



# Victorian Certificate of Education 2009

SUPERVISOR TO ATTACH PROCESSING LABEL HERE

## STUDENT NUMBER

Figures

Words


Letter

--

# VCE VET MUSIC INDUSTRY (Technical production)

## Aural and written examination

Thursday 12 November 2009

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	9	9	25
B	17	17	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 white out liquid/tape.
- No calculator is allowed in this examination.

### Materials supplied

- Question and answer book of 14 pages.
- Answer **all** questions in the spaces provided.
- An audio compact disc will run continuously throughout Section A of the examination. The audio compact disc will run for 21 minutes.

### 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.
- 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 CD plays throughout Section A. In **Questions 1–9**, audio excerpts are played twice. The announcer explains how the audio excerpt(s) for each question will be played.

**Question 1**

The following guitar excerpt has two parts.

Identify the type of signal processing used on the second part of the excerpt.

---

1 mark

**Question 2**

The following four frequency excerpts are sine waves.

From the choices provided, identify the frequency of each tone.

125 Hz 250 Hz 500 Hz 1000 Hz 2000 Hz 4000 Hz

a. \_\_\_\_\_ Hz   b. \_\_\_\_\_ Hz   c. \_\_\_\_\_ Hz   d. \_\_\_\_\_ Hz

1 + 1 + 1 + 1 = 4 marks

**Question 3**

The following guitar excerpt has two parts. Each part uses the same type of processing on the guitar.

a. What processing has been used on each part?

---

b. Which parameter has been altered between the first and second parts?

---

c. Describe how the parameter has been altered.

---

1 + 1 + 1 = 3 marks

**Question 4**

The following vocal excerpt is in two parts.

Identify the type of digital processing applied to the second part.

---

1 mark

**Question 5**

a. The following drum excerpt is in two parts.

i. What kind of processing has been applied to the second part of the excerpt?

---

ii. How has this processing affected the sound of the second part of the excerpt?

---

b. The following trumpet excerpt contains unwanted noise.

i. What is this type of noise called?

---

ii. Name one typical cause of this noise.

---

(1 + 1) + (1 + 1) = 4 marks

**Question 6**

The following two song excerpts are in two parts. Describe how the second part of each excerpt has been altered.

Song A \_\_\_\_\_

Song B \_\_\_\_\_

2 marks

**Question 7**

The following three tones are electronically generated tones.

From the choices provided, identify the waveform of each tone.

sine square sawtooth noise

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

1 + 1 + 1 = 3 marks

**Question 8**

The following two vocal excerpts are each in two parts.

**Vocal excerpt 1**

- a. What kind of processing has been applied to the second part?

---

- b. Describe how the sound of the second part has changed.

---

**Vocal excerpt 2**

- c. What kind of processing has been applied to the second part?

---

- d. Describe how the sound of the second part has changed.

---

1 + 1 + 1 + 1 = 4 marks

**Question 9**

- a. The following song excerpt is in two parts.

What kind of mixing technique has been applied to the second part?

---

- b. The following song excerpt is in two parts.

- i. Identify the problem with the second part.

---

- ii. Suggest one solution to prevent the problem occurring.

---

1 + (1 + 1) = 3 marks

Total 25 marks

## SECTION B

### Question 1

- a. At what voltage is phantom power typically supplied?

\_\_\_\_\_ volts DC

- b. What does the term DI stand for?

**D** \_\_\_\_\_ **I** \_\_\_\_\_

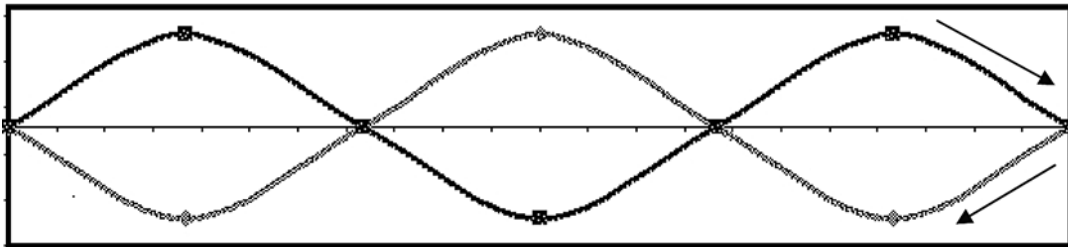
- c. What does the term RMS stand for?

**R** \_\_\_\_\_ **M** \_\_\_\_\_ **S** \_\_\_\_\_

1 + 1 + 1 = 3 marks

### Question 2

The diagram below represents a sound wave travelling along a closed pipe and reflecting back again.



- a. What is this type of wave called?

\_\_\_\_\_

- b. What is the audible result?

\_\_\_\_\_

1 + 1 = 2 marks

### Question 3

- a. Given the two sounds below, which would produce a sound with the shorter wavelength?

Tick (✓) the correct box.

i. thunder

ii. umpire/sports whistle

- b. What frequency is one octave lower than 250 Hz?

\_\_\_\_\_ Hz

1 + 1 = 2 marks

**Question 4**

- a. You have finished mixing a song that is six minutes in length. The artist asks you to create a 'radio edit' of the song.

What is the length, in minutes and seconds, of a typical radio edit?

\_\_\_\_\_ min \_\_\_\_\_ s

- b. You are asked to supply a portable audio recorder/editor for an outdoor film project. Of the devices below, which would most likely provide nondestructive editing functions? Tick (✓) the correct box.

i. portable hard disk recorder

ii. portable CD burner

- c. An interview you have edited needs to be backed up to disk. The total size of the audio files is 2.5 gigabytes (Gb).

Provide two types of backup media suitable for storing the files.

i. \_\_\_\_\_

ii. \_\_\_\_\_

1 + 1 + (1 + 1) = 4 marks

**Question 5**

When considering basic sampling theory

- a. what is the quantisation resolution, in bits, of audio CD

\_\_\_\_\_ bits

- b. what is the dynamic range, in decibels (dB), of 8 bit audio

\_\_\_\_\_ dB

- c. what is the sample rate, in kHz, of audio CD

\_\_\_\_\_ kHz

- d. what is the Nyquist frequency of 32 kHz?

\_\_\_\_\_ kHz

1 + 1 + 1 + 1 = 4 marks

**Question 6**

Place a tick (✓) in the box next to the digital audio format that does **not** use data compression.

i. mp4/AAC file

ii. audio CD track

iii. mp3 file

iv. mobile ringtone

1 mark

**Question 7**

Given the Australian National Safety Standard for hearing in the workplace, at what Sound Pressure Level (SPL) would you need to wear earplugs if you were exposed to more than eight hours of continuous noise?

\_\_\_\_\_ dB SPL

1 mark

**Question 8**

a. Explain the function of a noise gate when applied to an audio signal.

---



---

b. Provide two practical examples/applications of effective use of a noise gate in a recording situation.

Application 1 \_\_\_\_\_

---

Application 2 \_\_\_\_\_

---

2 + (1 + 1) = 4 marks

**Question 9**

When considering equalisation (EQ)

a. what does HPF stand for

---

b. in what way does HPF change the sound

---

c. what does LPF stand for

---

d. in what way does LPF change the sound?

---

1 + 1 + 1 + 1 = 4 marks

**Question 10**



a. Describe the audible result of the spike in the waveform shown above.

---

b. Suggest a possible editing process that could be used to eliminate the spike.

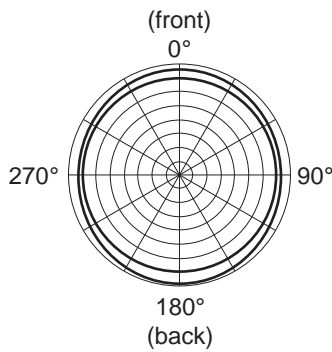
---

1 + 1 = 2 marks

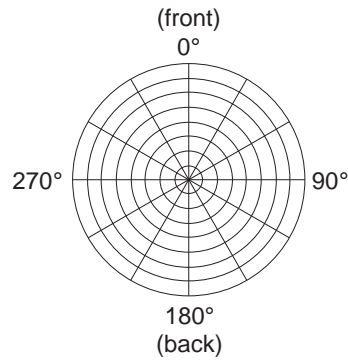
**Question 11**

On the polar graphs below, draw the microphone response patterns indicated. An example graph showing an omnidirectional pattern is shown on diagram A.

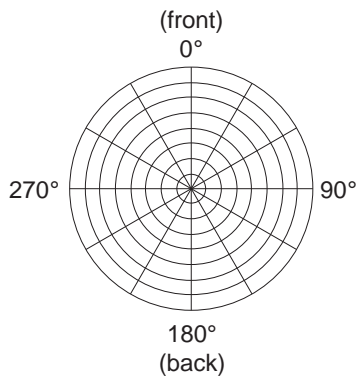
A. omnidirectional



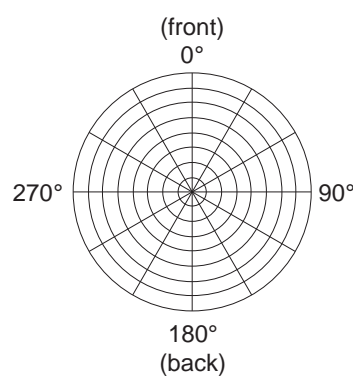
B. hypercardioid



C. cardioid



D. bidirectional



3 marks



**Question 12**

You have been asked to record a bass guitarist in a home recording studio. List the following components in correct order of signal flow for a successful recording and monitoring of the recorded signal.

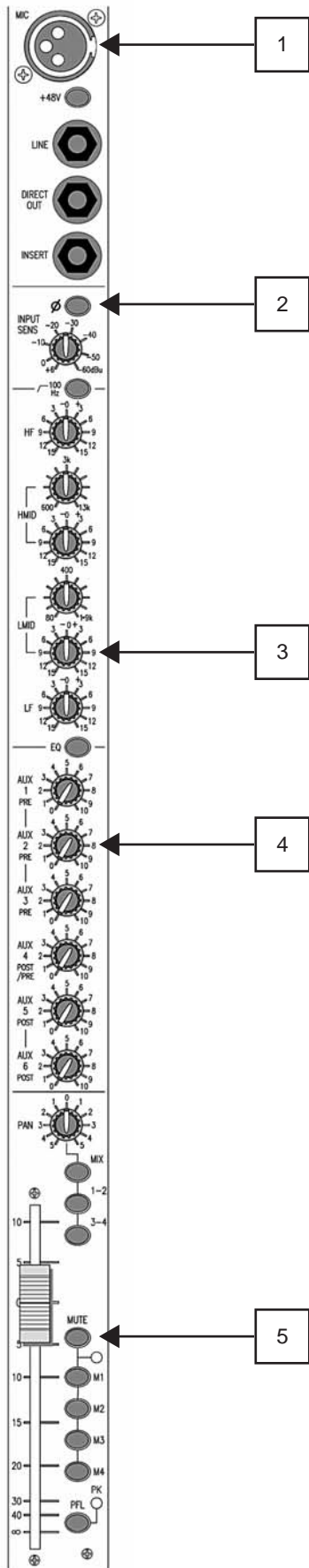
bass guitar, mixing console, studio monitors, effects pedal, preamp with built-in DI, sound card

- A. bass guitar
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_
- E. \_\_\_\_\_
- F. \_\_\_\_\_

5 marks

**Question 13**

- a. Describe each of the controls indicated on the mixing console channel below and provide an explanation of a possible application.



1. Item \_\_\_\_\_

Explain its application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Item \_\_\_\_\_

Explain its application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Item \_\_\_\_\_

Explain its application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4. Item \_\_\_\_\_

Explain its application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

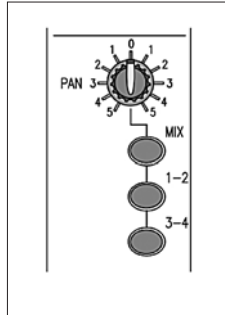
5. Item \_\_\_\_\_

Explain its application \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

- b. Below is a section of the same mixer channel. Provide two practical uses for this in the studio.

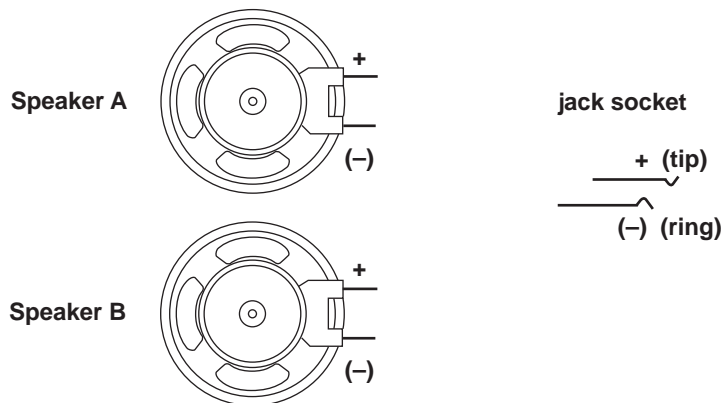


1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_

10 + (1 + 1) = 12 marks

**Question 14**

- a. In the picture below, Speaker A and Speaker B need to be wired in series. Draw lines connecting the positive (+) and negative (-) terminals of Speakers A and B to the positive and negative terminals of the jack socket to ensure the speakers would be correctly wired in series.



- b. If both speakers have an impedance of 4 Ω, calculate the total impedance for the following.
- if they are wired in series \_\_\_\_\_
- if they are wired in parallel \_\_\_\_\_

2 + (1 + 1) = 4 marks

**Question 15**

a. What voltage does an Australian 3-phase power outlet provide?

\_\_\_\_\_ volts

b. What is the alternating frequency of Australian AC mains electricity?

\_\_\_\_\_ Hz

c. Name two essential functions the earth pin provides when connecting audio equipment to AC mains electricity.

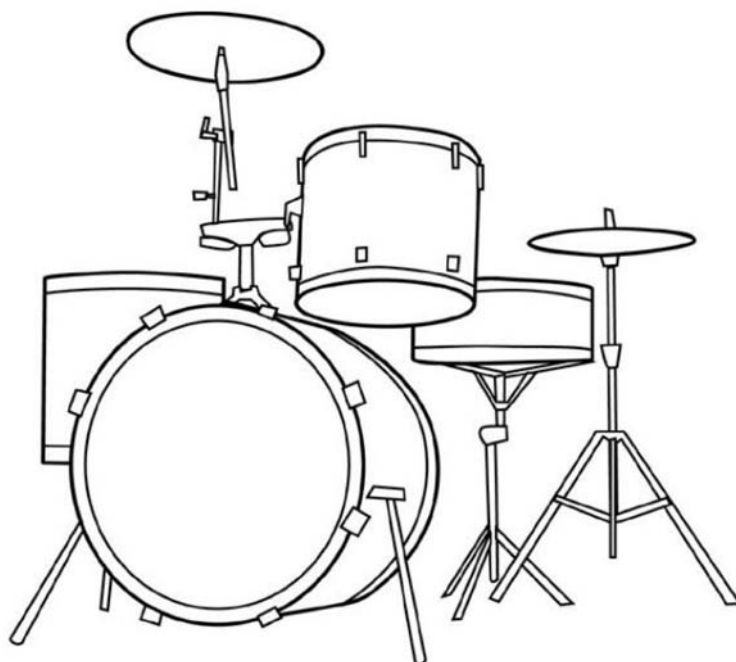
Function 1 \_\_\_\_\_

Function 2 \_\_\_\_\_

1 + 1 + (1 + 1) = 4 marks

**Question 16**

The diagram below shows a typical four-piece drum kit with cymbals.



Imagine you are mixing the drum kit at a live concert, and there are six channels available on the mixer for the drums. The PA system comes supplied with the following list of microphones.

Number	Diaphragm	Type	Pattern
1	large diaphragm	dynamic	cardioid
2	large diaphragm	condenser	omnidirectional
3	small diaphragm	dynamic	cardioid
4	small diaphragm	dynamic	cardioid
5	small diaphragm	dynamic	hypercardioid
6	small diaphragm	condenser	supercardioid

You are required to assign each microphone from 1 to 6 to different parts of the drum kit and indicate on the diagram where you would place them. Each microphone should capture a good balance of each drum in both close and ambient positions.

Write each number from 1 to 6 inside a circle, for example (1), in the correct position on the diagram.

12 marks

**Question 17**

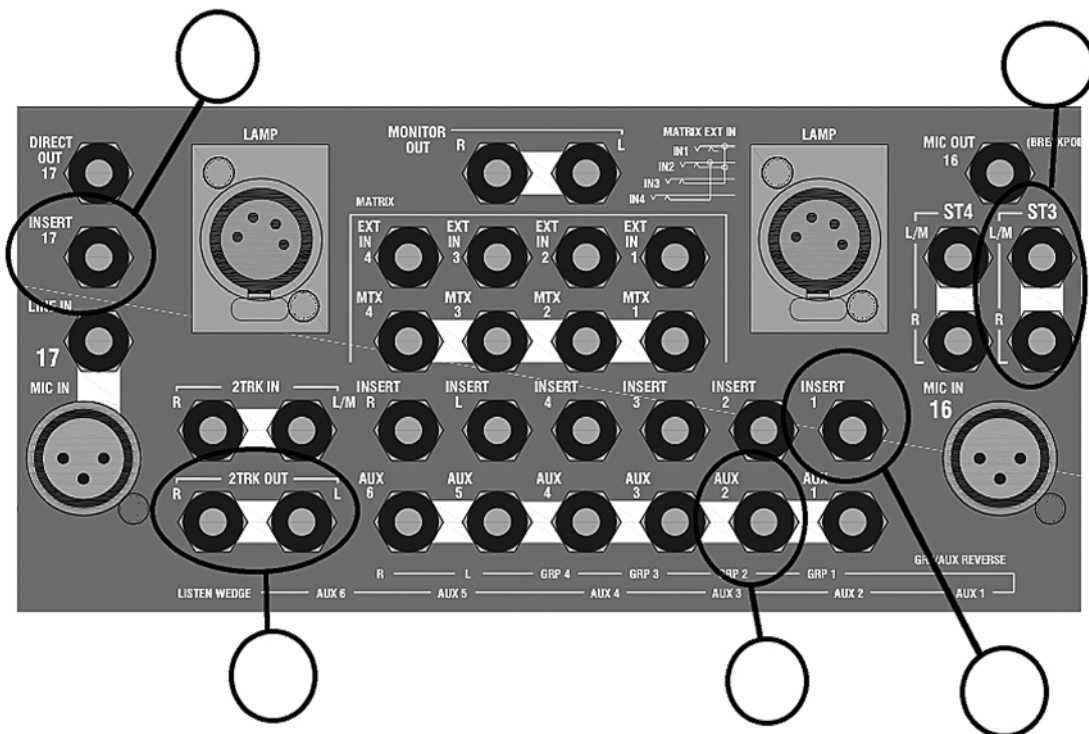
a. Imagine you are mixing and recording a jazz band live on stage. You are preparing to set up the bass player’s channel on the mixer. It is an upright acoustic bass amplified with a condenser microphone.

- The diagram below shows a section of the patch bay located on the back of the mixer.
- The bass player will be connected to channel 17.
- A foldback wedge will be connected to Aux 1.
- An effects unit will be connected to Aux 2.

The following list of devices needs to be correctly connected to the sockets circled below.

- **A** – foldback graphic equaliser
- **B** – effects unit – mono send
- **C** – effects unit – stereo return
- **D** – bass compressor
- **E** – portable 2-track recorder

In the blank circles, write a letter from A to E, where you would connect each device above.



b. The same jazz band is playing a song in the key of A = 440 Hz. You can hear low frequency feedback in the foldback speakers.

i. Given the key of the song, what low/bass frequencies are likely to be causing the feedback? Provide two frequencies.

Frequency 1 \_\_\_\_\_ Hz

Frequency 2 \_\_\_\_\_ Hz

ii. Given the devices A to E above, which device would most effectively eliminate the feedback?

5 + (2 + 1) = 8 marks

Total 75 marks

