NCFE Level 3 Applied General Certificate in Music Technology (601/6779/8)

Assessment date: 12 June 2019

Mark Scheme

This mark scheme has been written by the Assessment Writer and refined, alongside the relevant questions, by a panel of subject experts through the external assessment writing process and at standardisation meetings.

The purpose of this mark scheme is to give you:

- examples and criteria of the types of response expected from a learner
- information on how individual marks are to be awarded.

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all learners, who must receive the same treatment. You must mark the first learner in exactly the same way as you mark the last.

- The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.
- Reward learners positively, giving credit for what they have shown rather than penalising for what they might have omitted.
- Utilise the whole mark range and always award full marks when the response merits them.
- Be prepared to award zero marks if the learner's response has no creditworthy material.
- Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.
- The marks awarded for each response should be clearly and legibly recorded in the grid on the front of the question paper.
- If you are in any doubt about the application of the mark scheme, you must consult with a senior Examiner.

Guidelines for using level of response marking grids

Level of response marking grids have been designed to award a learner's response holistically and should follow a best-fit approach. The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

When determining a level, you should use a bottom-up approach. If the response meets all the descriptors in the lowest level, you should move to the next one, and so on, until the response matches the level descriptor. Remember to look at the overall quality of the response and reward learners positively rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best-fit approach at this stage, and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. Standardisation materials, marked by senior Examiners, will help you with determining a mark. You will be able to use exemplar learner responses to compare to a live response, to decide if it is the same, better or worse.

You are reminded that any indicative content provided is there as a guide, and therefore you must credit any other suitable responses a learner may produce. It is not a requirement either, that learners must cover all of the indicative content to be awarded full marks.

Qu	Marking guidance	Total marks

Section 1 **Total for this section: 10 marks**

1	**Which one of the following terms best describes the function of the last 8-bit byte of the MIDI Note-on message shown in Figure 1?** Answer: D (Velocity) (1)	1

2	**Identify two peripheral devices that could be connected to the MIDI IN connector shown by the arrow in Figure 2.** Award one mark for any correct device up to a maximum of two marks. Accept any MIDI controller device eg: • Keyboard • Synthesiser • Drum Machine • Surface Controller Do not accept Guitar or audio source unless MIDI pickup is stipulated. Accept other reasonable responses.	2

3	**Explain one advantage of using real-time MIDI input over step-time input when recording a performance.** Award one mark for a correct advantage and one mark for explanation, eg: • Allows for small timing variations (1) for a more natural (also accept 'human') performance (1). • Allows for small velocity variations (1) for a more natural performance (1). • If you can play keyboard, it is quicker (1) for capturing a complex performance (1). Accept other reasonable responses.	2

4	**What effect has been applied to the drums between 00:33 and 00:45 in Audio File Section 1?** Answer: Reverb (1).	1

5	**Explain how one Digital Audio Workstation (DAW) arranging feature has been used to alter the music between 00:33 and 00:45 in Audio File Section 1.** Award one mark for any correct feature and one mark for an explanation, eg: • Time signature change (1) From 3/4 to 4/4 (1). • Tempo changes (1) Decreasing BPM followed by an increase BPM (1). Accept other reasonable responses.	**2**

6	**A producer is preparing to export Audio File Section 1 to an MP3 format. Explain one audible disadvantage of exporting audio as an MP3 format file.** Award one mark for a correct disadvantage and one mark for explanation, eg: • High frequency sounds are affected (1) as data is removed due to compression (1). • High frequency sounds gain 'washy' artefacts (1) as data is removed due to compression (1). • Transient sounds can gain pre-echo (1) as data is removed due to compression (1). Accept other reasonable responses.	**2**

Section 2 **Total for this section: 10 marks**

7	**Which one of the following terms best describes the length of the note shown by the arrow in Figure 3?** Answer: D (Semi-quaver) (1).	**1**

8	**Identify the chord shown by the arrow in Figure 4.** Award one mark for correct chord and one mark for correct extension: • D minor (1) 7 (1).	**2**

9	**Describe how the introduction of new instrumentation affects the texture of the music at 00:59 of Audio File Section 2.** Award one mark for identifying the change and one mark for describing the effect on texture, eg: • String instrumentation is added (1) which creates a thicker texture (1). • Homophonic (1) string instrumentation is added(1). • String instrumentation is added (1) the strings feature parallel motion (1). Also any valid response including references to classical music textures (1). Accept other reasonable responses.	**2**

10	**Identify the structure of the song in Audio File Section 2.** Answer: ABC (1). Accept other reasonable responses.	**1**

11	**Explain how the rhythm of the electric guitar part changes at 00:29 in Audio File Section 2.** Award one mark for explaining the change and one mark for a reasonable expansion, eg: • Changes from being syncopated (1) to being on the beat (1). Accept any other reasonable responses.	**2**

12	**The organ melody heard from 00:00 to 00:28 in Audio File Section 2 is a phrase repeated four times with a variation in the final two repetitions.** **Explain how the changing melody of the organ affects its melodic relationship with the background electric piano chords.** Award one mark for identifying the change and one mark for explaining the effect, eg: • The key of the melody changes from minor to major (1) which clashes with the underlying minor chords (1). Accept any other reasonable responses.	**2**

Section 3 **Total for this section: 20 marks**

13	**The microphone being used on the snare drum in Audio File Section 3 is capturing a lot of unwanted spill from the other parts of the drum kit. Identify an appropriate microphone polar pattern that would reject unwanted sound sources.** Award one mark for any correct device up to a maximum of one mark, eg: • Hyper-Cardioid • Cardioid • Rifle (accept shotgun) Accept other reasonable responses.	**1**

14	**Which one of the following statements best describes the term over-dubbing?** Answer: B (Recording additional versions of the same musical part) (1).	**1**

15	**The vocal in Audio File Section 3 has a noticeable balance issue. There is a lot of sibilance (emphasis of 't' and 's' sounds) when certain words are sung. Explain how the Frequency and Q controls in Figure 5 would be used to reduce the sibilance.** Award one mark for explaining how the control could be used and one mark for a reasonable expansion, up to a maximum of two marks for each control and four marks in total, eg: **Frequency:** • Sweep the frequency control (1) to find the problem area (1). • Set the frequency control to a frequency between 1kHz>14kHz (1) as this is the typical frequency range for sibilance issues (1). **Q Control:** • Tighten Q value (1) to narrow filter to problem frequencies only (1). • Q-factor should be set to a value higher than (1) so that only sibilant frequencies are removed (1). Accept other reasonable responses.	**4**

16	**A band called The Flaming Fretboards have plugged a condenser microphone into the MIC input of their audio interface to record vocals. The microphone is not producing any output. Explain how you would resolve the output problem by changing one of the settings shown in Figure 6.** Award one mark for identifying correct setting and one mark for an explanation, eg: • Condenser microphones require electrical power to work (1) phantom power (48V) needs to be switched on (1). • Turn 48V on (1) in order to provide electrical power to the condenser microphone (1). Accept any other reasonable responses.	**2**

17	**The Flaming Fretboards have multi-track recordings made on analogue tape. They have decided to create digital backup copies of these recordings. Explain one advantage of transferring analogue tape recordings to digital hard disk recorders for long-term storage.** Award one mark for an advantage and one mark for an explanation, eg: • Hard disks are less prone to signal degradation over time (1) unlike tape which are more prone to humidity and temperature (1). • Analogue tapes can create artefacts such as pre-echo, when stored for a long time (1) hard disks do not suffer from pre-echo. (Also accept - or post echo in the event of a tail-out recording) (1). • Once in the digital domain, further copies or playback of audio tracks will be identical (1) unlike tape, where variations such as signal degradation, machine motor speed, wow, flutter etc. cause each copy to sound different (1). Accept any other reasonable responses.	**2**

18 **The producer of The Flaming Fretboards often uses a laptop DAW system. Evaluate the impact of portable DAWs on the recording industry in the 21st century.** **10**

Band	Marks	Description
5	9–10	Excellent. **Functions and concepts** Knowledge of a broad range of relevant concepts and functions in relation to the impact of portable DAWs on traditional recording practice. **Terminology** Terminology and technical language is used appropriately and correctly throughout. **Conclusion** Conclusions are detailed and supported by appropriate theory. **Coherence and clarity** Response is coherent and clear throughout.
4	7–8	Very Good. **Functions and concepts** Knowledge of a range of relevant concepts and functions which relate to the impact of portable DAWs on traditional recording practice. **Terminology** Terminology and technical language is used appropriately and correctly with occasional minor errors or omissions. **Conclusion** Conclusions are valid and supported by some valid theory. **Coherence and clarity** Response is generally coherent and clear.
3	5–6	Good. **Functions and concepts** Knowledge of a range of concepts and functions however some may not always be relevant and some references to DAWs in general, rather than focusing on portable systems and the impact they have had on traditional recording practices.

				Terminology Terminology and technical language is used occasional errors or omissions. **Conclusion** Conclusions are limited and supported by some theory. **Coherence and clarity** Response is not always clear and may not be structurally coherent.		
		2	3–4	Inconsistent. **Functions and concepts** Knowledge of some broad references to concepts but not specific to portable DAWs. **Terminology** Terminology and technical language is inconsistently used. **Conclusion** Conclusions are limited and not supported by theory. **Coherence and clarity** Response is not clear or structurally coherent.		
		1	1–2	Limited. **Functions and concepts** Little reference to functions or concepts. **Terminology** Terminology and technical language is largely absent from candidate response. **Conclusion** No valid conclusion drawn. **Coherence and clarity** Response is inaccurate or extremely limited in detail and coherence.		
			0	No rewardable material. No response or response inappropriate.		

	Indicative content • Cost of portable DAW equipment; how it has fallen in price, leading to more DIY production and less business for recording studios. • Simplification of technology of hardware (ease of use), increasing accessibility of industry at the expense of professional engineers/producers (and their businesses). • Increase of quality of cheaper hardware/equipment (microphones, mixing desks etc). Cheap hardware being much more competitive with pro-studio hardware. • Less emphasis on critical listening environments – good headphones/preamps negate the use of a critical listening environment to make mix decisions. • Less emphasis on critical recording environments – use of post-recording processing to tune-up or fix recordings undertaken in poorer environments. • High quality mobile recording DAWs can be set up in specialist venues easily (eg orchestral work in concert halls), rather than requiring orchestras to set up in large recording studios. • Improvements in hardware emulation (eg preamps) somewhat negates the requirement to access large-scale recording hardware, as typically found in recording studios. • No (or less) costs associated with studio hire. Less time pressure to get things right – f artists are less bound by pressure, they can begin to use portable DAW solutions as more of a creative bridge between pre- and post-production. • Portable DAWs facilitate cheap pre-production, allowing artists to be better prepared when entering a recording studio for the production stage (tracks partially complete etc). • As more people shun recording studios for portable DAW solutions, studios are progressively starting to shut down, resulting in a potential loss of quality/good practice from studio-based producers and engineers. • Portable DAWs allow producers to take ownership of the entire recording/production process with less/no outside interference from record companies or other producers. This allows for more creative freedom on the part of the producer/composer. • Portable DAWs allow musicians to get involved in the production process, allowing them to take control over the entire process.	

Section 4 **Total for this section: 20 marks**

19	**Sound can be produced using various different types of synthesis. Identify three characteristic features of FM synthesis.** Award one mark for each correct response up to a maximum of three marks, eg: • Production of Inharmonic (sideband) sounds (1) (also accept 'bell-like'). • Use of modulators on a carrier frequency (1). • Frequency modulated by carrier (1). • Complex (1) (operation). • Digitally generated (1). Accept any other reasonable responses.	**3**

20	**The bit-depth of the drums has been reduced from 00:27s onwards in Audio File Section 4. Describe how the reduced bit-depth affects the drum part.** Award one mark for a description and one mark for a reasonable expansion, eg: • Reducing the bit-depth reduces the dynamic range (1) which leads to increased distortion (1). Accept any other reasonable responses.	**2**

21	**Identify the type of filter that has been applied across the whole mix between 00:24 and 00:26 of Audio File Section 4.** Answer: B (High-pass filter) (1).	**1**

22	**Explain how two envelope settings have been audibly manipulated on the synth part at 00:40s of Audio File Section 4.** Award one mark for explaining how each setting has been manipulated and one mark for a reasonable expansion, up to a maximum of four marks, eg: • The envelope attack has been increased (1) leading to a longer rise-time in the synth notes (1). • The envelope release has been increased (1) leading to increased time taken for sound to fade (1). Accept any other reasonable responses.	**4**

23 **Audio File Section 4 features a sampled acoustic drum kit. Evaluate the processes and equipment required to prepare and sample an acoustic drum kit.** **10**

Band	Marks	Description
5	9–10	Excellent. **Functions and concepts** Knowledge of a broad range of relevant concepts and specific functions in relation to audio editing tools and sampling. **Terminology** Terminology and technical language is used appropriately and correctly throughout. **Conclusion** Conclusions are detailed and supported by appropriate theory. **Coherence and clarity** Response is coherent and clear throughout.
4	7–8	Very Good. **Functions and concepts** Knowledge of a range of relevant concepts and functions which relate to specific audio editing tools and sampling. **Terminology** Terminology and technical language is used appropriately and correctly with occasional minor errors or omissions. **Conclusion** Conclusions are valid and supported by some valid theory. **Coherence and clarity** Response is generally coherent and clear.
3	5–6	Good. **Functions and concepts** Knowledge of a range of concepts and functions however some may not always be relevant and specific. **Terminology** Terminology and technical language is used occasional errors or omissions. **Conclusion**

				Conclusions are limited and supported by some theory. **Coherence and clarity** Response is not always clear and may not be structurally coherent.		
		2	3–4	Inconsistent. **Functions and concepts** Knowledge of some broad references to concepts but not specific audio editing or sampling. **Terminology** Terminology and technical language is inconsistently used. **Conclusion** Conclusions are limited and not supported by theory. **Coherence and clarity** Response is not clear or structurally coherent.		
		1	1–2	Limited. **Functions and concepts** Little reference to functions or concepts. **Terminology** Terminology and technical language is largely absent from learner response. **Conclusion** No valid conclusion drawn. **Coherence and clarity** Response is inaccurate or extremely limited in detail and coherence.		
			0	No rewardable material. No response or response inappropriate.		

Indicative content

- Ensure drum kit is tuned correctly prior to recording.
- Ensure drum hardware is free of rattles.
- Creation/sourcing/recording of audio files which span a range of drum kit parts.
- Using multiple samples to recreate changes in performance volume

	• Use of multiple samples to recreate changes in texture (hitting a ride cymbal on the edge, vs the bell etc). • Ensuring audio files recorded have sufficient headroom and are not clipped • Ensuring files are trimmed neatly to prevent unnecessary silences/prolonged sample length. • Ensuring all trimming occurs at zero-crossing points on waveforms to prevent clicks and pops. • Use of short (<30ms) quick fades to prevent clicks and pops. • Use of EQ, compression and other effects (if required) to increase quality of the recorded sounds prior to sampler import. • Ensuring bounced sample files are of an appropriate format – could justify higher quality settings vs low RAM memory requirements etc as long as they provide effective justification "I have chosen to bounce my files down as 44.1kHz, 16-Bit PCM format, instead of 192kHz, to prevent my sampler patch being too dependent on RAM (memory). • Panning of audio to represent stereo image (toms, overheads etc). • Specific application of zones or groups, for example linking a closed hi-hat to open hi-hat so that one overrides the other. • Use of 'one-shot' to ensure complete audio file is played back on trigger • Ensure different velocity layers have no gaps, nor crossover, causing unwanted double sample.	

Section 5 **Total for this section: 10 marks**

24	**You have been asked to create a technical plan for The Flaming Fretboards' next tour. You can choose passive or active stage monitors. State one advantage of using passive stage monitors.** Award one mark for any valid response, up to a maximum of one mark, eg: • Lighter. • Easier to repair (than active monitors). • All adjustment and control is by the sound engineer. • Can be paired with amplifiers of engineers choice. • Do not require additional onstage power supply. Accept any other reasonable responses.	**1**

25	**Which one of the following activities would you not expect to take place at a technical rehearsal?** Answer: A (Learning the musical parts) (1).	**1**

26	**The Flaming Fretboards are considering touring with a drum machine instead of a drummer. Identify one advantage and one**	**2**

	disadvantage of a rock band using a drum machine for live performances. Award one mark only for any valid advantage, eg: • Easier (accept faster) to set up. • Easy to link to compatible equipment. • Sync with MIDI/USB. Award one mark only for any valid disadvantage, eg: • Loss of energy. • Stylistic disadvantage. • Ability to improvise around changing musicians lost . Accept any other reasonable responses.	

27	**The guitarist in the Flaming Fretboards likes to move around the stage during performances and is often situated far from her backline amplification. The amplifiers are already set to full, but the guitarist can't hear her backline when she is on the other side of the stage. Describe one way to make sure the guitarist can hear herself evenly across all of the stage area.** Award one mark for description and one mark for a reasonable expansion, eg; • A side-fill could be situated at the side of the stage (1) ensuring coverage across all of the stage area (1). • In-Ear monitors (1) to allow discrete monitoring for the guitarist (1). • A network of floor monitors (1) with the monitor engineer (live sound engineer) sending the guitar foldback to the nearest floor monitor (1). • Additional stereo guitar cabinet on stage side/downstage (1) to provide more coherent coverage (1). • Use of a sound check where all backline volumes are set (1) to ensure that all musician's backlines are set at an appropriate level (1). • Use of a volume pedal (1) which could be used to boost backline volume when a guitarist is far from the amplifier (1). • Additional guitar speaker cabinets (1) wired in parallel to the same amplifier avoid a level drop (1). • Backline could be raised in height (put on a guitar amp stand) (1) to provide greater coverage at ear height (1). Accept any other reasonable responses.	**2**

28	**A DJ will be performing between The Flaming Fretboards' two sets every night on the tour. Explain one advantage and one disadvantage of a DJ using only CD decks during an event.** Award one mark for an advantage and one mark for a valid expansion, eg: • Increased quality of CD format (1) through high frequency response/dynamic range (1) (also accept comparison against another format of lesser quality – i.e. streaming). • CDs are reliable (1) less prone to skipping (1) than vinyl or streaming (buffering). • CDJ takes up a smaller stage footprint than turntables (1) which makes it quicker to set up in between the band's sets. (1). Award one mark for a disadvantage and one mark for a valid expansion, e.g.: • Limited library of music (1) inability to facilitate requests (1) • Has to carry a large collection of CDs and CDJ equipment (1) which could be harder to carry/set up (1). Accept other reasonable responses.	**4**

Section 6 **Total for this section: 10 marks**

29	**The Flaming Fretboards have distributed their music across multiple streaming services. Which two services have generated the most income for the band?** Answer: B (Jungle Music) (1). Answer: E (Topaz Streaming) (1).	**2**

30	**Many bands now choose to distribute their music online instead of using traditional physical formats. Explain one disadvantage of distributing physical products (for example, CD or vinyl) rather than using online digital distribution.** Award one mark for identification of a disadvantage and one mark for explanation, eg: • Higher costs (1) of producing physical products (1). • Higher costs (1) to store physical products (1). • Higher costs (1) of posting/transporting products to consumers (1). • CDs (if posted) aren't available immediately (1) which means it takes longer for consumers who have to wait (1). (Credit reversal to streaming/downloads – instant access, unlike CDs which have to be bought and shipped). Accept other reasonable responses.	**2**

31	**The Flaming Fretboards have decided to release a music video on YouTube before their album is distributed. The video release date is two months before the album release. Explain one possible disadvantage of releasing the video at that time.** Award one mark for identification of a disadvantage and one mark for explanation, eg: The time provided is too long (1) which may lead to a loss of interest prior to the album release (1) **or** which may lead to the song being pirated (sourced illegally), as it is not available for legitimate purchase (1). Accept other reasonable responses.	**2**

32	**The Flaming Fretboards think they might release audio previews of their album. These previews will feature small excerpts from each song. Explain how the audio previews could help promote the album release.** Award one mark for explanation and one mark for expansion, eg: • Short clips of audio can be used to familiarise fans with the songs (1) leading to higher album sales/streams when the album is released (1) • Short clips of audio can be used to keep fans excited (1) whilst they are waiting for the album to be completed (1). • Short clips of audio can be shared by fans in advance of the album release date (1) this will help further promote the album before it is released (1). Accept other reasonable responses.	**2**

33	**The Flaming Fretboards want to promote the release of their album. They only have a limited amount of money to spend on merchandise. They have decided to spend money on either posters or t-shirts. They have asked your advice on which to choose. Explain which you would choose and justify your choice.** Award one mark for explanation and one mark for expansion, e.g.: Posters • Potentially more posters are available than t-shirts (1) meaning more fans can be reached directly with the product (1). • Unsold posters could be put up in venues/record shops (1) increasing visibility (1). • Posters should retail cheaper than t-shirts (1) increased chances all would be sold (1). T-shirts • The potential profit margin on this product is higher (1) giving more income potential (1) • Fans wearing your bands name or logo is an effective way of promoting your work (1) to increase visibility (1) • This product may be relevant for longer than a single release (1) increasing long-term promotion (1). Marks can only be awarded for one option; should not award two for comparisons. Accept other reasonable responses.	**2**