

STUDENT NUMBER Letter

VCE VET MUSIC INDUSTRY: SOUND PRODUCTION

Aural and written examination

Thursday 4 November 2021

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	15	15	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 18 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.

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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 (5 marks)

The following mix excerpts are in two parts. The second part has had an aspect of the mix altered.

- a. In the second part of Excerpt 1a, which instrument tracks have been soloed? 1 mark

- b. What has been added to the snare in the second part of Excerpt 1b? 1 mark

- c. The mixing engineer has forgotten to mute one track in the second part of Excerpt 1c.
What is the function of this unmuted track in the second part? 1 mark

- d. What element has been muted in the second part of Excerpt 1d? 1 mark

- e. What effect has been applied to the drums in the second part of Excerpt 1e? 1 mark

Question 2 (3 marks)

The following three drum loop excerpts are in two parts. The first part of each excerpt has had no effect applied. The second part of each excerpt has had the same type of effect applied.

- a. What type of effect has been applied to the second part of Excerpt 2a? 1 mark

- b. In the second part of Excerpt 2b, what parameter has been altered in the effect? 1 mark

- c. In the second part of Excerpt 2c, what parameter has been altered in the effect? 1 mark

Question 3 (4 marks)

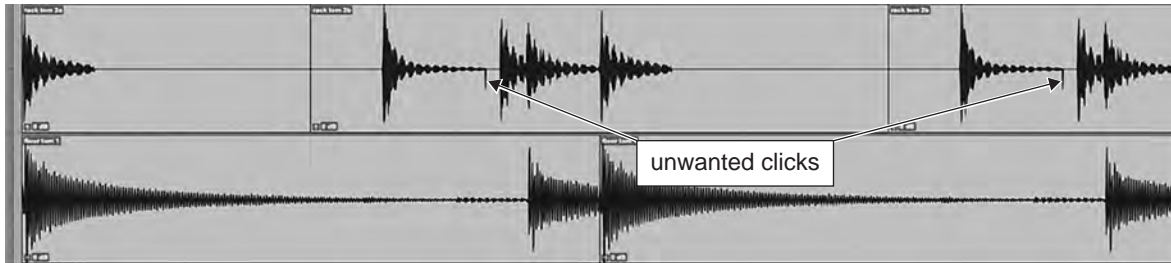
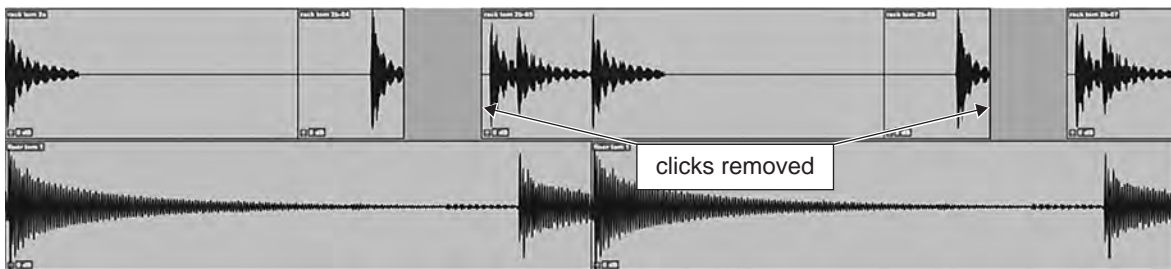
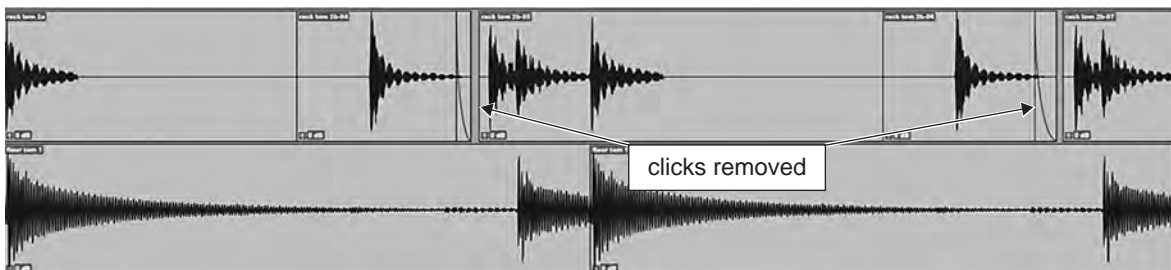
The following audio excerpt is made up of four tracks: synth pad, shaker, acoustic guitar and a looped recording of creaking floorboards. All of these tracks will be played together and then separately. The producer has asked for the tracks to be categorised so that each can be mixed with a different treatment.

Complete the table below by ticking (✓) the **one** role that best describes each track.

Track	Rhythm	Pitch	Rhythm and pitch
synth pad			
shaker			
acoustic guitar			
creaking floorboards			

Question 4 (3 marks)

The following audio excerpt is a digital audio workstation (DAW) recording of a rack tom and a floor tom, edited into a repeated loop. The excerpt is in three parts. The images below show the waveforms for the two tom tracks for each part of the excerpt.

Excerpt part 1 – Original tom loop with unwanted clicks**Excerpt part 2 – Editing option A (clicks removed)****Excerpt part 3 – Editing option B (clicks removed)**

- a. Explain why Editing option B results in a better audible outcome. 1 mark

- b. What are the two editing actions that have been taken in Editing option B? 2 marks

Action 1 _____

Action 2 _____

Question 5 (2 marks)

The following excerpt is of a multitrack recording that has been mixed. The second and third parts of the excerpt have each had a type of filter sweep applied.

Name the type of filter used in each part.

Type of filter – Part 2 _____

Type of filter – Part 3 _____

Question 6 (5 marks)

The following excerpt is of an acoustic guitarist performing background music at a restaurant. The guitarist is playing into a microphone through a PA system. The excerpt includes unwanted audio.

- a. What is the unwanted audio called? 1 mark

- b. Suggest two ways that the unwanted audio could be avoided without the use of a direct input (DI) box. 2 marks

1. _____

2. _____

- c. In the excerpt, the acoustic guitar is being amplified with a microphone connected to the PA system. A DI box may be a better option.

Explain why a DI box may be a better option and identify what item the guitar would need to have installed for a DI box to be used. 2 marks

Explanation _____

Item _____

Question 7 (3 marks)

The following excerpt is a recording of a person introducing an online meeting. The excerpt is in three parts.

- a. Describe **one** action that could be taken to improve the quality of the audio in the second part. 1 mark

- b. What type of sound can be heard in the second part, other than the voice? 1 mark

- c. Describe **one** action that could be taken to improve the quality of the audio in the third part. 1 mark





END OF SECTION A

SECTION B**Instructions for Section B**

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

Question 1 (8 marks)

Complete the table below by providing two ideal applications for each type of microphone.

Type of microphone	Applications
calibrated test microphone 	1. _____ 2. _____
handheld dynamic microphone 	1. _____ 2. _____
pencil condenser microphone 	1. _____ 2. _____
large diaphragm dynamic microphone 	1. _____ 2. _____

Sources (from top): dbx by HARMAN, <<https://dbxpro.com/en/products/rta-m>>;
 Shure, <www.shure.com/en-ASIA/products/microphones/beta_58a>;
 Neumann.Berlin, <<https://en-de.neumann.com/km-184>>;
 Shure, <https://www.shure.com/en-MEA/products/microphones/beta_52a>

Question 2 (2 marks)

A sound engineer is about to mix a multitrack recording in a studio. In preparation for this, a familiar reference track is played through the studio's speakers.

- a. Give **one** reason why it is useful for the sound engineer to listen to the familiar reference track before mixing. 1 mark

- b. Apart from any potential hearing damage, why should the sound engineer carry out the mix at a moderate to low monitoring volume? 1 mark

Question 3 (1 mark)

During a sound check, a sound engineer notices that, after applying reverb, the drums become less defined.

What reverb setting could be used to retain the same overall amount of reverb while improving clarity?

Question 4 (5 marks)

During a sound check, a sound engineer notices that the bass does not cut through the mix even after adjusting the equalisation. The stage sound of the bass is adequate. The sound engineer decides to use a compressor to improve the bass in the mix.

Use the image below to assist with your response to this question.



Source: Apple.com

The controls listed in the table below are found on many compressors.

Explain the function of each control.

Control	Function
attack	
release	
threshold	
ratio	
make up	

Question 5 (1 mark)

What aspect of a recorded sound wave would be improved when using a sample rate of 96 kHz rather than 44.1 kHz in a digital audio workstation (DAW)?

Question 6 (4 marks)

Two images of a power extension lead are shown below.



- a. Give three reasons why this lead may present a safety hazard to users. 3 marks

Reason 1 _____

Reason 2 _____

Reason 3 _____

- b. Give a solution that would eliminate the safety hazard. 1 mark

Question 7 (1 mark)

An audio engineer is recording a trumpet with a dynamic microphone but she is not satisfied with the sound. She replaces the dynamic microphone with a large diaphragm condenser microphone. The change of microphone results in a reduced input level that remains very low even when the preamp of the mixer is boosted. All of the equipment is patched and functioning correctly.

Give **one** possible cause of the low input level.

Question 8 (4 marks)

A band is conducting a sound check in an empty hall. The band complains to the sound engineer that the foldback monitors are not loud enough. When the foldback is increased to the level the band requests, the result is loud feedback. The sound engineer tells the band that the feedback will not occur once the hall is filled with an audience.

The band is also concerned that the empty hall is too reverberant and therefore the sound lacks clarity. The sound engineer assures the band that the reverb will reduce once the audience arrives.

- a. Is the sound engineer correct that the feedback will not occur when the hall is filled with an audience? Give **one** reason to support your answer. 2 marks

- b. Is the sound engineer correct that the reverb will reduce when the hall is filled with an audience? Give **one** reason to support your answer. 2 marks

Question 9 (3 marks)

A DJ needs to hire sound reinforcement equipment for a performance.

Give three pieces of information the DJ will need about the venue that will have an impact on the choice of equipment.

1. _____
2. _____
3. _____

Question 10 (12 marks)

A sound engineer is mixing a live band that consists of:

- a lead vocalist
- a backing vocalist
- a drummer
- a bass player
- an electric guitarist
- a trumpet player
- a trombone player.

The lead vocalist and backing vocalist have foldback monitors.

- a. During the performance, the sound engineer notices the problems listed in the table below.

Complete the table by providing a probable cause and solution for each problem.

10 marks

Problem	Probable cause	Solution
The lead vocalist makes an uncomfortable facial expression and backs off from the microphone while singing.		
The band's stage volume is reaching dangerous levels.		
The bass is routed through a direct input (DI) box. The bass drops out of the PA and the onstage bass amp during the performance.		
There is a crackling sound in the mix when the lead vocalist takes the microphone from the stand and moves around.		
The trombone player and the trumpet player are sharing a microphone and the trumpet player cannot be heard.		

- b. The venue operator approaches the sound engineer and says the band needs to be 'toned down'.

What are two questions the sound engineer should ask the venue operator in order to identify the best action to take?

2 marks

Question 1 _____

Question 2 _____

Question 11 (6 marks)

When troubleshooting audio equipment, a good approach is to be methodical and follow the signal path.

- a. Give an example of a home studio input signal path by listing three pieces of equipment in the correct order.

3 marks

1. _____

2. _____

3. _____

- b. Give an example of a signal path for an active PA system used for speeches by listing three pieces of equipment in the correct order.

3 marks

1. _____

2. _____

3. _____

Question 12 (6 marks)

A filmmaker is setting up a voice over studio to record narration for a documentary. A computer and DAW software have been purchased.

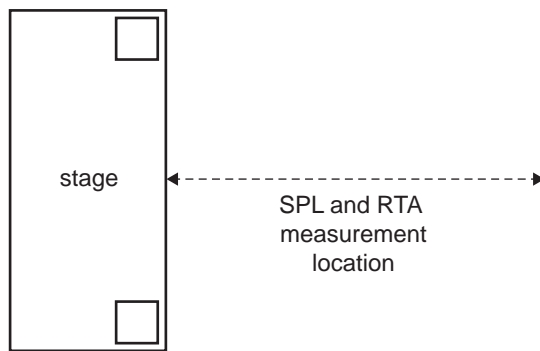
- a. List five additional pieces of audio equipment that the filmmaker will need to make the recording. 5 marks

1. _____
2. _____
3. _____
4. _____
5. _____

- b. The voice over studio is too reverberant.
How could this be improved? 1 mark

Question 13 (6 marks)

A sound engineer is taking sound pressure level (SPL) and real-time analyser (RTA) measurements in front of the stage during a sound check at an outdoor music festival.



- a. The sound engineer observes an average SPL of 50 dB at the measurement location in front of the stage. The volume of the PA system is increased until the sound engineer perceives it to be twice as loud.

What would the expected average SPL measurement be after the volume is doubled? 1 mark

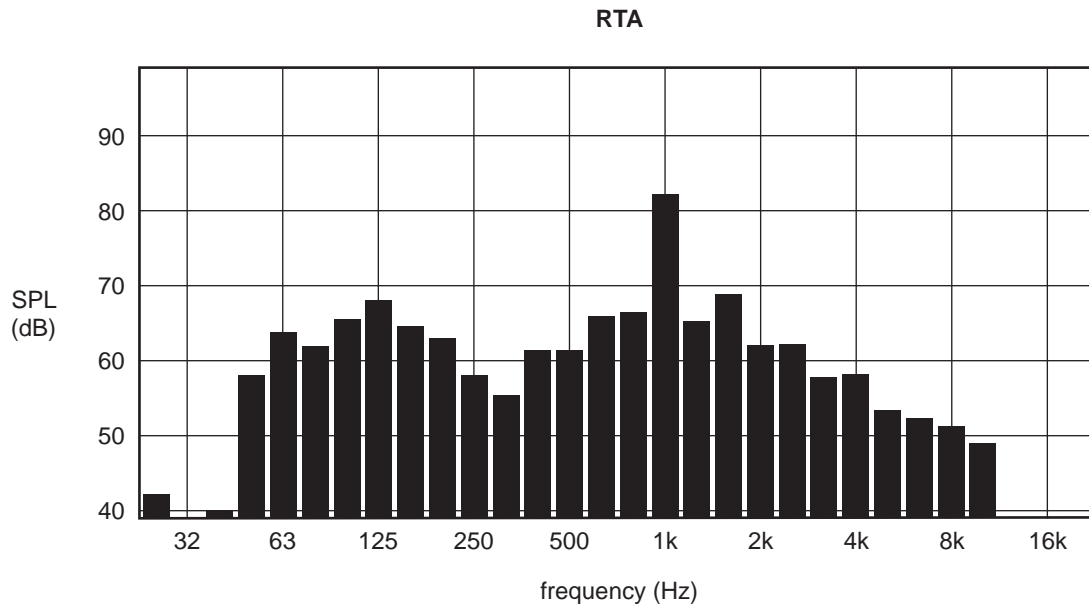
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- b. A decision is made to double the number of amplifiers and front-of-house (FoH) speakers for the PA system. This doubles the output power of the PA system.

What approximate increase in SPL would be achieved by doing this? Give your answer in decibels (dB).

1 mark

- c. Shown below is the RTA reading when loud feedback occurs.



- i. At what approximate frequency does the feedback occur? 1 mark

- ii. Suggest two possible solutions to reduce the likelihood of the feedback occurring again. 2 marks

1. _____

2. _____

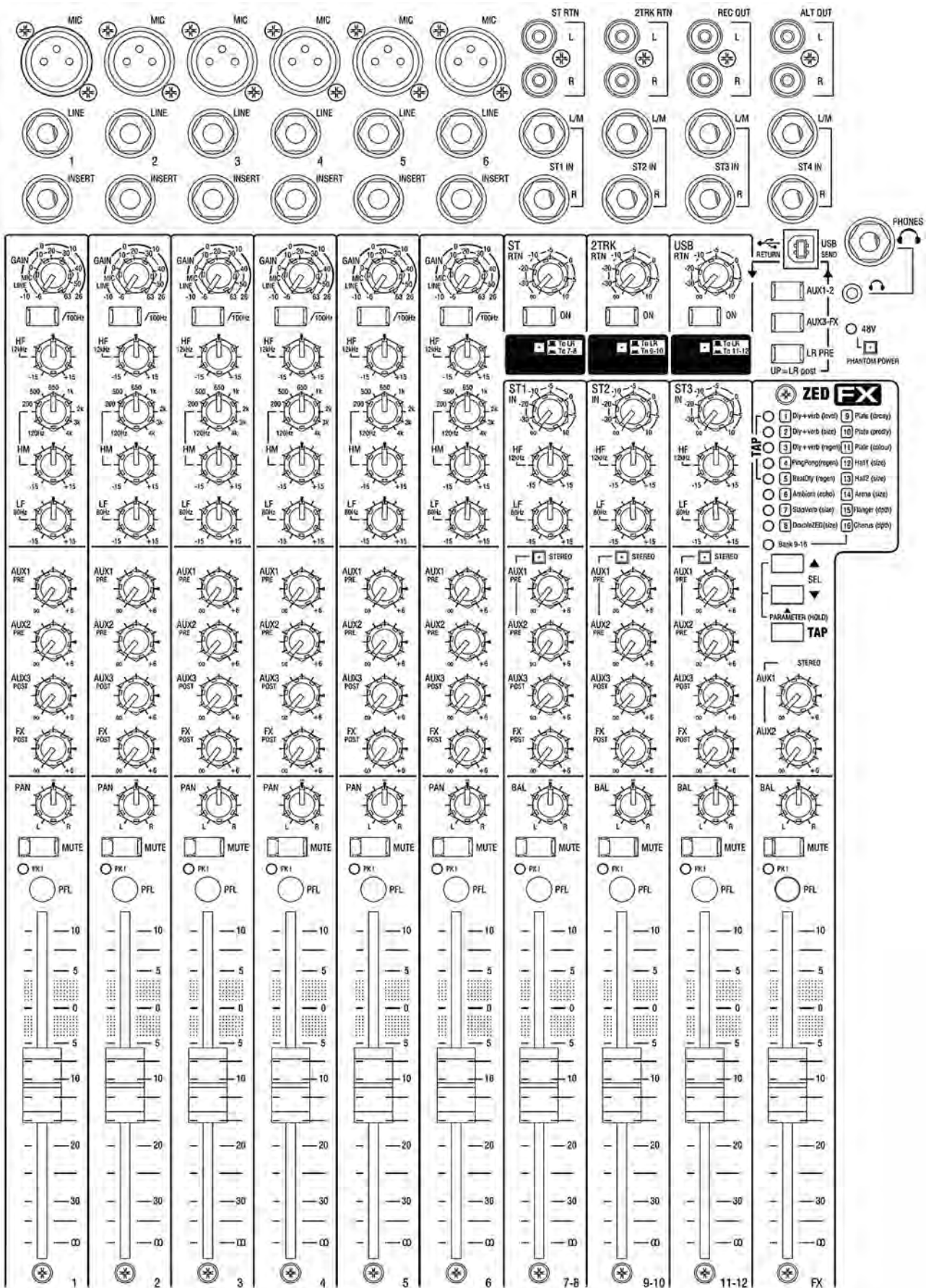
- d. At a distance of 40 m from the stage, the sound engineer notices that there is a considerable drop in SPL. The engineer decides to set up an additional set of amplifiers and speakers at this distance from the stage.

What type of signal processor would need to be in the audio signal path to ensure that the sound heard at this distance is time aligned?

1 mark

Question 14 (14 marks)

The diagram below shows some of the controls on a mixing desk.



Source: adapted from ZED 12 FX diagram from Allen & Heath, ZED 12 FX, ZED 16 FX and ZED 22 FX user guide, p. 7, <<https://www.allen-heath.com/ahproducts/zed-12fx/>>

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- a.** Name the socket that would enable a compressor to be placed in the signal path after the gain control but before the equaliser. 1 mark
-
- b.** How many auxiliary outputs are available to control headphone monitor mixes that are independent of fader adjustments? 1 mark
-
- c.** On the diagram on page 16, circle the area of the mixer that is used to select built-in FX programs. 1 mark
- d.** Explain the function of the 100 Hz button. 1 mark
-
- e.** Explain the function of the AUX1 and AUX2 knobs on the FX channel. 1 mark
-
- f.** On the diagram on page 16, indicate with an arrow the knob used to select the frequency for the sweepable/semi-parametric-type equaliser for input channel 1. 1 mark
- g.** The 48 V phantom power button on this mixer is referred to in the user manual as ‘global’. Explain what is meant by the term ‘global’ in this context. 1 mark
-
- h.** Give two examples of input devices that would require the 48 V phantom power to be switched on. 2 marks
- Example 1 _____
- Example 2 _____
- i.** Describe the function of the button marked ‘TAP’. 1 mark
-
- j.** Describe the function of the PFL button. 1 mark
-

- k.** An external stereo FX processor is going to be used in addition to the mixing desk's built-in FX. The processor will be connected so that signal can be sent from each channel individually and then blended back into the main LR mix.
- i.** Which output socket on the mixing desk would be used to connect to the input of the external FX processor? 1 mark
-
- ii.** Which input sockets on the mixing desk would be used to return the external stereo FX signal into its own channel? 1 mark
-
- l.** This desk is being used to mix a live gig with six microphone input sources.
Why is it that this desk cannot be used to make a multitrack recording at the same time? 1 mark
-

Question 15 (2 marks)

What two audible changes would occur as a result of playing back a 44.1 kHz digital recording at a sample rate of 48 kHz?

Audible change 1 _____

Audible change 2 _____