Examiners' Report
Principal Examiner Feedback

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Pearson Edexcel GCE
Music Technology (9MT0)
Paper 04 : Producing & Analysing

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9MT0/04 Principal Examiner's Report to Centres 2020

This paper is the paper that was going to be used in June 2020. It wasn't changed in any way because of Covid-19. This was a re-sit paper for candidates who weren't happy with their Teacher Assessed Grade. Consequently, only 22 candidates sat this paper. All scripts were marked by the Chief Examiner because no other examiners were required for such a small cohort.

Despite the small cohort, all questions reflected a full range of responses. Paper totals ranged from 15 to 90.

With the practical questions, if the examiner cannot hear the work clearly, it cannot be credited. Many candidates could not be credited for work they may have done because they did not solo the track or left the metronome on.

Centres were well prepared for the examination. There weren't any of the normal problems with muddled CD files or CDs missing etc. However, there were some missing word processor cover sheets. Also, please ensure that the CDs are data CDs, not audio CDs; about half of the CDs were audio CDs which meant that the candidate's details weren't imbedded in the files.

In general, for questions 1-4, please export the whole song from bar 1. This makes it much easier for examiners to align the audio for assessment. Also it reduces the risk of candidates missing part of their bounce.

Question 1

This question was intended to be a series of short answer and accessible questions to ease the candidates into the exam. These gradually got harder throughout question 1.

(a) Most candidates correctly identified the cymbal was reversed.

(b) Most candidates correctly identified bar 21.

(c) The closed hi-hat was often missed out completely, maybe because it played the same rhythm at the kick drum and candidates didn't notice it.

(d) This question required the simple process of dragging the out of time audio in time, then copy and pasting an extra kick in bar 30. Many candidates scored good marks here, but there were some unexpected responses. Some candidates time stretched the drums to make them in time for most of 23-29, but then the rest of the song was out of time and the section 23-29 gradually drifted out of time. Some candidates, instead of copying an extra kick into bar 30, dragged all of bars 30-33 back a beat, so the final kick of the song was missing.

Question 2

Question 2 tested the candidates' knowledge and understanding of MIDI sequencing and synthesis.

(a) Many candidates obtained 2 marks, showing that candidates had been well prepared for the new technical numeracy part of the specification.

(b) Only the best candidates noticed that the release was very short, many leaving an audible tail presumably from a preset. Some candidates chose a close preset so managed to score a couple of marks by being close enough, e.g. for the waveform. Some candidates left the MIDI file on a default piano and didn't change the octave so scored 0.

(c) This was mostly answered well. Some candidates introduced rhythm errors to other parts of the song.

Question 3

Question 3 was testing wave theory, and then audio editing.

(a)(i)(ii)(iii) Most candidates got these correct. For part (i), many answered "saw" possibly thinking of the waveform of the timbre rather than the LFO that is modulating the sound.

(a)(iv) Technical numeracy is the new aspect of the 2018 specification that was introduced following feedback during re-development from universities. Candidates had to perform a calculation to work out the frequency of the LFO having been given some clues about its period. Candidates received some marks for some working if it was clear to follow. Often candidates didn't know how to convert from time domain to frequency domain, i.e. $f=1/T$. A few good candidates successfully scored 4 marks.

(a)(v) Many candidates mislabelled the graph x-axis, mistaking frequency for time. Many candidates squandered marks by not presenting diagrams and labelling accurate enough to credit; it was too roughly drawn, e.g. the period wasn't clearly labelled from peak to peak but about 0.8 of the period instead. Error carried forward from (a)(i) was credited with wave shape.

(b) & (c)(i) These were very easy questions intended to guide candidates through c(ii) so most candidates scored full marks.

(c) This question required candidates to create a bassline that played in unison with the synth riff from a small segment of given audio. Most of the bassline could be generated by looping but some copy and pasting of individual notes was required for the variations. The click in the given audio was made deliberately intrusive so candidates had to work hard to remove it. The easiest way to remove it was to re-draw the sample that caused the click, however nearly all candidates that attempted click removal did it with fading with varying degrees of success.

The most common audio submission was the bass just looped throughout, completely ignoring the fills that the candidate had correctly identified in (c)(i), e.g. bar 13 was just looped through and the rest was missing in bar 29. Some candidates who tried to edit bar 13 had incorrect pitches and rhythm.

Some candidates left the synth riff and piano in the bounce so clicks could not be assessed.

No candidate scored full marks for this question; all candidates had different issues that prevented them scoring 8, e.g. a click or a wrong note in bar 13.

Question 4

Question 4 was testing the candidates' understanding of data compression formats.

(a) As usual with gating questions, weaker candidates made incorrect references to certain frequencies being cut. Other candidates incorrectly that the vocals were cut without carefully listening to the audio; the vocals are intact in the recording. Only the best candidates noticed the issue with the breaths.

(b) This memory recall question was mostly answered correctly showing that candidates showed *knowledge* about what lossy compression was. However, in later questions it was apparent that they didn't *understand* it.

(c) Many responses seemed random with no understanding of the various formats. Like any multiple choice question, some candidate's lucked into 1 mark by filling in the boxes. Only a couple of candidates got this question correct.

(d)(i) Most candidates showed a complete lack of understanding of data compression and incorrectly responded with references to sibilance. Only 2 or 3 candidates correctly identified the artefacts.

(d)(ii) The artefacts are deliberately really noticeable in this recording, but not indecipherable like 1kbps. This was mostly answered incorrectly. There were some lucky guesses (judging by the understanding in the other questions). The best candidates understood that 40kbps would create the noticeable artefacts in the recording.

(e) This question required candidates to interpret some graphical information to compare a lossy data compressed format with an uncompressed audio file.

Candidates who just memorised information from revision without understanding it could not score very highly in this question because it was designed to test higher levels of understanding: candidates not only had to recall and use technical vocabulary associated with frequency response and noise, but interpret the unfamiliar data given in the graphs, and then evaluate the sound quality of the two formats.

Most candidates seemed slightly confused as to what they were looking at: they showed no comprehension of the vertical lines being sine waves and the other signal being the noise. There were many incorrect references to AAC being louder than CD; these candidates were looking at the noise and assuming that was the wanted signal (rather than unwanted noise). Some even said that it was louder because it was compressed (confusing dynamic compression with data compression). Some candidates even incorrectly said that CD was data compressed (because it is compact) and AAC was not data compressed so was better; they were completely ignoring the information in the graphs.

There were many confused and unclear answers that used technical terms but made no sense, mimicking learning. These weren't credited. Some responses were a whole page of uncreditworthy text.

No marks were given for "better sound quality"; this was not precise enough. Candidates needed to refer to frequency response and signal to noise ratio to be credited.

Noticing that CD had a flat frequency response scored the most common mark. Some candidates went on to state that AAC had a reduced high frequency response.

Only the best handful of candidates scored decent marks by fully understanding what the graphs were showing and linking that to how the audio will sound in practice.

As it was designed to, this question differentiated across the higher grades successfully.

Question 5

This question has a range of editing, processing and effects-based tasks to cater for a wide range of candidate ability. Although all questions differentiated across the grade range, they were targeted at different ability levels. Question (a) was targeted at E candidates, (b) was targeted a little higher, gradually building until (e) which was aimed at A candidates.

Candidates should answer the questions and not add other creative panning, dynamic processing, EQ and effects not specified in the question. Otherwise full credit may not be given because the processing that the question asks for may not be clearly audible.

(a) The majority of candidates were successful at panning the synth riff. Some weaker candidates were a little sloppy with the placement of automation so the transients were not hard panned properly.

(b) This task was mostly successfully completed. The most common problem that candidates had was that the cut-off frequency either started too low, or was too slow to rise so the synth riff was not audible in bar 10.

(c) Candidates struggled with this question even though a lot of clues were given in question 3. Most students used some kind of tremolo or gating, but the rhythm was incorrect. The best students scored 3 marks with the correct rhythm. There were some unsuccessful attempts with chorus etc.

(d) I was very impressed that many candidates did this task correctly. There are several steps so it's quite tricky. Firstly, the candidate needed to work out what the pitch should be, and then re-pitch the word without introducing significant artefacts. Most candidates scored 3 for a correct re-pitching. There were many 0 for no attempt. A few re-pitched to the wrong note, or introduced a glitch on the edit point.

(e) This question was aimed at A/A* candidates. Therefore, it is expected that most candidates would be unsuccessful at completing it. Because this was quite an involved task, the paper gave clues in the bullet points to guide the candidates' listening to the example in bar 6-7. Ideally candidates would put a very long reverb on an aux send followed by a gate which is side-chained to the drums; the threshold would need to be adjusted so that a choppy rhythm in the reverb is generated. Candidates less than about a B grade did not score more than 1 mark for some kind of reverb added, or gating on the dry vocal ruining the mix balance. A few candidates correctly set up the side chaining reverb but still failed to score full marks because the rhythm wasn't as intricate as the example; the gate was only being triggered by the kick rather than the intricate rhythm of the other drums. Though not perfect, one candidate of the 22 candidates scored a full 6 marks, with a decent attempt at recreating the rhythm.

(f) The stems are deliberately mastered at wildly varying volumes to ensure that the candidate needed to listen (rather than look at fader positions) to earn credit. The best candidates that used their ears to balance all five parts achieved full marks. Many candidates had a tendency to leave the drums too quiet as in the original audio files.

(g) Unlike most years, tails were left intact this year. However, the main problem was candidates leaving 2 seconds (1 whole bar) at the start.

Question 6

It's important that the candidates write clearly, or use a word processor. There was one example where even after trying to decipher it, I couldn't read much of the writing so couldn't credit it.

There were two candidates who left this question blank even though the rest of the paper was quite good. Did they not see the question having completed their mix?

Also it was important to clearly state which guitar the candidate was discussing. There were a few examples where this wasn't stated or even implied so credited could not be given because some of the settings were opposite or different for the different guitars.

This question was designed to differentiate across all of the grades, including A*. E grade students tended to score about 4 marks. Only A students showed an intuitive understanding and scored more than 15 marks. Two candidates scored a full 20 marks. Similarly to 4(e), candidates are expected to apply their knowledge to an unfamiliar diagram/picture and extrapolate how it would sound.

The vast majority of candidates were able to score some AO3 credit by identifying the types of EQ used. One candidate regurgitated their revision by citing reams of gating theory but had little evaluation of how the guitars would sound so credit would be limited as explained in the opening paragraph of the mark scheme.

AO4 marks were awarded for describing the impact of the parameters on the sound, and the suitability of these settings in a mix. It was intended that some of the features of the mix required improvement, e.g. the gate threshold on the rhythm guitars which would yield silence! Only a few students noticed this. Many students confused gating with compression, thinking that the gate was a compressor.

There was much incorrect terminology with the parametric EQs. Many candidates incorrectly referred to these as a notch filter or BPF.

Noting that the guitars were hard panned resulting in a wide stereo picture was the easiest AO4 mark to score.

Very few candidates commented on the routing, e.g. insert order, reverb as inserts.

The best responses discussed the merits of opposite EQs on the different guitars, correctly described how the gating would sound and commented on the suitability of the reverb.