

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson Edexcel  
Level 3 GCE**

Centre Number

Candidate Number

**Time** 2 hours 15 minutes plus  
10 minutes setting up time

**Paper  
reference**

**9MT0/04**

**Music Technology**

**Advanced**

**COMPONENT 4: Producing and Analysing**

**You must have:** Figures 1 & 2 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 **100 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 at the start of bar 2.
- 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.
- Good luck with your examination.

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 . 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 part.

1 Listen to the bass that you have imported.

(a) Identify the most appropriate quantise value for the bass in bars 2–12.

(1)

- A 1/32
- B 1/16
- C 1/12
- D 1/8

(b) Identify the pitch bend range of the bass in bar 12.

(1)

- A 2 semitones
- B 7 semitones
- C 12 semitones
- D 24 semitones

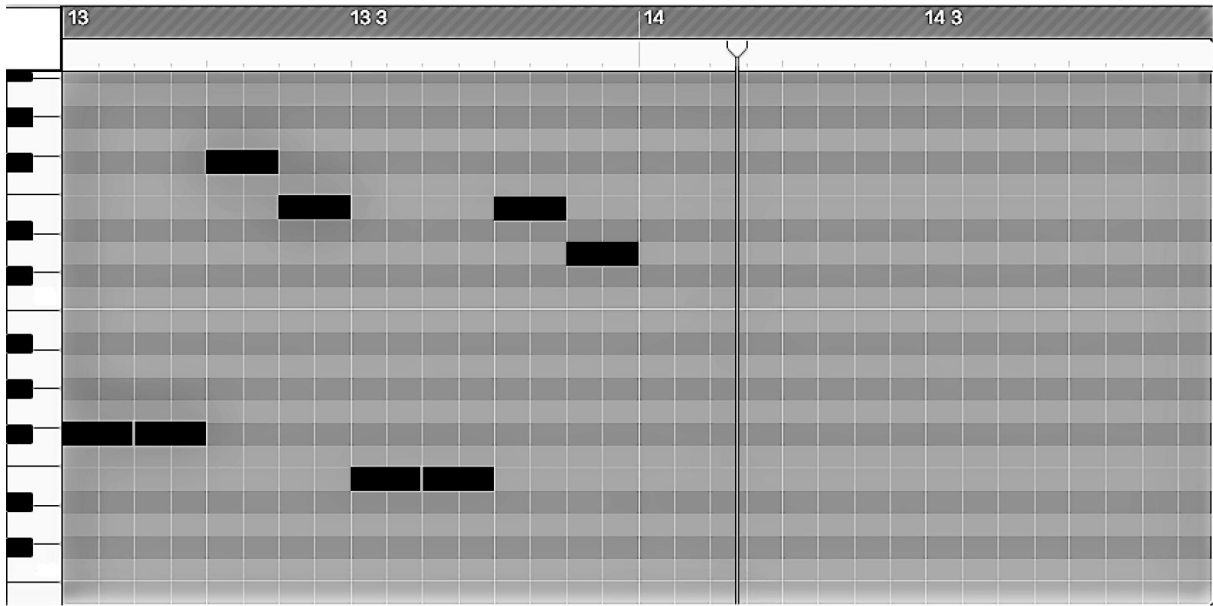
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(c) Below shows a piano roll editor for bars 13–14.



(i) State the position of the playback head. The bar and ticks have been given.

Bar	Beat	Div	Tick
14	(1)	(1)	161

(ii) Draw the bass part for bar 14 on the piano roll editor above. Bar 13 has been completed for you.

(4)



(d) On the graph below, illustrate the amplitude ADSR envelope of the bass synth.

(i) Label the two axes. (2)

(ii) Draw the amplitude ADSR envelope of the bass synth. (4)

(iii) Label the four stages. (1)



(e) The bass is out of time in bars 23–24. Edit the audio so that the bass is in time. Repair the partially cut bass note on bar 25 beat 1. (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 2.
- (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
98	01100010
(1)	(1)
(1)	(1)

- (b) Note velocity uses 7 bits to store a range of values from 0–127. Explain why note velocities cannot exceed 127 in the MIDI protocol.

(2)

.....

.....

.....

.....



(c) 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 a pop style drum part. You should not change the rhythm.

- Kick drum
- Snare
- Closed hi-hat
- Open hi-hat
- Crash

(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 = 11 marks)**



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**Question 3 is about the synth chords part.**

**3** Import 'synth chords.wav' to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The chords begin at the start of bar 4.

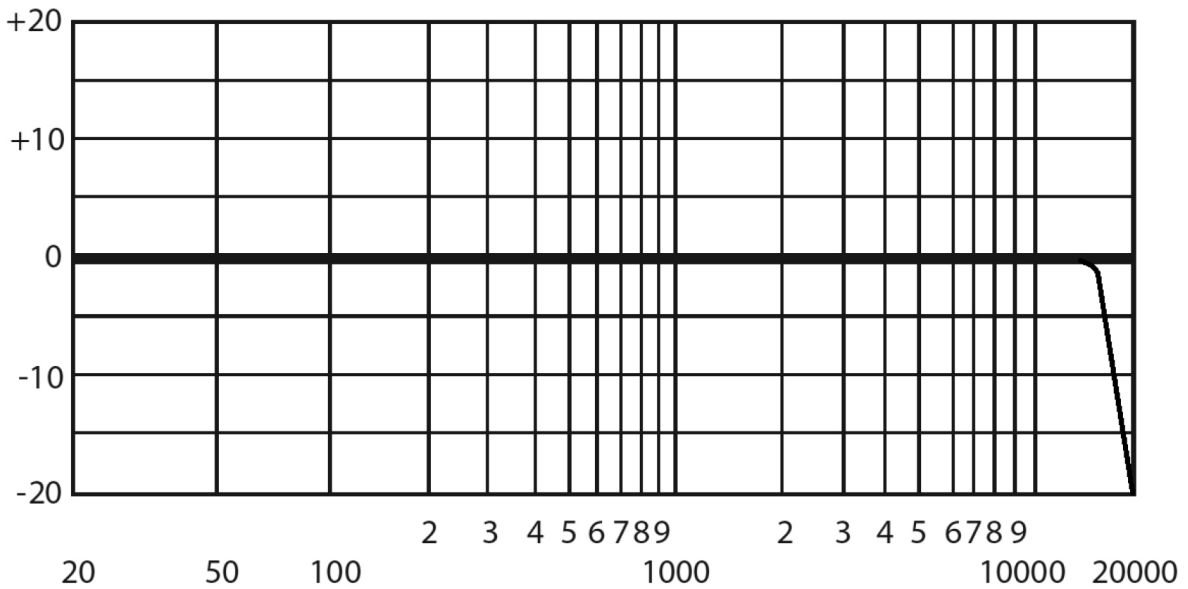
In bars 13–16, a filter has been applied to the synth chords to create a rhythmic effect. The cut-off frequency is changing every 8<sup>th</sup> note to alternate between a less bright timbre and a bright timbre. The graph below shows the bright filter setting at song position 13:1:3:1.

(a) Identify the filter. (1)

(b) Label the axes. (2)

(c) Draw a cross to indicate the filter cut-off frequency. (1)

(d) Draw the filter at song position 13:1:1:1. (3)



**(Total for Question 3 = 7 marks)**



**Question 4 is about the vocal part.**

- 4 Import 'vocal.wav' to a new track in your DAW. The beginning of this audio track should be aligned with the start of bar 1. The vocal begins during the third beat of bar 3.

This vocal was recorded by Suzanne Vega in 1986 and has been edited to form 'vocal.wav'.

- (a) The vocal was recorded using analogue tape. Identify a feature of analogue tape audible in bar 18.

(1)

- (b) The version used in 'vocal.wav' was downloaded from iTunes using AAC. State the type of data compression used in AAC files.

(1)

- A Bit crusher
- B Dynamic compression
- C Lossless compression
- D Lossy compression

- (c) State an advantage of AAC audio files over wav audio files.

(1)

- (d) Identify the bit rate that has been used in the AAC file.

(1)

- A 1 kbps
- B 16 kbps
- C 40 kbps
- D 256 kbps





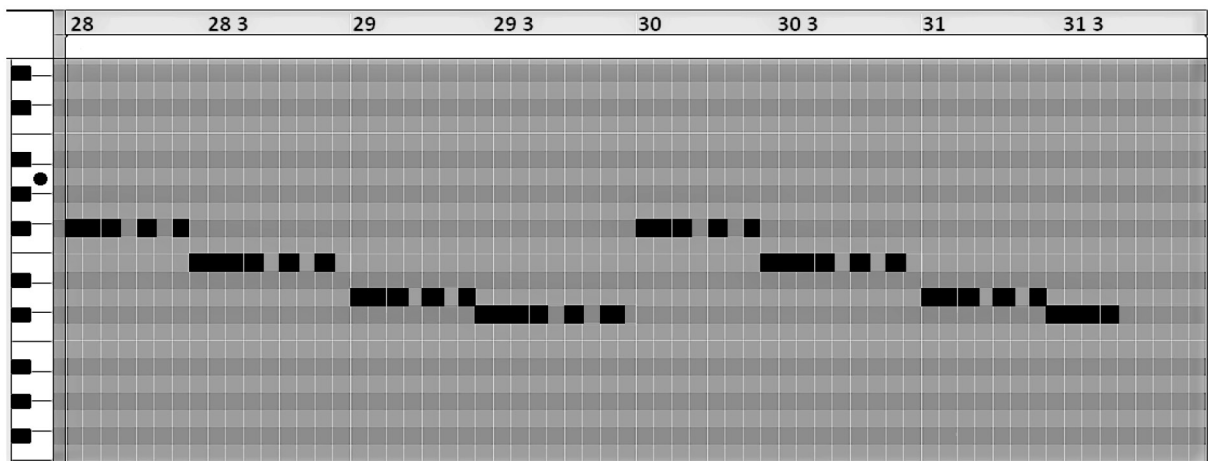
(e) Remove the noise and breath in bar 3 and bar 18.

(3)

(f) Create a harmonised backing vocal track in bars 28–31.

- The pitch of the first note in the lead vocal is A as indicated by a dot on the piano roll.
- The backing vocal should be using the same syllables as the lead vocal.
- The backing vocal should be in rhythmic unison with the lead vocal.
- The pitch and rhythm is given in the piano roll editor below.
- Pan the backing vocal hard left.

(8)



**Bounce/export the completed lead vocal and backing 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).**





- 5 You should now have the following tracks in your DAW: bass, drums, synth chords, vocal and backing vocal.
- (a) Apply automated panning to the bass.
- Only bar 27 should be affected; all other bars should be panned to the centre.
  - Pan the bass in bar 27 smoothly from hard left to hard right. (2)
- (b) Listen to the effect on the bass in bar 32. Recreate the same effect in bars 2–31. (3)
- (c) Gate the synth chords.
- The bass track should trigger the side chain of the gate so that the synth chords play only when the bass is playing. (3)
- (d) Listen to the delay and reverb effect on the vocals in bar 22. Recreate that effect in bar 7 on “coffee”. (5)
- (e) Listen to the effect on the vocals in bars 11–12. Recreate that effect in bars 26–27 on “head”. (5)
- (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**





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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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**Time** 2 hours 15 minutes plus  
10 minutes setting up time

**Paper  
reference**

**9MT0/04**

## Music Technology

**Advanced**

**COMPONENT 4: Producing and Analysing**

**Figures 1 & 2 for Question 6**

**Do not return Figures 1 & 2 with the question paper.**

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Figure 1

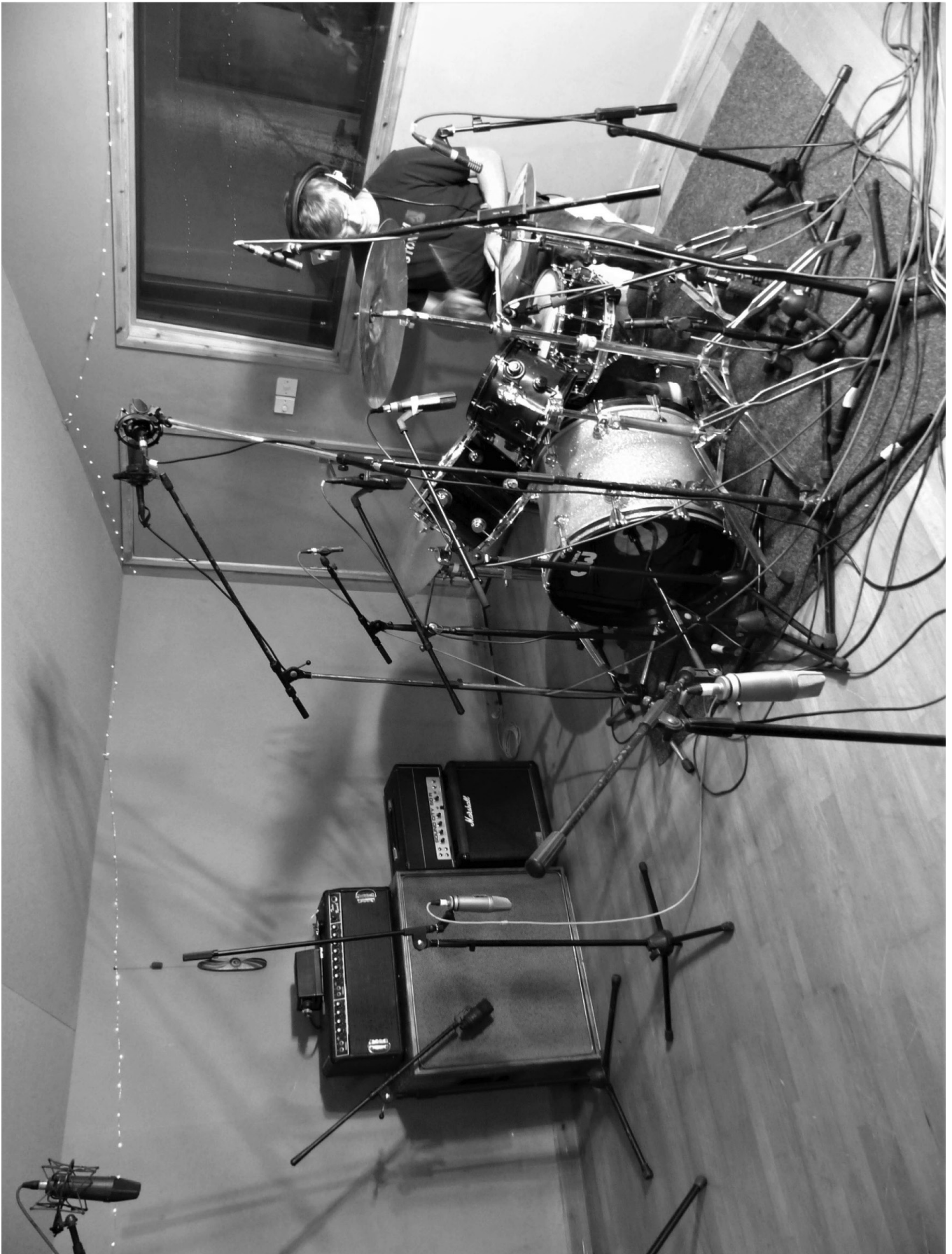


Figure 2



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