VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Victorian Certificate of Education 2019

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

STUDENT NUMBER | | | | | | | | | Letter |

VCE VET MUSIC INDUSTRY: SOUND PRODUCTION

Aural and written examination

Monday 11 November 2019

Reading time: 9.00 am to 9.15 am (15 minutes)
Writing time: 9.15 am to 10.45 am (1 hour 30 minutes)

QUESTION AND ANSWER BOOK

Structure of book

Section	*Number of questions*	*Number of questions to be answered*	*Number of marks*
A	7	7	25
B	16	16	75
			Total 100

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or correction fluid/tape.
- No calculator is allowed in this examination.

Materials supplied
- Question and answer book of 22 pages
- An audio compact disc containing musical excerpts for Section A

Instructions
- Write your **student number** in the space provided above on this page.
- You may write at any time during the running of the audio compact disc and after it stops.
- Answer **all** questions in the spaces provided.
- All written responses must be in English.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A

Instructions for Section A

The audio compact disc plays throughout Section A. In **Questions 1–7**, audio excerpts are played twice.
The announcer explains how the audio excerpt(s) for each question will be played.
Answer **all** questions in the spaces provided.

Question 1 (4 marks)

The following four mix excerpts are in two parts. The first part of each excerpt is the original mix. The second part of each excerpt is a variation of the original mix.

a. Which aspect of the mix has changed in the second part of Excerpt 1a? 1 mark

_____

b. Which aspect of the mix has changed in the second part of Excerpt 1b? 1 mark

_____

c. Name the type of processing that has been applied to the guitar in the second part of Excerpt 1c. 1 mark

_____

d. Name the type of processing that has been applied to the guitar in the second part of Excerpt 1d. 1 mark

_____

Question 2 (3 marks)

The following flute excerpt is in three parts. The first part of the excerpt has had no effect applied. The second and third parts of the excerpt have had the same kind of effect applied.

a. Name the effect that has been applied in the second and third parts of Excerpt 2. 1 mark

_____

b. **i.** Which parameter has been changed in the third part of Excerpt 2? 1 mark

_____

ii. In what way has the parameter been changed in the third part of Excerpt 2? 1 mark

_____

Question 3 (2 marks)

The following excerpt of a lapel microphone fitted to an announcer's jacket contains an audible problem. The microphone and all other equipment are functioning normally.

a. What is the most likely cause of the audible problem in Excerpt 3? 1 mark

_____

b. Suggest a solution to avoid the cause of the problem identified in **part a.** 1 mark

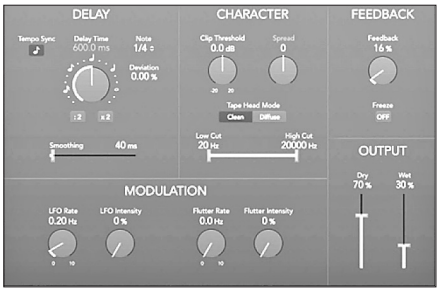
_____

Question 4 (4 marks)

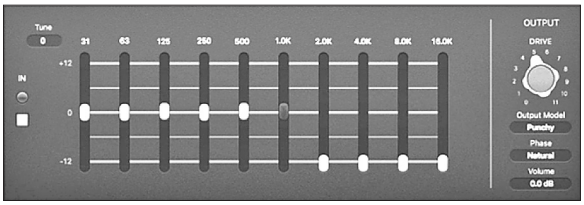
The following four excerpts are of a saxophone playing a solo with a band. Each excerpt is in two parts. The first part of each excerpt has no effect applied. The second part of each excerpt has an effect applied to the saxophone.

Answer the questions that follow with an effect processor from the list below. Use any selected effect processor only **once**.

H-Reverb

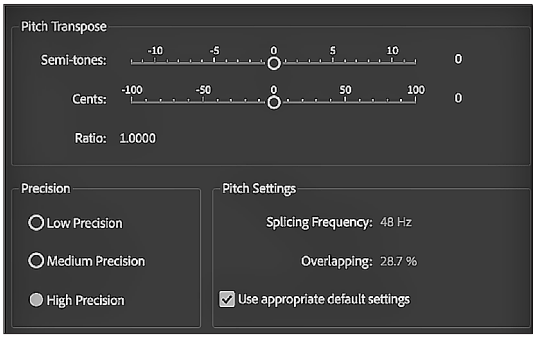


tape delay



vintage graphic EQ

fuzz-wah



pitch shifter

Sources: screenshots from Waves' H-Reverb software; Apple's Logic Pro X software (tape delay, vintage graphic EQ, fuzz-wah); Adobe's Audition software (pitch shifter)

a. Which effect processor is used in the second part of Excerpt 4a? 1 mark

_____

b. Which effect processor is used in the second part of Excerpt 4b? 1 mark

_____

c. Which effect processor is used in the second part of Excerpt 4c? 1 mark

_____

d. Which effect processor is used in the second part of Excerpt 4d? 1 mark

_____

Question 5 (8 marks)

An engineer has started to mix a song on a digital audio workstation (DAW) that contains a multi-track recording of a drum kit. The following excerpt is one track from the multi-track recording. The excerpt is of the snare drum microphone only. As well as the snare drum, the track contains unwanted audio that will need to be reduced or removed.

a. What is the term for the unwanted audio in Excerpt 5? 1 mark

_____

b. Why might the presence of this unwanted audio make the track harder to mix? 1 mark

_____

c. Complete the table below by identifying the three types of effect processors from the following list that would minimise the unwanted audio contained in Excerpt 5 and briefly explain how each would minimise the unwanted audio:

- reverb
- flanger
- tape delay
- guitar tuner
- expander/gate
- chorus
- equaliser
- pitch shift
- spring reverb
- select and delete edit functions

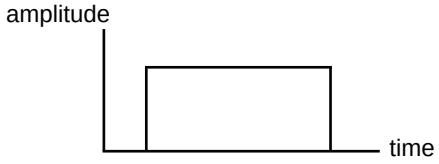
6 marks

Type of effect processor	How unwanted audio is minimised

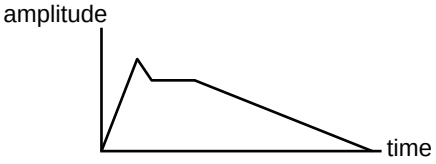
Question 6 (2 marks)

The following two excerpts each have a unique waveform envelope.

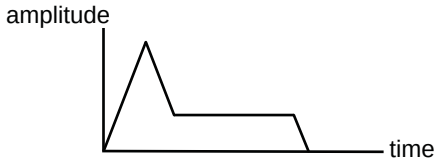
Answer the questions that follow with a waveform envelope from the diagrams below. Use any selected waveform envelope only **once**.



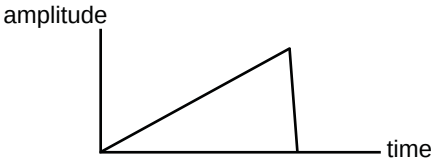
Envelope 1



Envelope 2



Envelope 3



Envelope 4

a. Which is the correct waveform envelope number for Excerpt 6a? 1 mark

_____

b. Which is the correct waveform envelope number for Excerpt 6b? 1 mark

_____

Question 7 (2 marks)

The following excerpt is in two parts. Each part is a different final mix file of the same song. The band was satisfied with the sound of the second mix file but not the first mix file. The only difference between the mixes was the adjustment of a parameter in an effect applied to the main mix output.

a. Name the effect that has been applied to the main mix output in both parts. 1 mark

_____

b. Which parameter has been adjusted? 1 mark

_____

END OF SECTION A

SECTION B

Instructions for Section B

Answer **all** questions in the spaces provided.

Question 1 (2 marks)

Match each frequency band to the correct type of speaker by drawing a straight line between the matched items.

Frequency band
2 kHz – 20 kHz
120 Hz – 2 kHz
40 Hz – 120 Hz

Type of speaker
woofer
subwoofer
tweeter

Question 2 (3 marks)

The two images below show microphone cables.

correctly rolled

incorrectly rolled

List three benefits of rolling microphone cables correctly.

1. _____

2. _____

3. _____

Question 3 (3 marks)

While recording vocal parts over previously recorded tracks, a vocalist says that the sound from their headphones is strange. While testing the vocalist's headphones, the engineer notices that they can hear themselves twice with a very short delay in between. There are no plugins or other processing applied that could be causing this problem.

a. Name the cause of this problem. 1 mark

_____

b. Why does this problem occur? 1 mark

_____

c. Suggest a resolution to this problem. 1 mark

_____

Question 4 (4 marks)

Consider a compressor with a threshold set to –70 dB and an input signal currently at –62 dB. All other parameters are normalised.

a. For a 4:1 ratio, what would be the output level in decibels? 1 mark

_____

b. **i.** For an infinity:1 ratio, what would be the output level in decibels? 1 mark

_____

ii. Explain why the infinity:1 ratio in **part b.i.** is known as 'limiting'. 1 mark

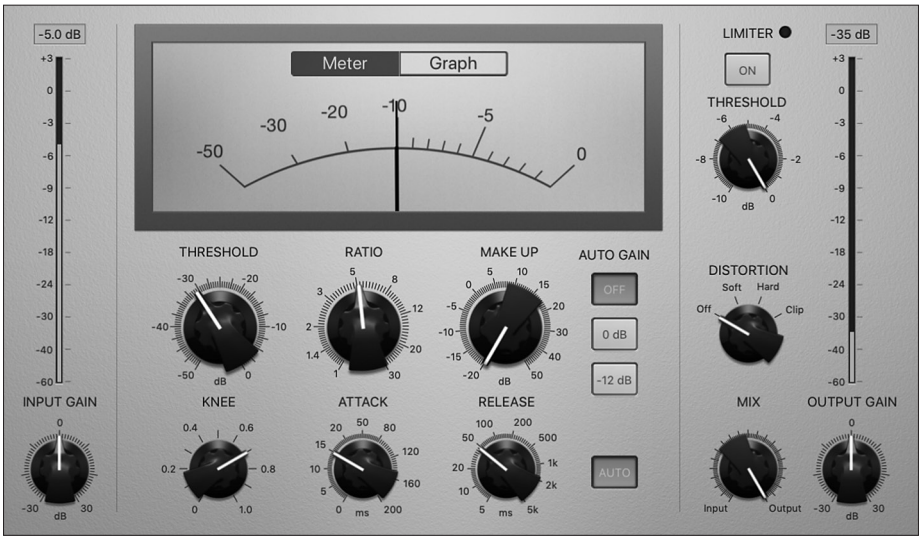
_____

iii. Give an example of why limiting might be used over the front-of-house output of a PA system in a live context. 1 mark

_____

Question 5 (3 marks)

While mixing a song, an engineer achieves a good balance between instruments. However, the mix becomes unbalanced when the compressor shown below is applied to the guitar track.



Source: screenshot from Apple's Logic Pro X software (compressor)

a. In what way is the mix likely to be unbalanced? 1 mark

_____

b. What parameter does the central meter show? 1 mark

_____

c. Which dial could be used to rebalance the mix without altering the amount of compression? 1 mark

_____

Question 6 (7 marks)

A stagehand is working at a music festival. The first band starts at 10 am and there is continuous music either live or pre-recorded until 11 pm. There is a sound pressure level (SPL) meter at the side of the stage and this registers an average SPL of 90 dB (A) for the duration of the festival.

For at least one period of time, the measured SPL was over 110 dB (A), which exceeds the noise exposure standard.

a. What is WorkSafe Victoria's average noise exposure standard for an eight-hour period? 1 mark

_____

b. What personal protective equipment (PPE) could be used to counteract noise exposure? 1 mark

_____

c. What effect could exposure to hazardous SPL have on the stagehand's hearing? 1 mark

_____

d. Part of the stagehand's role is to check the safety of all mains-powered electrical equipment that artists bring with them.

List three things the stagehand should check for. 3 marks

1. _____

2. _____

3. _____

e. Manual handling is a significant risk in the music industry.

Suggest a piece of equipment that would reduce the risk of injury from manual handling when moving large or bulky backline equipment. 1 mark

_____

Question 7 (4 marks)

The image below shows a microphone accessory labelled X.

Source: antb/Shutterstock.com

a. What is the name of the microphone accessory labelled X? 1 mark

_____

b. Why might this microphone accessory be used when capturing audio outdoors? 1 mark

_____

c. A shotgun/hypercardioid microphone mounted on a boom, as shown in the image above, is commonly used to record dialogue when filming a video.

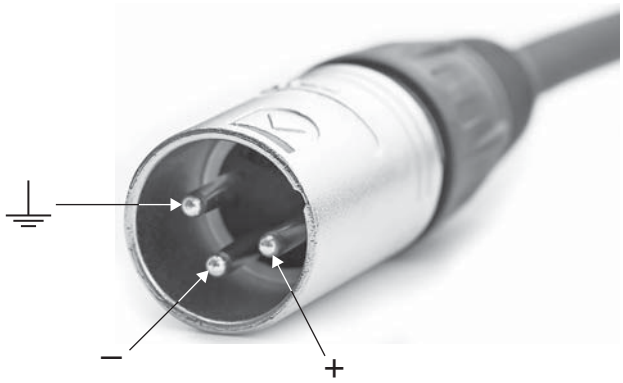
Describe two advantages of this type of microphone. 2 marks

Advantage 1 _____

Advantage 2 _____

Question 8 (6 marks)

The image below shows symbols labelled on the parts of a microphone cable connector.



Source: p|s/Shutterstock.com

a. What is the name of this type of microphone cable connector? 1 mark

_____

b. Match the symbols on the microphone cable connector to the standard pin numbers (1, 2 or 3). 2 marks

⏚ Pin number _____

\+ Pin number _____

– Pin number _____

c. What are the alternate names for the following pin symbols? 2 marks

\+ _____

– _____

d. What does the following pin symbol refer to? 1 mark

⏚ _____

Question 9 (2 marks)

During a sound check before a live performance, a sound engineer hears a high-pitched feedback frequency from the drum foldback each time they turn up the drummer's vocal microphone. There are a number of microphones being sent to the drum foldback, including the kick drum and overheads. There is no signal being sent to the front-of-house at this point. The sound engineer notices that the drummer's foldback wedge is on the drummer's right while the vocal microphone is on the drummer's left.

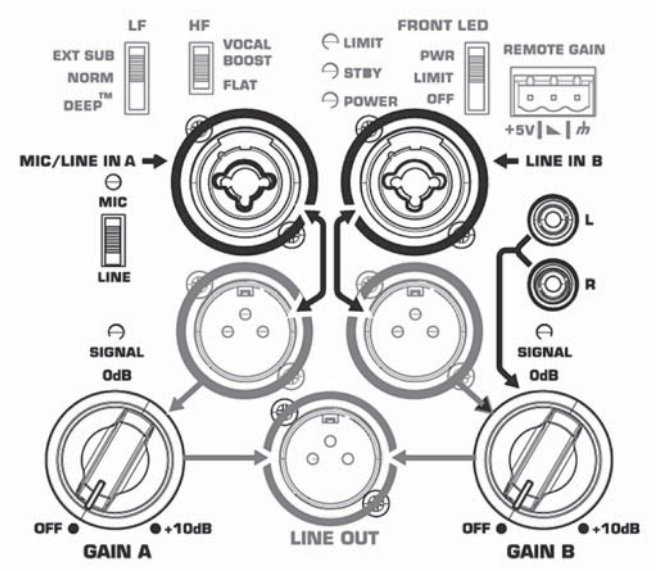
Suggest two actions the sound engineer could take to maximise the drummer's vocal foldback level and avoid the feedback.

Action 1 _____

Action 2 _____

Question 10 (5 marks)

The image below shows the rear panel of a powered (active) speaker box.



Source: QSC, <www.qsc.com>

a. What are the connections (as labelled on the speaker's rear panel) and the switch settings to be made, assuming a microphone and a stereo laptop are to be connected to two of these speakers? 4 marks

Connection for stereo laptop _____

Connection for microphone _____

MIC/LINE switch setting _____

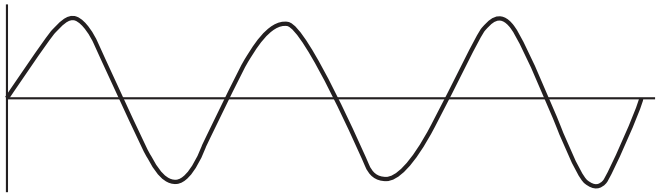
Connection for additional speaker _____

b. On the HF switch, what is meant by the label 'FLAT''? 1 mark

_____

Question 11 (2 marks)

The image below shows a waveform.



a. Draw a square bracket (⌈) on the image above to indicate one complete cycle of the waveform. 1 mark

b. What is the name of this type of waveform? 1 mark

_____

Question 12 (1 mark)

Why is a reverb effect often patched into a mixing desk using an auxiliary send rather than inserted into each channel that requires it?

_____

_____

Question 13 (2 marks)

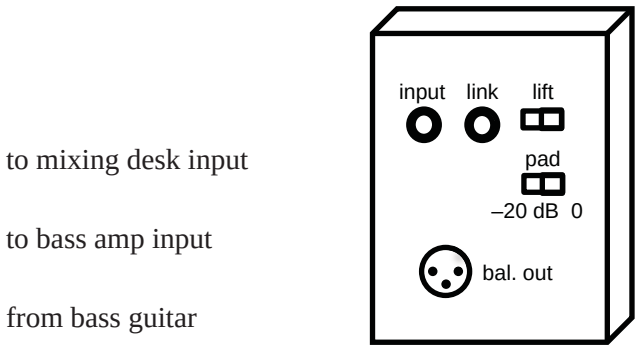
When mixing many inputs from the stage at a live show, what are two advantages of assigning all of the drum microphones to a group channel/bus?

Advantage 1 _____

Advantage 2 _____

Question 14 (4 marks)

The image below shows a direct input (DI) box to be used in conjunction with a bass guitar, bass amplifier and mixing desk.



a. Draw **three** straight lines on the image above to indicate the connections from the bass guitar, to the bass amplifier input and to the mixing desk input. 2 marks

b. What audible problem would require the 'lift' switch to be used to improve the sound quality? 1 mark

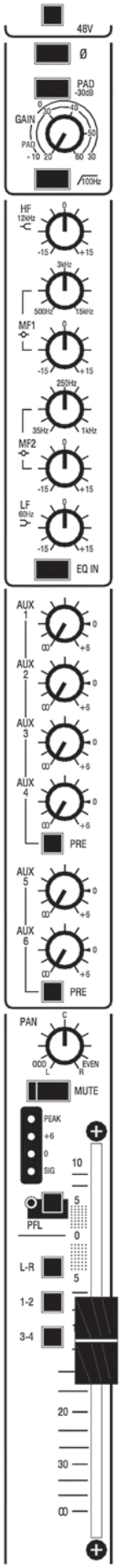
_____

c. Describe a situation where the 'pad' switch would need to be set to –20 dB. 1 mark

_____

Question 15 (15 marks)

The image below shows a channel strip.



Source: Allen & Heath, 'GL2200 Dual Function Audio Mixing Console User Guide', publication: AP3388, issue 5, p. 11, <www.allen-heath.com>

a. **i.** Name two pieces of equipment that require the 48 V button to be used. 2 marks

Equipment 1 _____

Equipment 2 _____

ii. What is the common name for the function of the 48 V button? 1 mark

_____

b. The Ø button inverts the signal.

When would inverting the signal be used to improve the sound? 1 mark

_____

c. Why does the gain control have two scales? 1 mark

_____

d. Which control would be used to remove unwanted frequencies below 100 Hz? 1 mark

_____

e. There are two mid-frequency equaliser controls – MF1 and MF2.

Outline the difference between the two controls. 1 mark

_____

_____

f. **i.** Describe the function of the –15 to +15 labels on the controls in the equaliser section. 1 mark

_____

ii. What unit of measurement applies to the –15 to +15 labels? 1 mark

_____

g. What is the maximum number of independent foldback sends that this desk can provide when used for front-of-house and foldback simultaneously? 1 mark

_____

h. How would the PRE buttons be set when using an external effects unit? 1 mark

_____

i. How would the PAN control and group/bus assign switch be set to route the signal to sub-group 1? 2 marks

PAN _____

Group/bus assign _____

j. Give two useful applications for the PFL button. 2 marks

Application 1 _____

Application 2 _____

CONTINUES OVER PAGE

Question 16 (12 marks)

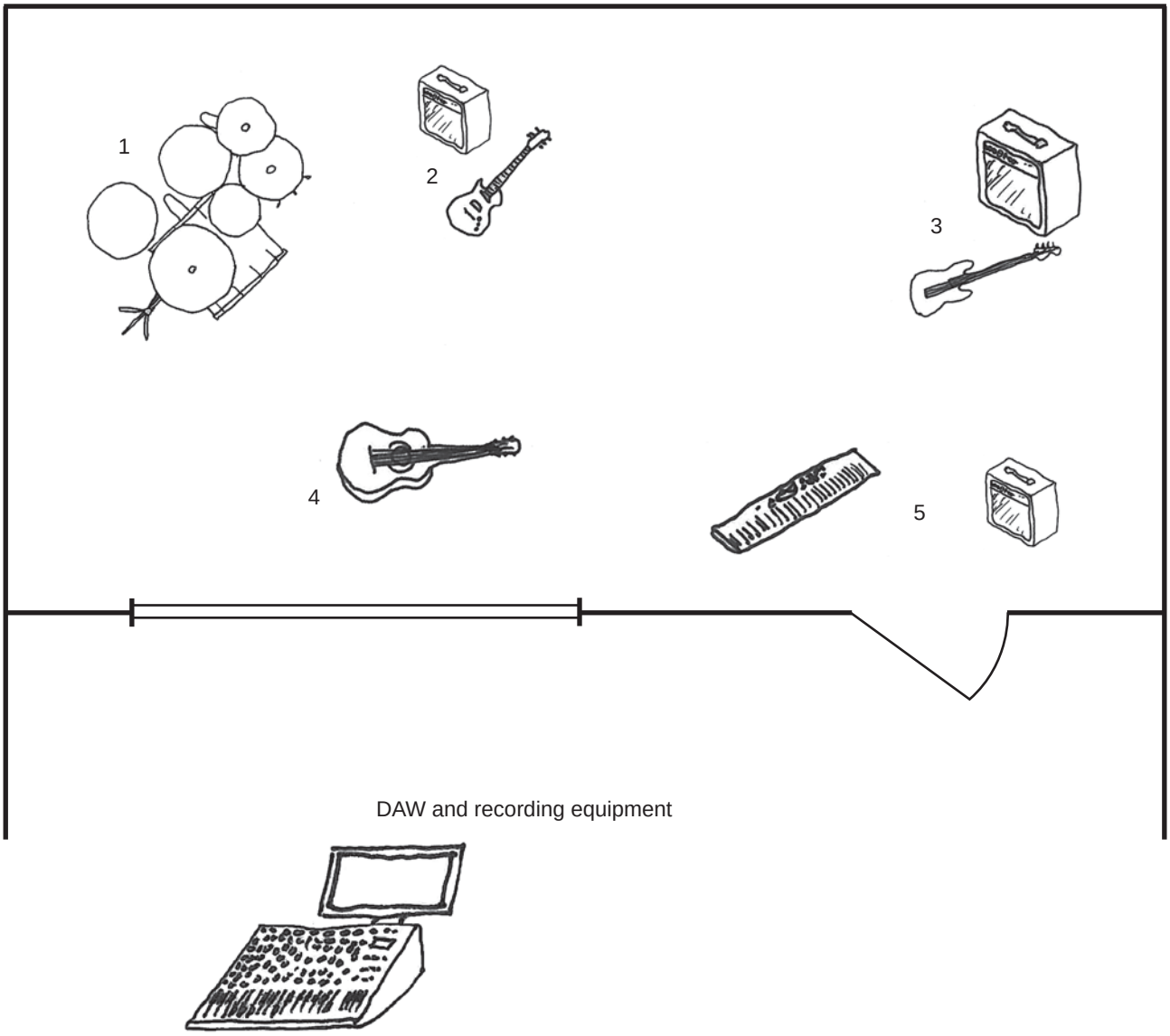
An engineer is required to record a five-piece band.

The engineer has only four hours to complete the tracking part of the recording. It is likely that there will be some time to record overdubs. Mixing will take place at a later date.

The diagram below shows the layout of the musicians and instruments for the recording studio session.

The musicians, numbered to match their location in the diagram, are as follows:

1. a drummer
2. a vocalist who also plays an electric guitar
3. an electric bass player
4. an acoustic guitar player (no pick-up)
5. a keyboard player



The vocalist and each of the instruments have been set up with the following microphones. Each microphone will be recorded to its own channel in the DAW.

Instrument/channel	Microphone
kick drum	small diaphragm dynamic cardioid
snare drum	small diaphragm dynamic cardioid
drums overhead L	large diaphragm condenser cardioid
drums overhead R	small diaphragm condenser cardioid
bass guitar amp	large diaphragm dynamic cardioid
electric guitar amp	small diaphragm dynamic cardioid
acoustic guitar	small diaphragm dynamic cardioid
keyboard amp	small diaphragm condenser cardioid
vocals	small diaphragm condenser omnidirectional

Also available for use are a pop shield, two DI boxes, one additional small diaphragm condenser cardioid microphone, five sets of headphones for monitoring and four large, lightweight, moveable sound absorption panels.

a. List the four channels that are most likely to contain unwanted spill. 4 marks

1. _____

2. _____

3. _____

4. _____

b. Suggest two different ways by which unwanted spill could be reduced before reaching the DAW while all the musicians are playing at the same time in the studio space. 2 marks

1. _____

2. _____

c. Given the microphones and DI boxes available, complete the blank cells in the table below with new selections that would be more likely to result in less spill and that capture the full range of frequencies for the vocalist and for each instrument. 6 marks

Instrument/ channel	Original microphone	New microphone/DI box selection
kick drum	small diaphragm dynamic cardioid	
snare drum	small diaphragm dynamic cardioid	small diaphragm dynamic cardioid
drums overhead L	large diaphragm condenser cardioid	
drums overhead R	small diaphragm condenser cardioid	small diaphragm condenser cardioid
bass guitar amp	large diaphragm dynamic cardioid	
electric guitar amp	small diaphragm dynamic cardioid	small diaphragm dynamic cardioid
acoustic guitar	small diaphragm dynamic cardioid	
keyboard amp	small diaphragm condenser cardioid	
vocals	small diaphragm condenser omnidirectional	

END OF QUESTION AND ANSWER BOOK