

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson Edexcel
Level 3 GCE**

Centre Number

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Candidate Number

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Wednesday 5 June 2019

Afternoon (Time: 2 hour 15 minutes)
(plus 10 minutes setting up time)

Paper Reference **9MT0 04**

Music Technology

Advanced

Component 4: Producing and analysing

You must have: Figure 1 for Question 6 (enclosed), CD ROM containing component audio/MIDI files, blank CD for burning finished tasks, headphones or monitor speakers, digital audio workstation (DAW) and MIDI keyboard.

Total Marks

Setting up time

- Open a new project in your DAW using 16 bit/44.1kHz sample rate.
- Save the project as '**comp4_your candidate number**' (e.g. **comp4_1234**) in the folder designated by your centre.
- Set the metronome to **124 bpm**.
- Import 'bass.wav' to a new track in your DAW, aligned with the beginning of bar 1.
- Ensure that the bass is audible and plays in time with the metronome. The bass begins in bar 4.
- You must not open the paper until instructed to do so by the invigilator.

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Save your audio files for Questions 1, 2, 4 and 5 within the 2 hour 15 minute examination time.
- You must ensure that the left and right earpieces of your headphones are worn correctly.
- Access to a calculator or calculator software is not permitted.
- Access to the internet or local network is not permitted.

Information

- The total mark for this paper is 105.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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SECTION A

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

Question 1 is about the bass guitar part.

1 (a) (i) Identify the unwanted noise on the bass guitar. (1)

(ii) List **two** ways this noise could have been avoided whilst recording. (2)

1

2

(b) (i) On a noise gate, describe how the threshold control affects the signal. (2)

(ii) Explain the challenges of using a gate to remove the noise heard on the bass track. (2)

(c) Apply a gate to the bass guitar to remove the noise without unwanted side-effects. (3)

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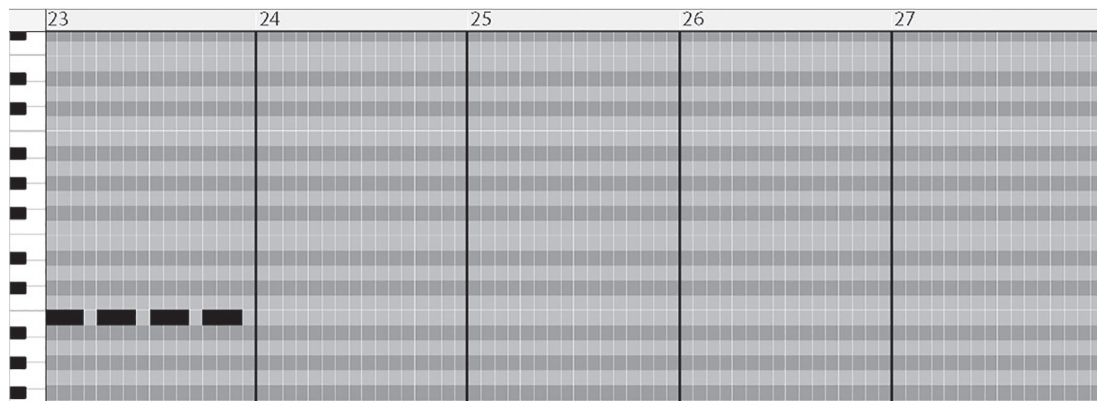
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(d) Draw the bass part for bars 24-27 on the piano roll editor below. Bar 23 has been completed for you.

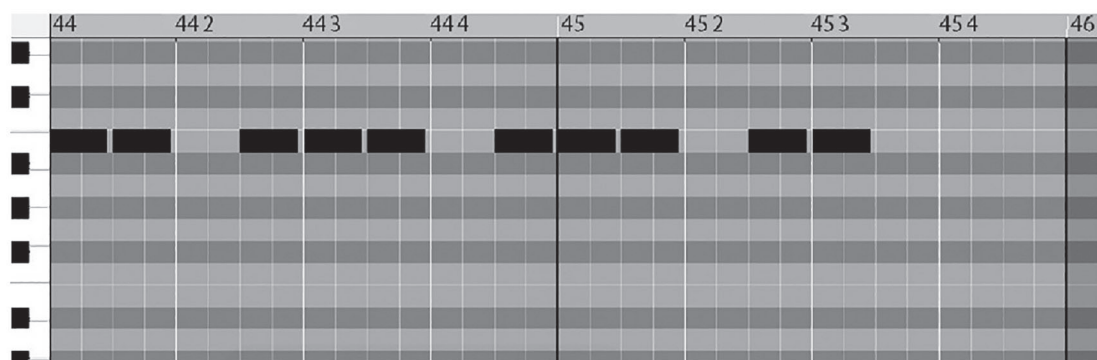
(5)



(e) Complete the bass part for bars 44-45 in your DAW.

- Use audio from bar 41.
- The pitch and rhythm are shown in the piano roll editor below.

(5)



Bounce/export the completed bass part as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.

Name it 'q1_ your candidate number' (e.g. q1_1234).

(Total for Question 1 = 20 marks)



Question 2 is about the drum part.

2 Import the MIDI file 'drums.mid' to a new track in your DAW. Align the part so that the drums begin playing at the start of bar 4.

(a) Complete the table below to give the velocity in decimal and in binary of the first three events of the MIDI file. The first event has been given as an example.

Velocity in decimal	Velocity in binary
113	01110001
(1)	(1)
(1)	(1)

(b) Other than Note On and Note Off, identify **three** other MIDI messages present in the MIDI file.

(3)

1

2

3

(c) The notes in the MIDI file have been assigned to the incorrect sounds. Using an acoustic drum kit, assign the notes to the sounds listed below to form a rock style drum part. You should not change the rhythm.

- Kick drum
- Snare
- Crash
- Closed hi-hat starting at bar 11, beat 4
- Ride cymbal starting at bar 12, beat 1

(5)

Bounce/export the completed drum part as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.

Name it 'q2_ your candidate number' (e.g. q2_1234).

(Total for Question 2 = 12 marks)



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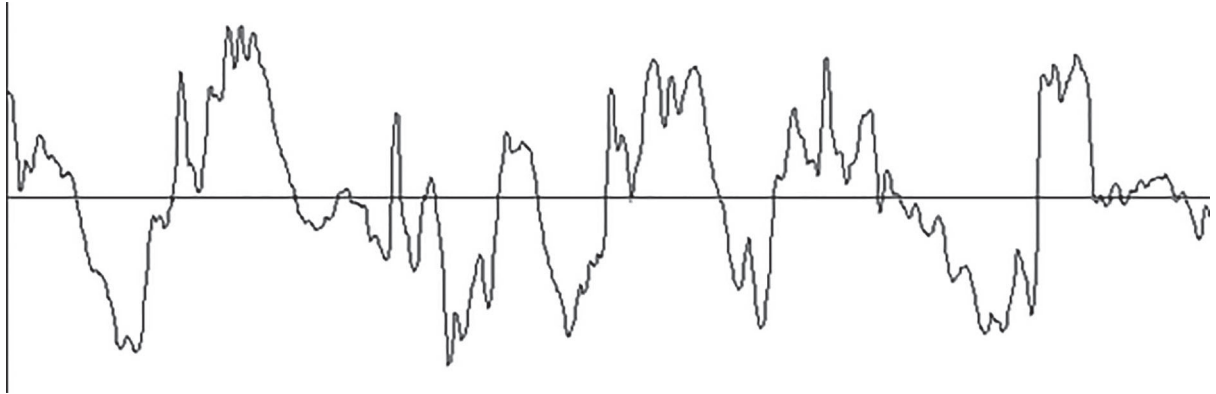
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Question 3 is about the guitar part.

- 3** Import 'guitar.wav' to a new track in your DAW. This track is the electric guitar part. Ensure that the beginning of this audio track is aligned with the start of bar 1. The electric guitar begins at the start of bar 2.

The graph below shows the waveform of the clean DI guitar signal in bar 4.



- (a) Label the axes. (2)
- (b) On top of the original waveform, draw the change in the waveform shape once distortion has been added. (2)
- (c) State how adding distortion changes the dynamic range. (1)

(Total for Question 3 = 5 marks)



Question 4 is about the vocals.

4 Import 'vocal main.wav' to a new track in your DAW. This track is the lead vocal part. Ensure that the beginning of this audio track is aligned with the start of bar 1. The vocal begins during the second beat of bar 3.

(a) There are some artefacts in the vocal part which are clearly audible in bars 43-44.

(i) Identify the processor that caused the artefacts.

(1)

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(ii) State what an audio artefact is.

(1)

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(b) There is some headphone spill on the vocal recording. State **two** ways you would have reduced headphone spill whilst recording.

(2)

1

2

(c) Import 'vocal sample.wav' into your DAW.

(i) Identify which wave shape is most similar to the vocal sample.

(1)

- A** Pulse
- B** Saw
- C** Sine
- D** White noise

(ii) The frequency of the sample is 294Hz. Calculate the frequency of a note an octave higher. Show your working.

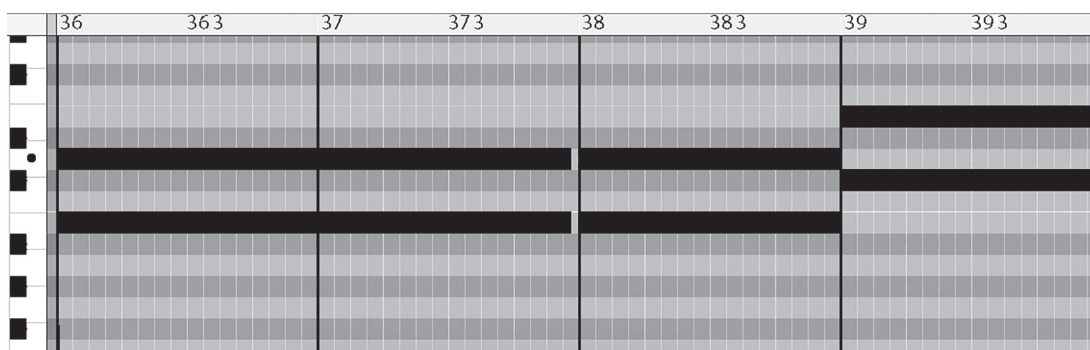
(2)

..... Hz



- (d) Create a backing vocal part for bars 36-43 in your DAW.
- Use the audio from 'vocal sample.wav'.
 - The pitch of 'vocal sample.wav' is D as indicated by a dot on the piano roll.
 - The completed backing vocal should have pitch and rhythm as shown on the piano roll.
 - Repeat this part in bars 40-43.
 - The lower vocal part must be panned left; the upper part must be panned right.

(9)



Bounce/export the completed vocal parts as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.

Name it 'q4_ your candidate number' (e.g. q4_1234).

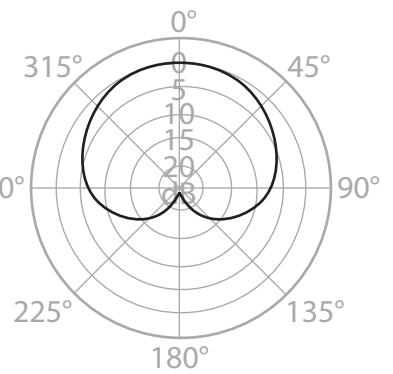
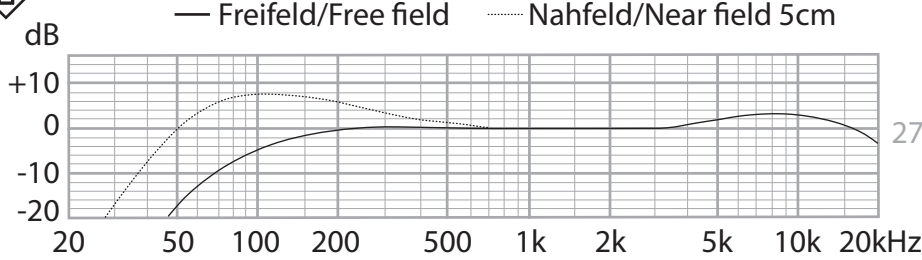


4 (e) The diagram shows technical specifications for a microphone. Evaluate the suitability of the microphone for recording vocals.

(8)



Measure in free-field conditions (IEC 60268-4), tolerance ± 2 dB



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(Total for Question 4 = 24 marks)



- 5 You should now have the following tracks in your DAW: bass guitar, drums, electric guitar, lead vocal and backing vocals.
- (a) Apply reverb to the vocal and backing vocals.
- Use a 3 second reverb
 - The reverb should blend the vocal with the electric guitar.
- (3)
- (b) Import 'drum example.wav' to a new track in your DAW. This file illustrates an effect on a snare drum. You should not use this audio in your final mix.
- Apply the effect heard in 'drum example.wav' to the drum track.
- (3)
- (c) Listen to the modulation effect on the guitar in bars 4-5. Recreate that effect in all other bars.
- (3)
- (d) Gate the vocals.
- Only bars 34–35 should be affected.
 - The bass track should trigger the side chain of the gate so that the vocal plays in time with the bass.
 - The vocal reverb should not be gated.
- (3)
- (e) Listen to the effect in bar 43 on the bass. Recreate the same effect in bars 20-42.
- The dry signal should remain unaffected.
 - An additional signal should be pitch shifted up an octave and heavily distorted.
 - Balance the dry and effected signal so they sound equal in volume.
 - Pan the distorted signal to match bar 43.
- (6)
- (f) Balance the levels of the mix.
- (3)
- (g) 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 at the end do not exceed one second.
- (3)

Bounce/export the completed mix as a single 16 bit/44.1kHz stereo .wav file to the designated folder on your computer.

Name it 'q5_ your candidate number' (e.g. q5_1234).

(Total for Question 5 = 24 marks)

TOTAL FOR SECTION A = 85 MARKS



SECTION B

Answer Question 6. Write your answer in the space provided.

- 6** Figure 1 shows a synthesiser from 1982. Evaluate the suitability of the settings shown to produce a synth pad.

(20)

Area with horizontal dotted lines for writing the answer.

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(Total for Question 6 = 20 marks)

TOTAL FOR SECTION B = 20 MARKS

TOTAL FOR PAPER = 105 MARKS



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