooth (1) Slide is three semitones and finishes in correct place, the rest of the bass is in tune and has no</p>	(3)

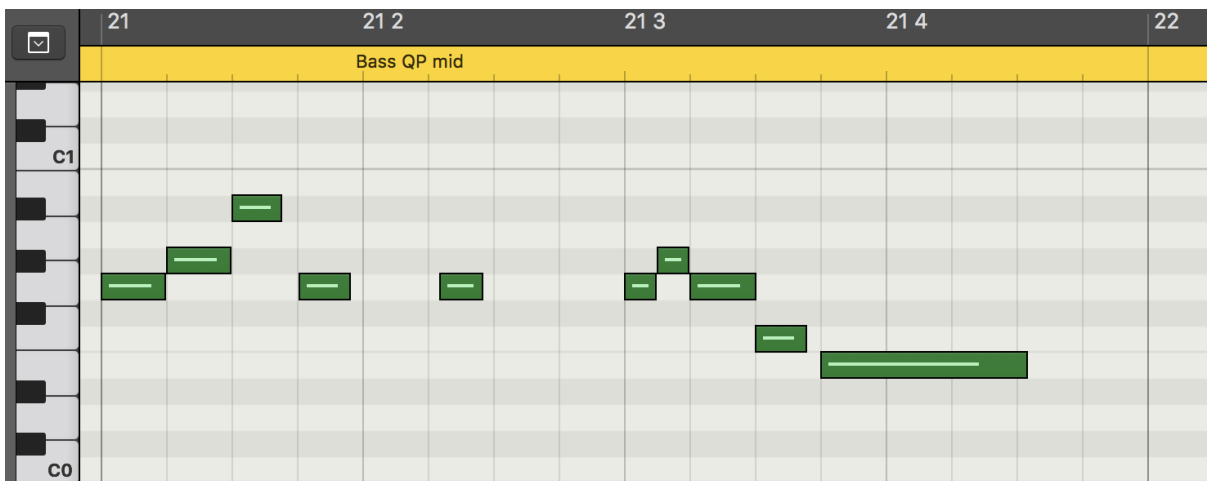
	portamento (1) If bass not Soloed/metronome present, mark what can be clearly heard Max. 2	
--	---	--

Question Number	Answer	Mark
3d audio examiner	<p>1 mark for each correct note: pitch, timing, length</p> <p>See screen shots below:</p> <p>1st shows QP mid file with incorrect notes highlighted</p> <p>2nd shows corrected timing</p> <p>If other notes have been moved out of time, max. 1 mark.</p> <p>If bass not Soloed/metronome present, mark what can be clearly heard Max. 2.</p>	(2)

QP MIDI



Correct edits



Question Number	Answer	Mark
4a(i) Type 4	D is correct (1/2 note) A B C are all too short	(1)

Question Number	Answer	Mark
4a(ii) Type 1	Can have multiple instances (1) No noise (1) No cables/mixing desk/mains power or other analogue connections (max 1) Settings stored with project (1) More accurate timing/synced with project (1) Automation (1)	(2)

Question Number	Answer	Mark
4b audio examiner	1/2 note delay time (1) Single repeat and no other delay on other parts of vocal (1) Same level as in bars 4 - 5 (1) Ignore reverb/double tracking from Q5 if present; mark what can be heard clearly. Vocal not soloed / metronome left on - mark what can clearly be heard, max 2. Max. 2 if glitches present or dry level changed.	(3)

Question Number	Answer	Mark
4c(i) Type 1	Wide dynamic range/some parts are much louder than others (1) Compressor will reduce the dynamic range (1) Increases perceived loudness (1) Increases power/average level (1) Helps the vocal sit in the mix/increases the volume of quieter syllables (1) Emphasises transients (1) Helps prevent distortion on peaks (1)	(2)

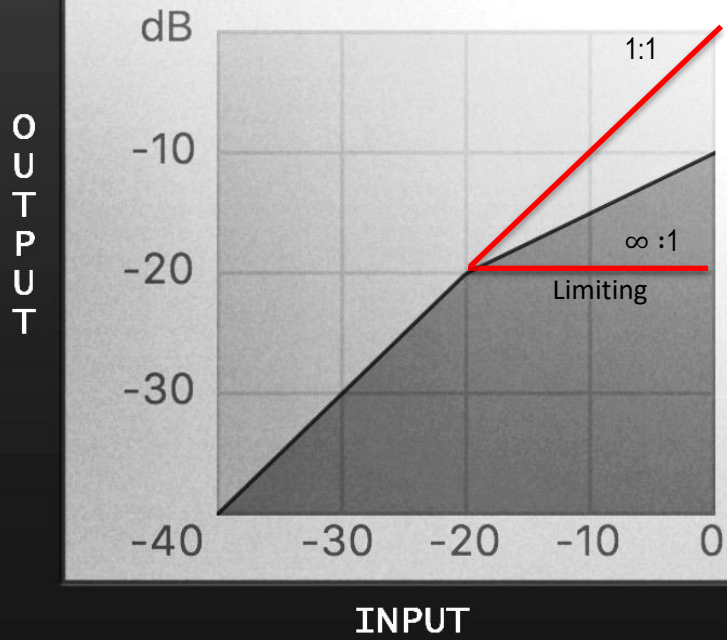
Question Number	Answer	Mark
4c(ii) Type 1	Pumping (1) Breath noise/other noise can be increased/exaggerated (1) Distortion if extreme settings used (1) Transients can be adversely affected (1) Increase sibilance (1) Can affect the tone/EQ (1) <u>Heavy</u> compression resulting in unnatural sound (1)	(2)

Question Number	Answer	Mark
4d(i) Type 1	Threshold (1) and ratio knobs (1) as shown, accept any mark/arrow/line that is close to the correct number.	(2)

Question Number	Answer	Mark
4d(ii) Type 1	1:1 (1) and ∞ :1 (1) as shown, accept any straight line that is almost horizontal for limiting.	(2)

Question Number	Answer	Mark
4d(iii) Type 1	∞ :1 (1) identified as limiting.	(1)

COMPRESSOR GRAPH



THRESHOLD



RATIO



Question Number	Answer	Mark
5a audio examiner	Vocal has suitable delay time to produce doubling effect (1) Two copies of vocal panned left and right (1) Delay/copy is same level with no other effects applied and no high feedback (1) Max 2 if doubling effect appears elsewhere in song.	(3)

Question Number	Answer	Mark										
5b audio examiner	<p>Listen from 0.42 to 0.53</p> <table border="1"> <thead> <tr> <th>mark</th> <th>Vocal compression</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Compression has evened out the changes in dynamics; loud section in bars 18 to 22, quiet section at the end. No clipping introduced.</td> </tr> <tr> <td>2</td> <td>Compression has been applied but the vocal is still uneven; the quieter section at the end is still too quiet or the louder section bars 18 to 22 still too loud.</td> </tr> <tr> <td>1</td> <td>Release too long causing pumping OR Automation used unsuccessfully</td> </tr> <tr> <td>0</td> <td>No audible compression</td> </tr> </tbody> </table>	mark	Vocal compression	3	Compression has evened out the changes in dynamics; loud section in bars 18 to 22, quiet section at the end. No clipping introduced.	2	Compression has been applied but the vocal is still uneven; the quieter section at the end is still too quiet or the louder section bars 18 to 22 still too loud.	1	Release too long causing pumping OR Automation used unsuccessfully	0	No audible compression	(3)
mark	Vocal compression											
3	Compression has evened out the changes in dynamics; loud section in bars 18 to 22, quiet section at the end. No clipping introduced.											
2	Compression has been applied but the vocal is still uneven; the quieter section at the end is still too quiet or the louder section bars 18 to 22 still too loud.											
1	Release too long causing pumping OR Automation used unsuccessfully											
0	No audible compression											

Question Number	Answer	Mark
5c audio examiner	Listen at 0.26 First filtered repeat of 'music' panned hard left. (1) 2nd filtered repeat of 'music' panned hard right (1) Any changes in level, pan elsewhere or glitches max. 1	(2)

Question Number	Answer	Mark
5d audio examiner	Listen at bars 14 to 17 vocal, intro or bar 20 guitar & kybd Suitable reverb and level applied to vocal. (1) Suitable reverb and level applied to keyboard and guitar combined part. (1) Reverb remains stereo throughout including bars 10-11 / award 0 if vocal does not pan in 5c. (1)	(3)

Question number	Answer	Mark	
5e audio examiner	mark	Balance the mix	(3)
	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	

Question Number	Answer	Mark
5f audio examiner	All noise removed in bar 28 with no additional glitches	(1)

Question number	Answer	Mark		
5g audio examiner	<table border="1"> <tr> <td data-bbox="424 353 544 387">mark</td> <td data-bbox="544 353 1393 387">Production of final mix</td> </tr> </table>	mark	Production of final mix	(3)
	mark	Production of final mix		
	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		
0	No mix present			

Question Number	Answer	Mark								
<p>6 Type 1</p>	<p style="text-align: center;">AO3 (4 marks)/AO4 (12 marks)</p> <p>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.</p> <p>Responses that demonstrate only AO3 without any AO4 should be awarded marks as follows:</p> <ul style="list-style-type: none"> • Level 1 AO3 performance: 1 mark • Level 2 AO3 performance: 2 marks • Level 3 AO3 performance: 3 marks • Level 4 AO3 performance: 4 marks <p>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:</p> <table border="1" data-bbox="392 869 1423 1957"> <thead> <tr> <th data-bbox="392 869 692 904">AO3</th> <th data-bbox="692 869 1423 904">AO4</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="392 904 1423 940">AMPLIFIER</td> </tr> <tr> <td data-bbox="392 940 692 1245"> Volume knob controls gain/drive/ input/output. Volume is quite high. </td> <td data-bbox="692 940 1423 1245"> Guitar will be loud in the room. Will cause spill if other instruments being recorded in same room. Guitarist may like to play loud to suit own style/preference. High gain (volume) may lead to overdriven sound. High SPL means care must be taken of setting gain on desk/interface to avoid distortion. </td> </tr> <tr> <td data-bbox="392 1245 692 1957"> Amplifier has three EQ/tone controls. Bass has small amount of cut / bass is boosted (in proportion to cuts elsewhere) (9). Mids have a medium amount of cut (5). Treble is set low / has a lot of cut (2). </td> <td data-bbox="692 1245 1423 1957"> The bass setting will cause a bassy sound. Not a good setting for bright sound (as bass needs to be cut) / credit valid change in setting. The treble setting will cause a dull sound. Not good setting for a bright guitar / credit valid change in setting. The mid setting is appropriate for a bright guitar. Bass control is a low shelf/ HPF. Treble control is high shelf/ LPF. Mid control is band reject/notch filter. All tone controls are fixed frequency. (credit likely values e.g. 100 – 200 Hz bass, 1 – 4 kHz mids, 8 – 12 kHz highs). Fixed Q/bandwidth/slope. Wide bandwidth cuts wider range of frequencies. Limited control over EQ. Bright tone cuts through mix / leaves space for other instruments. </td> </tr> </tbody> </table>	AO3	AO4	AMPLIFIER		Volume knob controls gain/drive/ input/output. Volume is quite high.	Guitar will be loud in the room. Will cause spill if other instruments being recorded in same room. Guitarist may like to play loud to suit own style/preference. High gain (volume) may lead to overdriven sound. High SPL means care must be taken of setting gain on desk/interface to avoid distortion.	Amplifier has three EQ/tone controls. Bass has small amount of cut / bass is boosted (in proportion to cuts elsewhere) (9). Mids have a medium amount of cut (5). Treble is set low / has a lot of cut (2).	The bass setting will cause a bassy sound. Not a good setting for bright sound (as bass needs to be cut) / credit valid change in setting. The treble setting will cause a dull sound. Not good setting for a bright guitar / credit valid change in setting. The mid setting is appropriate for a bright guitar. Bass control is a low shelf/ HPF. Treble control is high shelf/ LPF. Mid control is band reject/notch filter. All tone controls are fixed frequency. (credit likely values e.g. 100 – 200 Hz bass, 1 – 4 kHz mids, 8 – 12 kHz highs). Fixed Q/bandwidth/slope. Wide bandwidth cuts wider range of frequencies. Limited control over EQ. Bright tone cuts through mix / leaves space for other instruments.	<p>(16)</p>
AO3	AO4									
AMPLIFIER										
Volume knob controls gain/drive/ input/output. Volume is quite high.	Guitar will be loud in the room. Will cause spill if other instruments being recorded in same room. Guitarist may like to play loud to suit own style/preference. High gain (volume) may lead to overdriven sound. High SPL means care must be taken of setting gain on desk/interface to avoid distortion.									
Amplifier has three EQ/tone controls. Bass has small amount of cut / bass is boosted (in proportion to cuts elsewhere) (9). Mids have a medium amount of cut (5). Treble is set low / has a lot of cut (2).	The bass setting will cause a bassy sound. Not a good setting for bright sound (as bass needs to be cut) / credit valid change in setting. The treble setting will cause a dull sound. Not good setting for a bright guitar / credit valid change in setting. The mid setting is appropriate for a bright guitar. Bass control is a low shelf/ HPF. Treble control is high shelf/ LPF. Mid control is band reject/notch filter. All tone controls are fixed frequency. (credit likely values e.g. 100 – 200 Hz bass, 1 – 4 kHz mids, 8 – 12 kHz highs). Fixed Q/bandwidth/slope. Wide bandwidth cuts wider range of frequencies. Limited control over EQ. Bright tone cuts through mix / leaves space for other instruments.									

AO3	AO4
MICROPHONE	
Microphone position is very close (to speaker cone).	(Cardioid mic) Proximity effect. Exaggerates/boosts low/lower mid frequencies. Not a good choice for bright guitar / mic placed further away. Dynamic microphone can cope with high SPL. Good for loud guitar amps. Microphone is directional. Reduces spill. Reduces ambience / room reverb.
	Microphone pointing at centre of speaker cone, good reproduction of full frequency range / more high frequencies produced.
Microphone can have low frequency roll off.	Bass frequencies will be reduced. These are unwanted in a bright guitar sound. Below ~100Hz. HPF. Small diaphragm.
Dynamic microphone does not have a flat frequency.	Dynamic microphone can have upper mid range boost around 5kHz. Presence peak. Will help guitar have definition/clarity/and stand out in mix. Useful for bright guitar tones. Condenser has flatter frequency response.
High frequency roll off.	Does not capture very much high end above about 12kHz. Not an issue because guitar amp will not produce much high frequency above 12kHz. Slow transient response. Condenser mic would reproduce wider frequency range / better at high frequencies.
Only one microphone used when there are two speakers.	Two speakers can be different types/produce different tones. A second microphone would allow more mixing options. A second microphone could introduce phasing problems.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom