Mark Scheme (Results)

Summer 2018

Pearson Edexcel GCE
In Music Technology (6MT04) Paper 01

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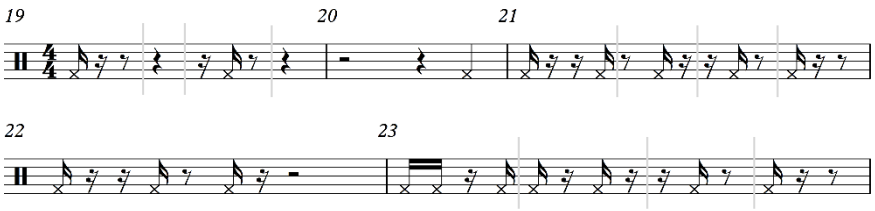
Summer 2018
Publications Code 6MT04_01_1806_MS

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.

Question Number	Question	Mark
1(a)	Identify the most appropriate quantise value for the chords.	1
	Acceptable Answers	
	B 1/16	

Question Number	Question	Mark
1(b)	Identify the term that best describes the change in the cutoff frequency between bars 27-30.	1
	Acceptable Answers	
	B Crescendo	

Question Number	Question	Mark
1(c)	Notate the chords rhythm in bars 19-23. Bar 22 has been given as an example.	4
	Acceptable Answers	
	 1 mark per correct bar	

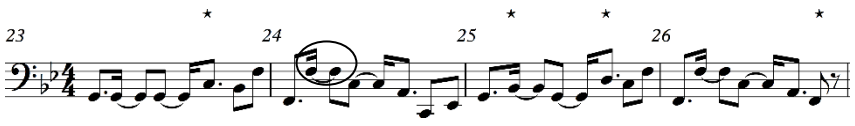
<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>1(d)(i)</td><td>Identify the settings that have been used.

Acceptable Answers

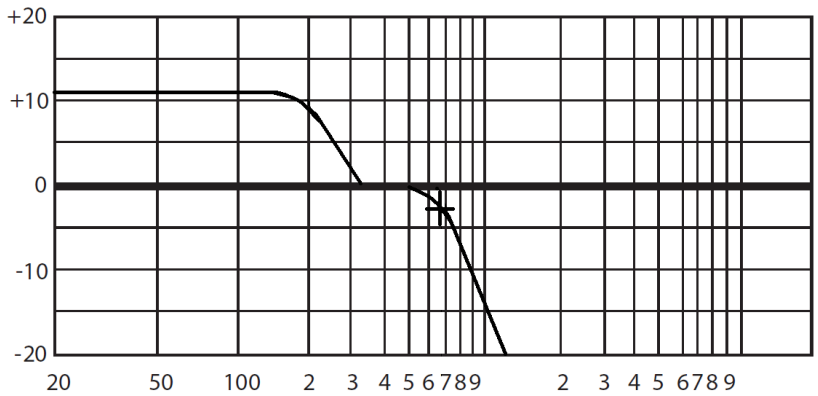
<table>
<tr><th>Control</th><th>Setting</th></tr>
<tr><td>Time (note value)</td><td>Quaver / 8 (1)</td></tr>
<tr><td>Feedback (%)</td><td>Accept 30-70 (1)</td></tr>
<tr><td>High cut (Hz)</td><td>Accept:
800-5000
OR
0.8k-5k (1)</td></tr>
</table>
</td><td>3</td></tr>
</table>

Question Number	Question	Mark
1(d)(ii)	The wet signal has a wider stereo field. Describe how this has been achieved. Acceptable Answers <u>Slight</u> difference in (1) delay time (1) (in left and right channels). Ping pong / panning left and right / different panning / crossfeed (1). Allow: Stereo spreader / stereo width plug-in / stereo imager / increase the spread/width knob (1) different EQ (1) different phase (1) different pitch (in left and right channels) (1).	2

Question Number	Question	Mark
1(e)	In bars 2-5 a pre-fade auxiliary send has been used to apply reverb. Explain how you can tell the auxiliary send is pre-fade rather than post-fade. Describe the effect it creates. Acceptable Answers The dry signal fades in / no dry sound at the start (1). With a pre-fade send, the wet signal remains constant (1) because the position of the fader does not affect the aux send amount (1). With a post-fade send, dry and wet signal fade together (1). It sounds like the chords are getting closer (1), (rather than just getting louder).	4

Question Number	Question	Mark
2(a)	Bars 23-26 of the bass part are notated below. (i) Fill in the four missing pitches (each marked by an asterisk). (ii) Circle the note on the score that has pitch bend	5
	Acceptable Answers	
		

Question Number	Question	Mark
2(b)	Describe the tremolo added to the bass in bar 18.	3
	Acceptable Answers	
	Fluctuation of volume (1) LFO (1) Square wave / no smoothing / symmetry on 50% (1) 16s / semiquavers (1) Full depth / depth 100% / cuts to silence / gated (1) Mono / 0 spatial / 0 phase (1)	

Question Number	Question	Mark
2(c)	EQ has been applied to the bass. On the graph below, illustrate the two EQ curves used on the bass: (i) Label the two axes. (ii) Draw the low shelf EQ. (iii) Draw the low pass filter. (iv) On the curve you have drawn for part (iii), draw a cross to indicate the low pass filter cutoff frequency.	9
	Acceptable Answers	
	(i) Frequency/Hertz/Hz (1) Amplitude/magnitude/volume/dB/gain (1) (ii) **Curve:** Low shelf boost. (1) **Gain:** boosts between 5-20dB (1) **Frequency:** Mid point of slope 100Hz and 400Hz.(1) Max 1 if any additional cuts below 0dB (iii) **Curve:** LPF (1) **Slope:** LPF is steep, not vertical curve that is steeper than 45º AND hits -20,with no resonance (1) (don't allow HPF) **Frequency:** LPF starts on x-axis 150-900Hz but must be higher than the low shelf (1) Max 1 if any additional boosts above 300Hz. (iv) Cutoff marked between -1dB and -5dB on the filter (for part (iii)) curve (1). Allow correct cutoff if part (iii) is incorrect.  	

Question Number	Question	Mark
3(a)	Identify the lowest note velocity in the MIDI file.	1
	Acceptable Answers	
	4	

Question Number	Question	Mark
3(b)	The notes in the MIDI file have been assigned to the incorrect sounds. Using an electronic drum kit, assign the notes to the sounds listed below to form an electronic dance music drum part. You should not change the rhythm. • Kick drum • Clap • Closed hi-hat • Open hi-hat • Crash cymbal	5
	Acceptable Answers	
	1 mark for each correctly assigned drum sound that plays the correct rhythm, in sync throughout. Max 3 if there are additional drums. Max 4 if the kick, hats and crash are acoustic. Max 4 if the kit is unbalanced. Max 4 if the kick and clap are off centre. If the drums are not soloed, or metronome is switched on, then assess what can be heard clearly.	

Question Number	Question	Mark
3(c)	Complete the vocal part for bars 19-22: • Use the "duh" vocal syllable heard in bar 19. • Bars 19-22 must have the same melody and rhythm as bars 6-9. • The melody and rhythm are shown in the piano roll editor below.	8
	Acceptable Answers	
	Listen to 0:45. **Pitch and rhythm:** Bar 20: Correct rhythm (1). Both Fs (1) G (1) A (1) Bar 19 and 21 are the same as the original bar 19 AND bar 22 is the same as bar 20 of candidate's work except the final note is missing (1). **Sample editing:** The beginning of the sample is clean: it has been edited with no clicks, has not been cut off and no timing issues due to the edit not being tight (1). The end of the sample: it has been edited correctly with the reverb tail intact (allow added reverb if similar to the original audio) (1). The timbre the same as the original sample: the formant is correct / no intrusive artefacts (including the reverb tail) / no change of level (1). If not soloed, then assess pitch and rhythm but not sample editing. When vocals are not sampled and re-pitched award 1 for an unsuccessful attempt: • if the melody is copy and pasted from bar 6 or 19. • if the correct melody is on a MIDI sound. • if other parts of the vocal are affected by pitch processing.	

Question Number	Question	Mark
4(a)	The following is a quote from Peter Franco & Mick Guzauski, the recording and mixing engineers who worked on the *Random Access Memories* album by Daft Punk: *"We were doing lots of tests with analogue tape… We wanted to see what the different combinations did; what and how tape could get us certain sounds… We recorded [parts] both to analogue [tape] and directly to Pro Tools [digital audio workstation], and later loaded the tape material in the same Pro Tools sessions, so we could choose what we liked the best… The analogue and digital versions were very similar but subtly different."* Describe how the analogue tape and digital recordings would sound different. Explain why editing in a digital audio workstation is preferred to editing using analogue tape.	16
	Acceptable Answers	
	In this mark scheme, italics mean that the mark should not be credited multiple times. Underlined technical terms must be spelt correctly. **Signal to noise ratio.** Analogue tape: Lower dynamic range (1). Hiss (1). Reduced by using Dolby (1), boosts high frequencies during recording (1) and attenuates them on play back (1). Digital: Better signal to noise ratio / less noise (1). Bit depth (1) 16/20/24 (1). More bits gives better the signal to noise ratio (1). Each bit gives (approximately) 6dB higher signal to noise ratio (1). Credit graph of digital waveform showing steps (1). **Frequency response.** Analogue tape: Continuous waveform (1). Credit graph of analogue waveform which compares smoothly to digital (1). Warm (1). *Reduced high frequency response (1).* Reduced transient response (1). Digital: *Flat frequency response (1).* Sample rate (1) of 44.1 / 48 / 88.2 / 96kHz (1). The higher the sample rate, the higher the frequency response (1).	

	Distortion. Harmonic distortion / adds overtones / increases HF content (1). Analogue tape: Non-linear response to amplitude (1) gives a soft / subtle compression (1). Saturation (1). Distortion is gradual / soft clipping (1). Credit graph of soft clipping (1). *Sounds less harsh / desirable distortion (1).* Digital: Hard clipping (1). Credit graph of hard clipping (1). *Harsh distortion / unwanted distortion (1).* **Other attributes of analogue tape:** Bleed / crosstalk (1). Every time the tape is played, quality reduces / deteriorates over time (1). Wow and flutter (1) slight variations in pitch and speed (1). Print through (1) which is where the music is heard as an echo before it should play (1). Better sound quality with higher tape speed (1). **Other attributes of digital:** Quicker / cheaper / possible to transmit via internet / home studio / back up / easy to save (1). **Editing:** Comping / compiling / compositing (1), accept description of comping (1). Analogue tape (credit DAW opposites): Razor blade and splicing tape / cut up tape (1), diagonally for a cross fade (1). All tracks would need have same edit point / couldn't edit tracks individually (1). Bouncing (1) reducing sound quality / because adds noise / reduces high frequencies (1). Cueing tape takes longer (1). Digital: More tracks / takes (1). Non-destructive / undoable (1). Copy and paste (1). Crossfades / automation (1). DAW allows user to edit and mix simultaneously (1). Flex time / audio quantise (1) tightens up timing (1) works best with percussive / rhythmic parts / parts with clear transients (1). Flex pitch / melodyne / correcting pitch errors (1) draw correct pitches on screen (1). Clicks/glitches can be edited out by re-drawing the waveform (1).	

Question Number	Question	Mark
4(b)	Figure 1 shows a selection of leads. Identify and explain features and applications of these leads.	16
	Acceptable Answers	
	In this mark scheme, italics mean that the mark should not be credited multiple times. Underlined technical terms must be spelt correctly All comments must relate to the correct cable in order to gain credit.. The **bold** name of the cable can only be credited if it's clearly linked to a picture. **All cables:** Coaxial (1) shield / sleeve (1) is ground/earth (1) to reduce interference (1) . Signal loss over long runs (1). **(i) ¼ inch / 6.3mm / Jack / TS (1)** Guitar / line / DI box input / accept any other valid application (1) *Analogue / analog (1)* *Mono (1)* *Unbalanced (1) so prone to hum (1)* Tip (1) carries the signal (1). **(ii) Phono / RCA (1)** Hi-fi / CD players / DJ mixers / accept any other valid application (1) *Analogue / analog (1)* *Mono (1)* Stereo if there are two cables (1) white/black is left, red is right (1) *Unbalanced (1) so prone to hum/interference (1)* *Also used for digital audio (1)* SPDIF (1) *connecting DAT / Digital Audio Tape / CD audio / PCM / audio interfaces (1) sample rate of 44.1kHz / 48kHz (1).* Also compressed / AC3 / digital audio for DVD / surround (1).	

	(iii) <u>XLR</u> / <u>Cannon</u> (1) <u>Male</u> and <u>female</u> (1). Signal flows from male to female (1). 3 pins: <u>Positive, negative and ground</u> / <u>Hot, cold and neutral</u> (1). Microphones / balanced line level / output of a DI box / accept any other valid application (1) not just 'mixing desk'. *<u>Analogue</u> / <u>analog</u> (1)* *<u>Mono</u> (1)* <u>Balanced</u> (1*) so less noise (1)* over long runs (1). Description of balanced signals: The signal is split into two copies of the signal (1) one positive, one negative / out of phase (1). When noise is introduced in the cable, it's in the same phase in both signals (1). When these are combined the phase is reversed on one signal so that both signals are in phase again (1) so the noise cancels out (1). Carries phantom power / 48V (1) for condenser mics / active DI boxes (1) credit valid description of how this works (1) *Also used for digital audio (1)* AES (1) *connecting DAT / Digital Audio Tape / CD audio / PCM / audio interfaces (1) sample rate of 44.1kHz / 48kHz (1).* Daisy-chained (1). Locking mechanism (1). **(iv) <u>MIDI</u> (1)** Musical Instrument Digital Interface (1) Used to connect synthesisers / accept any other valid application (1) not just 'audio interface'. 5 pin <u>DIN</u> (1) Digital data / not audio (1) Accept any MIDI data command e.g. note on, controller, pitchbend (1). In / out (1). <u>Thru</u> (1) produces a copy of the input (1) so equipment can be <u>daisy-chained</u> (1). Superseded by USB (1). Credit references to 1970s consumer audio leads (1).	

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(a)</td><td>Apply automated panning to the chords.
Only bars 6-9 should be affected; all other bars should panned to the centre.
Bars 6 and 7 should be panned hard left.
Bars 8 and 9 should be panned hard right.
Acceptable Answers<table><tr><th></th><th>Management & control of the chords panning automation</th></tr><tr><td>3</td><td>L – R as directed</td></tr><tr><td>2</td><td>R – L
OR
C – R
OR
L – C
OR
Audible moving panning of chords
OR
Not hard panned similar to D.
OR
Glitch / click on the edit</td></tr><tr><td>1</td><td>Erratic panning
AND/OR
Chords panned in a single position other than centre.
AND/OR
The chords do not reset to centre in bar 10.
AND/OR
Chords panned but other parts panned noticeably off-centre</td></tr><tr><td>0</td><td>There is no audible panning automation.
OR
No mix present on CD.</td></tr></table></td><td>3</td></tr>
</table>

Question Number	Question	Mark
5(b)	Apply a gate to the vocals to remove the hiss.	**3**
	Acceptable Answers	

	Management & control of vocal gating. Ungated hiss will be most audible in the intro, at 0:40 when bass is soloed, 1:11 at the end.
3	Hiss removed with no vocals cut.
2	Chattering gate, e.g. 0:40
1	Intrusive gating cutting some words OR Not all of the noise has been gated
0	There is no audible gating. OR No mix present on CD.
	Max 1 if the parts are out of sync intro, 0:40, and 1:11 aren't all assessable.

Question Number	Question	Mark
5(c)	Apply a filter to the vocals. • Use the filter type as heard in bar 24. • Only bar 26 should be affected.	**3**
	Acceptable Answers	

	Management & control of the vocal HPF
3	A HPF with a cut-off frequency of 1000Hz has been applied in bar 26. The remainder of the vocals are unaffected by the HPF.
2	A filter has been applied in bar 26 that gives a tinny tone with LF removed but: the cut-off frequency is incorrect AND/OR there is an audible glitch / volume change
1	Resonance approaching self-oscillation OR Wrong EQ or filter type OR Other phrases of the vocals are affected by the filter / EQ. OR Not all of bar 26 is filtered / EQ'ed AND/OR EQ added to vocals but some intrusive EQ added on any track.
0	There is no audible filter / EQ in bar 26 on the vocal track. OR No mix present on CD.

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(d)</td><td>Apply a 1.5s reverb to the chords.
Only bars 31-36 should be affected.
Recreate the reverb and fade effect from bars 2-5, but with the dry signal fading out instead of fading in.
Acceptable Answers
<table>
<tr><th></th><th>Application of reverb on the chords</th></tr>
<tr><td>3</td><td>The dry signal of the chords fades to nothing through bars 31-36 whilst the reverb remains constant. The reverb level and type matches previous bars.</td></tr>
<tr><td>2</td><td>Reverb is added in bar 31 and there is some change between the wet/dry balance.
OR
As 3 marks, but reverb affects other bars.</td></tr>
<tr><td>1</td><td>There is a fade but the reverb fades with the chords.
AND/OR
Reverb is added to bars 31-36 but there is no fade in the dry signal.
AND/OR
Reverb added to chords but some intrusive effects added on any track.</td></tr>
<tr><td>0</td><td>No evidence of reverb being applied to the chords.
OR
No mix present on CD.</td></tr>
</table></td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(e)</td><td>Balance the mix.
• Ensure that all of the tracks can be heard clearly.
Acceptable Answers
On CD ROM:
• vocals loudest
• chords mid volume
• bass quietest
• drums are MIDI
<table><tr><td></td><td>Balance and blend</td></tr><tr><td>3</td><td>Balanced and blended across all parts of the mix. Vocals sit on top of mix and bass is equal or louder than candidate C.</td></tr><tr><td>2</td><td>Most tracks are balanced with some masking. A few misjudgements, e.g. bass under / drums under</td></tr><tr><td>1</td><td>Balanced so that one track is barely audible. E.g. bass is <= ‘2018 MS task 3 unbalanced’.
OR
Not all of a track present affecting balance
OR
Additional tracks.
OR
Erratic volume changes.</td></tr><tr><td>0</td><td>No mix on CD
OR
Not all tracks present</td></tr></table>Ignore previously assessed work e.g. vocal gating; incomplete vocal between 19-22; drum internal balance.</td><td>3</td></tr>
</table>

<table>
<tr><th>Question Number</th><th>Question</th><th>Mark</th></tr>
<tr><td>5(f)</td><td>Produce a final stereo mix.
Ensure that the mix output is at as high a level as possible.
It should be free from distortion.
Do not limit or compress the mix output.
Ensure that the beginning and the end of the music are not cut off.
Ensure that silences at the beginning and end do not exceed one second.</td><td>3</td></tr>
<tr><td></td><td>Acceptable Answers

<table><tr><td></td><td>Presentation of mix</td></tr><tr><td>3</td><td>Beginning and end of mix does not cut out music or reverb tail. The beginning and end have less than 1 second
of silence. The mix output should be near normalised with no distortion.</td></tr><tr><td>2</td><td>Beginning and end of mix does not cut out.
The beginning or end has a silence of greater than 1 second.
OR
The mix output is too low OR there is some slight distortion
OR
Cut reverb tail</td></tr><tr><td>1</td><td>Obviously chopped start or ending (not including tails).
OR
The mix output is unacceptably low or high (distorted).
OR
Excessive use of mix compression causes pumping
OR
Metronome has not been turned off.
OR
Any part is noticeably out of sync / out of tune / not present

IGNORE previously assessed work:
Drum rhythm / drum sounds / vocal in bars 19-22</td></tr><tr><td>0</td><td>No mix present on CD.</td></tr></table></td><td></td></tr>
</table>