Examiners' Report
Principal Examiner Feedback

Summer 2019

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

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This is the second year of this paper.

There are 6 questions. Q5 is a mix task in 6 sections. Q6 is an essay evaluation of a recording or producing scenario. The other questions contain a mix of questions and audio or midi production tasks. There are three audio or midi production tasks in addition to the final mix.

The paper total is 84 marks. It was rare to see papers with total marks less than 20 or more than low 60s.

In particular, the essay question did not attract many marks. Centres will note that the marks are split between AO3 and AO4. A maximum of four marks of the 16 are awarded for AO3 answers, the rest are for the evaluative AO4 answers.

Audio and midi production tasks were handled well by a pleasing number of students. Copying the vocal phrase and replacing an existing section, plus the bass EQ question were least successful.

Where parts are not soloed, metronome left on or additional effects/processing added to that required in the question, the work cannot be assessed fully. The mark scheme shows approaches for each task.

Other problems arose through students not reading the instructions. Audio/MIDI incorrectly lined up, and occasionally incorrect tempo.

CDs should be submitted as data in accordance with the administrative guidance document. Where additional files are received or files are placed in the incorrect order on the CD, it can be difficult for the examiner to determine which task is which. It is recommended that all CDs are checked after burning and before submitting to make sure they contain the correct work. As this is the responsibility of the teacher or technician, it is hoped that there would be fewer errors.

This report should be used in conjunction with the published mark scheme.

Q1. 6 marks. Bass edits 3 marks.

a) i) Nearly all candidates got 1 mark.
a) ii) Responses gaining 2 marks were rare. Most common answers were accidental trigger or interference from other device. Often students wrongly referred to general capture issues e.g. ambient room sound.
b) Often scored 2 or 3 marks. Problems included copying two notes from b25 instead of one; untidy edits with clicks/glitches. Most managed to remove the noise successfully.

Q2. 20 marks. Drum MIDI edits 9 marks.

a) Most got kick and snare. Side stick was less successful though a range of answers were accepted including woodblock and clave.
b) Tested students' ability with drum editing. This was challenging and though many got the first two bars right, they did not transpose the whole pattern so drum sounds would change later in the song.
Many candidates made several wrong drum assignments. 2 to 4 marks typical. Most got kick drum and closed hi hat.
In some cases students used completely different drum patterns or copied parts of the given midi file so it was out of time.
It was rare that the original audio example was left in.
The wrong tempo made this awkward because the drums would not be in time with other parts.
c) Nearly all students got this correct.
d) Very few got this correct, even though wrong drum choices in b) were accepted if timbres were the same. Even removing all drums except the hi hat seemed too awkward. The timing of the roll was often incorrect if it had been copied from bar 3, or parts were removed/timing changed.
e) i) Only a small minority referred to analogue being a continuous cyclical electronic signal. The most common answer was 'not digital'.
e) ii) More candidates deduced that this was to do with changing the level – velocity was accepted even though this is not midi data. Not many identified that the accents could be applied to certain beats in the pattern, or the amount of accent could be varied.
e) iii) There are some very simple answers here that candidate's often missed. Many made reference to limited drum sounds, but basic answers such as restricted timing resolution, mono output, and limited sync / no midi were rare.
Some common wrong answers did not relate to technology e.g. expensive, hard to maintain, heavy, difficult to move.
Other incorrect answers lacked specific detail e.g. difficult to edit; a reference to which aspect of programming is difficult or has fewer options would have gained a mark.
Occasionally students misread the question and gave advantages of analogue.

Q3. 10 marks. Vocal processing & edits 6 marks.

a) The majority of students knew this. Incorrect answers included voice transformer, distortion, bit crusher, flanger.
b) Often good application of HPF in the correct places with no glitches. Some students just made it louder, or applied EQ to make it brighter. In rare instances EQ was applied to other parts of the vocal as well.
Some students bounced this with reverb on the vocal, perhaps leaving the bounces until after all processing tasks are completed including Q5. This is not what the question asks for an is likely to lead to a reduction in marks because the task cannot be clearly assessed, e.g. cut and joins / switching of effects may have problems masked by the reverb.
c) Full marks were rare. Most candidates noted that a click or pop would be heard. Some referred to this as 'clipping' – this was not credited as this is a specific term relating to distorted signals, and is not the cause of the audio problem in this case.
The next most common response to receive a mark was mentioning something to do with discontinuity in the audio waveform / not at zero crossing point. Examiners tried to be generous in accepting these descriptions as often the language was lacking technical accuracy.
Very few referred to the fades creating a zero crossing point, or cross fades overlapping to smooth out sustaining sounds.

d) Most students successfully removed the clean vocal. The vocoded phrase was usually pasted with the correct timing. The length or end edits of the vocoded segment was not often edited cleanly or at the correct point.

Q4. 14 marks.

a) i) Surprisingly few identified this as electric piano.
a) ii) Very few were able to accurately identify the pan positions. Sometimes it appeared that students were listening to the wrong segment of the song and made reference to other instruments not in the opening bars.
b) Many knew this was modulation/LFO/vibrato. Pitch bend/portamento was also an acceptable answer. Tremolo was the most common incorrect answer.
c) The majority of students used some appropriate language relating to filtering, showing a pleasing level of understanding across the cohort about this aspect of synthesis. Most mentioned sweep and filter type. More capable candidates included a description of opening filter/rising cut-off/increasing brightness, while only a few mentioned resonance /Q.
In rare cases there was no reference to any filter settings, instead referring to other synthesis parameters such as attack and release.
d) Generally not answered well. Marks were most commonly awarded for reference to a sample being assigned to a key or range of keys, then some students referred to the pitch being raised or lowered by change to playback speed.
Very few referred to multisampling at different pitches across the keyboard giving natural sounding timbres across the natural range of sampled instruments. This indicates a gap in understanding of a basic concept about digital instruments.
e) Very few students managed to get all three marks. Most referred to the short delay time. Many correctly identified it as 1/16th note. Many correctly referred to low feedback though a common error was to call this a slap-back delay. Some noticed the stereo movement. It was not necessary to describe the positioning to gain a mark.
Few noticed the repeats were filtered or that it was tape delay emulation.

Q5. 18 marks. Final mix in six sections, 3 marks each.

a) Most applied a suitable reverb the right time with a suitable level. Too much reverb was the most common issue. Sometimes the reverb time was too short.

b) Often completed successfully. Errors occurred with poor timing or slow movement in pan positions, or not panned hard left/right. Reversed left and right was uncommon.

c) Most applied some reduction in HF content at the correct point, but it was rare that the mid range element of the bass was left in resulting in a duller timbre. Quite common that EQ was applied to the whole bass track. Sometimes students removed low frequency content instead of HF.

d) Less than half got the correct delay time, usually candidates set it to 1/8th not 1/8th triplet. The feedback length was also problematic for many, either too long or too short/not ending during b39.

e) Vocal dominance was the most common issue, or keyboard too quiet. Generally handled well though sometimes choices of drum kits with uneven levels of individual parts caused problems.

f) Delay tail chopped or long lead in were common. Out of sync parts also occurred fairly frequently and is assessed here. Distortion was rare. Output level usually suitable though some quiet submissions did occur.

Q6. 16 marks.

This question was clearly more challenging than last year's essay with lower marks across the cohort. Marks in double figures were rare; many candidates scored fewer than 6 or 7.

12 marks are for AO4. This means students need to be offering explanations of why processing is successful or unsuitable to gain these marks.

A common problem in responses to this question was reference to capture techniques. The question asks for the processing shown in fig. 1 to be evaluated, not the recording methods. No marks were awarded for microphone type, use, placement, issues of acoustics or other conditions during capture. It appeared in some cases that students were replicating answers from last year's essay question that they had learned by rote.

This question exhibited a lot of confusion about how dynamics are controlled using noise gates and compression.

Few students noticed that the noise gate threshold was set very high for a signal with -10dB peaks. Setting the noise gate at around -15dB would leave only 5dB of dynamic range. Students that did notice this made suitable observations about vocals being cut out in quieter sections, and remedying the problem by lowering the threshold so noise was still removed but the vocal was unaffected.

More students identified compression settings that were likely to lead to heavy compression, relating this to high ratio and low-ish threshold. Fewer were able to offer

descriptions of how heavy compression would impact on the vocal recording, such as increased breath/lip noise, worse signal to noise ratio, emphasis of hard consonants and potential sibilance. Discussion of dynamic range was often missing or confused. Many students missed simple connections such as compression reduces dynamic range; dynamic range is already narrow; heavy compression not really needed.

Make-up gain is perhaps one of the simpler compression settings and a good number of students noticed that this was necessary to compensate for gain reduction introduced by compression.

In relation to both noise gate and compression use, many students referred to these dynamic processors having an effect on frequencies, rather than levels. For example, saying that a noise gate 'stops frequencies'. This illustrates a fairly fundamental lack of knowledge about what dynamic processors do.

Many students decided to use the word 'harsh' relating to high compression ratio, instead of just high ratio or heavy compression. The term has no meaning here; it can be applied to EQ inconsistencies resulting in a high concentration of upper mid range frequencies. It points to a wider problem in use of technical language – if an amount is being described then the words must relate to the scale and value. Often high, low, medium can be sufficient, though if a numerical value is evident then this is better. Quoting the scale used for measuring the value is always good practice.

With the EQ, not many students were able to make basic observations about the type of filter used and the amount of gain. Quite a few were able to identify high and low shelf, but few correctly identified parametric. The type of EQ does not give a numerical value for the amount of boost, so students got credit if they mentioned a suitable figure, bearing in mind typical EQs have 12 – 15 dB of boost / cut. This was rare though, and most commonly the only observation was large/high boost on the low shelf.

A common evaluation observation was that the high pass filter set at 50Hz would remove unwanted rumble. Some students related this to the proximity effect.

The details of microphone use given in the question were intended to encourage students to link the EQ settings to the behaviour of dynamic microphones. Proximity effect and HF roll off mean the high and low shelf settings are potentially unsuitable, though noting a lift in HF to compensate for this was credited. Some students mentioned the boost in the mid range that could help vocal ist better in the mix, but very few mentioned the common term 'presence' or related this to dynamic microphone peak in this area, again making additional boost using EQ perhaps redundant.

Where students were made these connections, they usually expanded the discussion to include the possibility of distortion, increasing hiss, exaggerated frequency response in specific areas.

The order of processors was rarely commented on. When it was, the thinking was not clear. Many thought the noise gate should be somewhere else in the chain, after the compressor. It makes more sense to use a noise gate at the start before the dynamic range is reduced, which increases the noise floor and brings it closer to the level of the vocal. There are

arguments either way for the order or EQ and compression, but few candidates presented a good case for either choice.

SUMMARY

Audio tasks yielded the greatest success across the ability range. Clearly these skills are being developed quite effectively by the majority. Candidates struggle to explain technical processes or display detailed technical knowledge. Where they can gain marks by mentioning a few buzz words they usually do fairly well but this does not link to deeper thinking and applying knowledge to unfamiliar scenarios.

- Good skills in practical tasks of audio editing, applying effects, creating a mix.
- Good knowledge with synthesis parameters.
- Lacking in ability to discuss gain staging and the impact of dynamic processing.
- Limited ability to interpret EQ settings and relate to a given scenario.
- Uncertainty about how samplers are configured.

ADMINISTRATION

1. CDs
Only the four student tasks are to be included on the CD.
It should be a data CD, not audio so candidate numbers and task are clearly identifiable. The instructions on the paper are clear and it is also in the published administrative support guide for centres. In quite a lot of cases, project files and many unnecessary audio files are included. Even audio files belonging to other candidates were mixed up on the same CDs in some cases.
Any of these errors could lead to the wrong work being assessed which is a breach of the exam conditions.

2. Use of incorrect MIDI files
There were no cases this year, which represents an improvement on last year.

3. Arrival of work
Some centres took a long time to send the work. The work should be sent as soon as possible after the conclusion of the exam. CDs must be sent with the exam papers, not at a later date. In some cases this involved sending the papers and CDs to different addresses. Again the administration guidance provides the information needed for centres.

4. Missing work
There were very few instances of missing CDs or papers from a submission. These were usually resolved quickly which is always appreciated. When a student has been withdrawn from the exam, or completed the written parts of the paper but not completed any audio tasks, it is important that this is made clear in the submission so unnecessary time is not spent chasing.

This year there seemed to be a fair amount of confusion over word processed submissions; this included no cover sheet or reference to the work but no print out. It is worrying when centres do not manage to support their students by presenting the submission according to the examination requirements.