

STUDENT NUMBER Letter

VCE VET MUSIC INDUSTRY: SOUND PRODUCTION

Aural and written examination

Wednesday 11 November 2020

Reading time: 11.45 am to 12.00 noon (15 minutes)

Writing time: 12.00 noon to 1.30 pm (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	5	5	25
B	14	14	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 23 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 1–5**, 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 (6 marks)

The following four multitrack 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. The mix consists of a synthesiser bass, electronic drums and a synthesiser lead.

- a. Which **two** percussion instruments have been added to the mix in the second part of Excerpt 1a? 2 marks
- _____
- _____
- b. Which instrument has had reverb added to it in the second part of Excerpt 1b? 1 mark
- _____
- c. Name the type of effect that has been applied to the synthesiser lead in the second part of Excerpt 1c. 1 mark
- _____
- d. Two changes have been made to the second part of Excerpt 1d.
- i. Which instrument has been muted? 1 mark
- _____
- ii. Name the type of effect that has been applied to the synthesiser bass. 1 mark
- _____

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Question 2 (3 marks)

The following three 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. The mix consists of four tracks: three clarinets and a bass clarinet, all individually miked.

- a. Which aspect of the mix has been changed in the second part of Excerpt 2a? 1 mark

- b. Name the type of processing that has been applied to the mix in the second part of Excerpt 2b. 1 mark

- c. What type of processing has been applied to the mix in the second part of Excerpt 2c? 1 mark

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Question 3 (8 marks)

The first three mix excerpts (Excerpt 3a, Excerpt 3b and Excerpt 3c) are in two parts. The first part of each of these excerpts is the original mix. The second part of each of these excerpts is a variation of the original mix. The mix consists of three instruments: drum kit, bass guitar and electric guitar. The fourth mix excerpt (Excerpt 3d) has one part. It is a variation of the original mix with the electric guitar soloed.

- a. What effect has been applied to the electric guitar in the second part of Excerpt 3a? 1 mark

- b. What effect has been applied to the bass guitar in the second part of Excerpt 3b? 1 mark

- c. Shown below are the electric guitar amplifier plug-in settings for the first part of Excerpt 3c.



Source: Avid, <www.avid.com>

Which setting has been changed on the electric guitar plug-in in the second part of Excerpt 3c?

1 mark

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- d. Excerpt 3d has audible clicks. The audio equipment is working normally. Shown below is a waveform image of the excerpt.



- i. Give a possible cause of the clicks in Excerpt 3d.

1 mark

- ii. Identify two types of audio processing that could be used during the mixing phase to reduce the clicks in Excerpt 3d and explain how each type of audio processing could achieve this.

4 marks

Type of audio processing	Explanation

Question 4 (4 marks)

The following four excerpts are of a recording of an electric guitar. 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.

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



Total Tremolo



fuzz-wah (auto wah parameter)



Squash Compressor



Fuzz Machine



Auto-Funk



Heavenly Chorus



Dr. Octave



Roswell Ringer



pitch shifter



H-Delay Hybrid Delay

Sources: Apple, <www.apple.com> (all except bottom right); Waves, <www.waves.com> (bottom right)

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- 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

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Question 5 (4 marks)

The following three mix excerpts are in two parts. The first part of each excerpt is the original mix. The second part of each excerpt has had a different process applied. Each mix is being prepared for a different video clip.

- a.** In the second part of Excerpt 5a, the engineer was asked to make the excerpt sound like it is coming from a small speaker in a lift.

What effect has been applied to achieve this?

1 mark

- b.** In the second part of Excerpt 5b, the engineer was asked to make the excerpt sound like it is being overheard from someone's earphones.

What effect has been applied to achieve this?

1 mark

- c.** In the second part of Excerpt 5c, the engineer was asked to make the excerpt sound more dramatic.

- i.** What effect has been applied to achieve this?

1 mark

- ii.** As the second part of Excerpt 5c was played, an effect parameter was altered.

Name the altered effect parameter.

1 mark

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CONTINUES OVER PAGE

TURN OVER

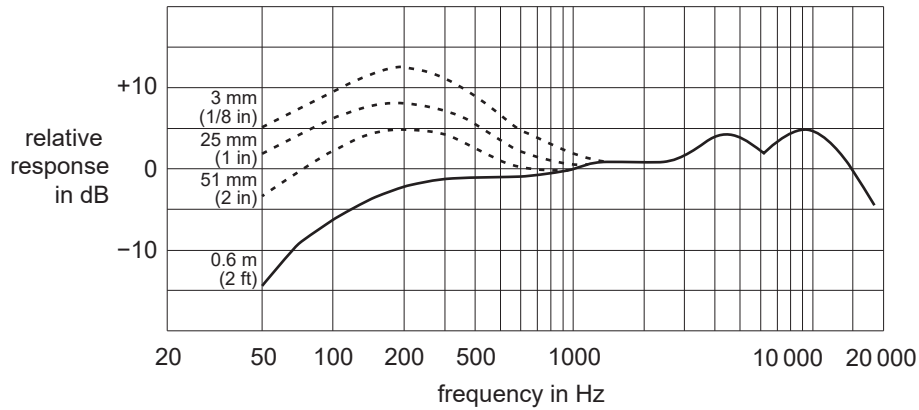
SECTION B

Instructions for Section B
 Answer **all** questions in the spaces provided.

Question 1 (4 marks)

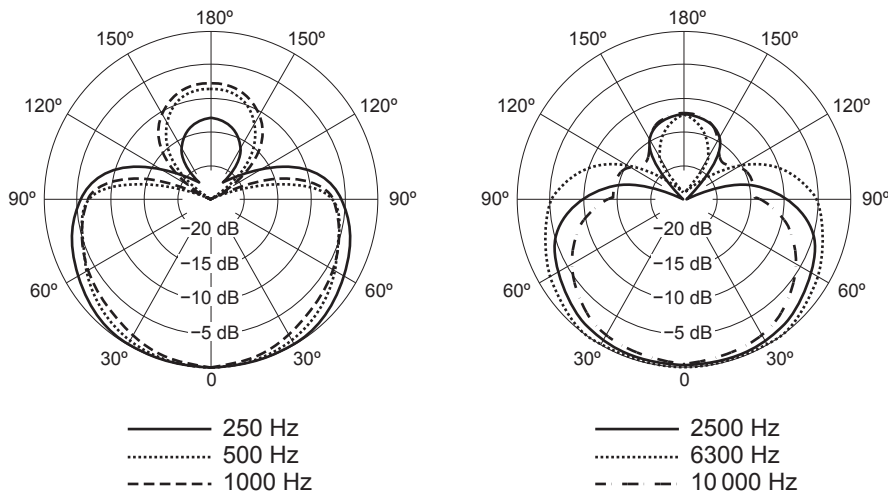
The frequency response and polar pattern graphs for a common supercardioid vocal microphone are shown below.

Typical frequency response



Source: Shure, <<https://pubs.shure.com/guide/BETA58A/enUS>>

Polar patterns



Source: Shure, <<https://pubs.shure.com/guide/BETA58A/enUS>>;
 Shure Incorporated; All rights reserved

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- a. What is the name of the effect that increases the bass response of this microphone, as shown by the dashed lines on the frequency response graph? 1 mark
-
- b. Which frequency is picked up the most by this microphone at 180°? 1 mark
-
- c. Which frequency is rejected the most by this microphone at 90°? 1 mark
-
- d. Give the best angle at which to locate a pair of foldback wedges for a vocalist in a live setting in order to minimise the chance of feedback occurring. 1 mark
-

Question 2 (1 mark)

According to WorkSafe Victoria, what type of handling is the biggest cause of injuries in Victorian workplaces?

Question 3 (1 mark)

A tilt-back trolley, a flatbed trolley and a guitar amplifier are shown below.



tilt-back trolley



flatbed trolley



guitar amplifier

Sources (from left): ElephantCastle/Shutterstock.com; Phonlamai Photo/Shutterstock.com; Waraporn Chokchaiworarat/Shutterstock.com

Why is the tilt-back trolley the best choice to move the guitar amplifier across a flat surface to another location?

Question 4 (1 mark)

Why does the same pitch note played on a violin sound different when played on a piano?

Question 5 (3 marks)

A microphone for a singer is set up as shown on a stage at an outdoor venue. There is a foldback wedge for the singer and front-of-house (FoH) speakers for the audience. A sound check is to take place before the audience enters the venue. Before the sound check, an engineer uses a graphic equaliser to tune the foldback wedge to maximise gain before feedback.



- a. Give the two steps that can be repeated several times in order to tune the foldback wedge to maximise gain before feedback. 2 marks

Step 1 _____

Step 2 _____

- b. Explain why tuning the foldback wedge could give different results when the singer is in front of the microphone compared to when nobody is in front of the microphone. 1 mark

Question 6 (30 marks)

Consider the following equipment available and the performer information for a live music event.

1 × analogue mixing desk (no built-in amplifiers or effects) with two pre-fader aux sends and one post-fader aux send	1 × large diaphragm dynamic microphone
2 × large active FoH speaker boxes	2 × small diaphragm condenser microphones
2 × speaker stands	2 × dynamic vocal microphones (with built-in pop shields)
4 × passive speaker wedges	2 × dynamic instrument microphones
1 × dual-channel power amplifier and speaker cables	1 × direct input (DI) box for bass guitar
2 × dual-channel graphic equalisers	1 × 30 m multicore with stage box (16 way – 12 in and 4 out)
1 × dual-channel compressor	15 × 7 m male-to-female XLR cables
1 × FX unit	6 × unbalanced 6.35 mm jack-to-jack (TS to TS) cables
4 × tall boom microphone stands	
3 × short boom microphone stands	
1 × straight microphone stand	

The line-up of the band consists of two guitarists who sing, a drummer and a bass player. The band has its own drum kit and instrument amplifiers. The FoH mix position is 15 m in front of the stage.

- a. From the equipment list provided, choose a suitable type of microphone or microphone stand for the input sources listed in the table below.

4 marks

Input source	Type of microphone	Type of microphone stand
kick drum		short boom microphone stand
drums overhead L	small diaphragm condenser microphone	
guitar amplifier 1		short boom microphone stand
vocals 1		tall boom microphone stand

- b. i. Explain your choice of microphone for the kick drum in **part a**. 1 mark

- ii. Explain your choice of microphone for the guitar amplifier in **part a**. 1 mark

c. The bass player wants to use a DI box to connect to the PA system.

Give two advantages of using a DI box to connect to the PA system.

2 marks

1. _____

2. _____

d. List three advantages of using the multicore.

3 marks

1. _____

2. _____

3. _____

e. Using items from the equipment list provided on page 13, complete the table below to show the correct order of signal flow for the FoH path.

4 marks

1	<i>microphones/DI and XLR cables</i>
2	
3	
4	
5	<i>dual-channel compressor with both channels set to limiting</i>
6	

f. Using items from the equipment list provided on page 13, complete the table below to show the correct order of signal flow for the foldback path.

4 marks

1	<i>microphones/DI and XLR cables</i>
2	
3	
4	<i>multicore</i>
5	
6	
7	<i>passive speaker wedges</i>

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- g. In the table below, identify four different applications for the unbalanced jack-to-jack leads. 4 marks

Equipment or instrument with unbalanced jack	Equipment the jack-to-jack lead would be connected to
bass guitar (to the PA system)	
DI unbalanced out	
mixing desk aux post out	
FX unit out	

- h. If the power amplifier states that its minimum output load is 4Ω per channel, what is the minimum impedance that each passive speaker box can be if they are connected in parallel pairs? 1 mark

- i. From the equipment list provided on page 13, give five types of PA equipment that are mains powered. 5 marks

1. _____

2. _____

3. _____

4. _____

5. _____

- j. Suggest a solution if the required equipment's total power consumption exceeds what can be safely provided from a single general purpose outlet (GPO). 1 mark

Question 7 (4 marks)

The image below shows folders and files on a computer-based digital audio workstation (DAW) system. The folders and files are from a recording session for a short piece of music across 12 tracks.

Name	Size	Kind
DAW band recording session	190.7 MB	Folder
▶ Audio Files	175.6 MB	Folder
band recording session	143 KB	DAW session file
▶ Bounced Files	6.2 MB	Folder
▶ Session File Backups	3 MB	Folder
WaveCache.wfm	5.7 MB	Overview Cache

- a. Identify the file or folder name that should be copied when making a copy of the session for backup purposes. 1 mark

- b. List three kinds of information likely to be contained in the 'band recording session' file. 3 marks

1. _____

2. _____

3. _____

Question 8 (5 marks)

The image below shows a microphone on a stand, along with two accessories labelled Accessory 1 and Accessory 2.



Source: Maono, <www.maonotech.com>

- a. Explain how Accessory 1 works and give two reasons why it would be useful when recording a quiet vocal part. 3 marks

Explanation _____

Reason 1 _____

Reason 2 _____

- b. Describe how Accessory 2 works and identify the unwanted sound it reduces. 2 marks

Description _____

Unwanted sound _____

Question 9 (10 marks)

The rack of audio equipment shown below is to be used for a live event consisting of speeches, a DJ and a musician who will sing over a backing track. The people giving the speeches will use a lectern microphone and the DJ will bring their own DJ mixer. The organisers have asked that the DJ not be too loud.



stereo couple is active

Sources (from top): Klark Teknik Group, <www.klarkteknik.com>;
 TC Electronic, <www.tcelectronic.com/tcelectronic/product?modelCode=P0CJT>;
 dbx by HARMAN, <https://dbxpro.com/en/products/166xs>

- a. Which piece of audio equipment shown in the image above could be used to ensure automatic control of the DJ’s volume to ensure it does not go over a set level? Which two controls would be adjusted to achieve this? 3 marks

Equipment _____

Control 1 _____

Control 2 _____

- b. During a sound check the singer complains that they have a very ‘dry’ vocal sound. Which piece of audio equipment shown in the image above could be used to fix this? 1 mark

- c. The organiser complains that the person speaking at the lectern sounds very bright and sibilant. Circle **three** faders on the graphic equaliser above that will most likely fix this problem. 3 marks

- d. The sound engineer notices that the DJ’s mixer is producing a low-frequency hum in between songs. Which control on the compressor shown above could the sound engineer use to automatically remove the hum? 1 mark

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- e. The organisers want a line check and a sound check to be carried out before the start of the event.

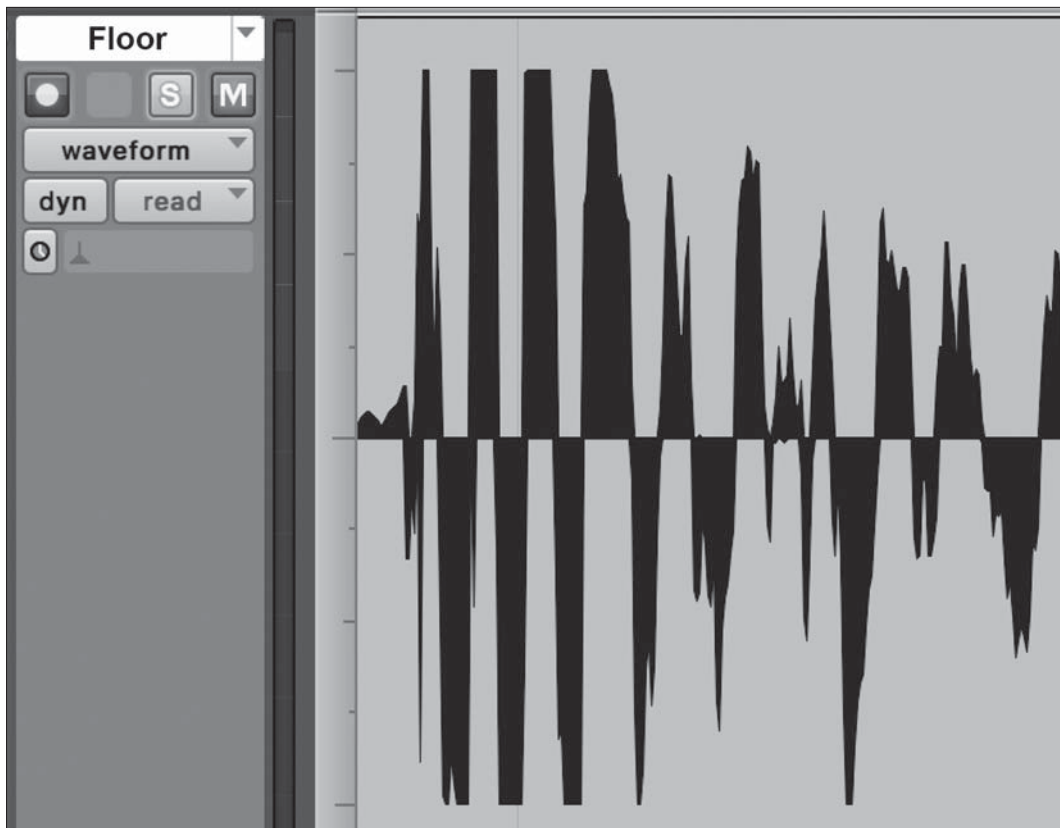
Explain the difference between a line check and a sound check.

2 marks

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Question 10 (3 marks)

Having just recorded a floor tom part on a DAW, an engineer hears that the recorded sound differs from the acoustic sound. The screenshot below shows the recorded waveform at the point where the problem occurs.



- a. What is the problem shown in the waveform? 1 mark
-
- b. Suggest a way that the floor tom could be rerecorded without the problem occurring again. 1 mark
-
- c. Suggest a way that the problem could be reduced without rerecording the floor tom. 1 mark
-

Question 11 (1 mark)

An engineer is recording a vocal overdub in a studio. The vocalist chooses not to use headphones, preferring to hear the previously recorded playback through a speaker.

In this situation, why would the engineer decide to record the vocalist using a bi-directional microphone with the playback speaker positioned at 90° to the microphone?

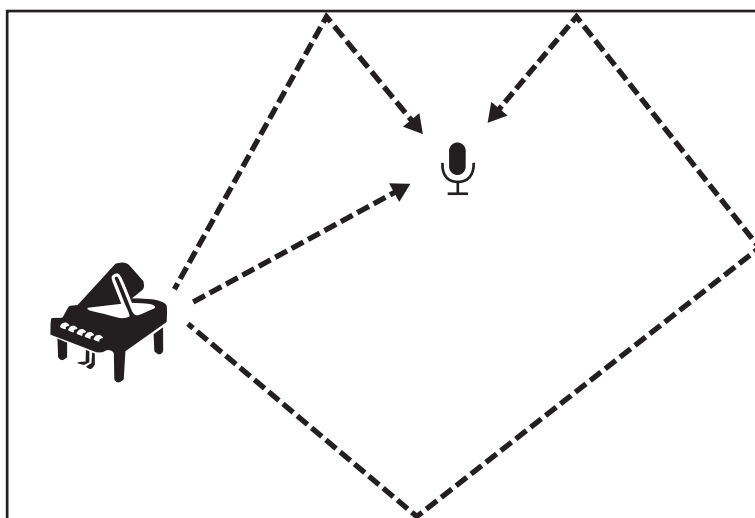
Question 12 (2 marks)

Give two reasons why phantom power is required for most condenser microphones.

1. _____
2. _____

Question 13 (3 marks)

A plan view of a recording studio with four walls is shown below. Three possible sound paths from a piano to a microphone are indicated by the dashed arrows.



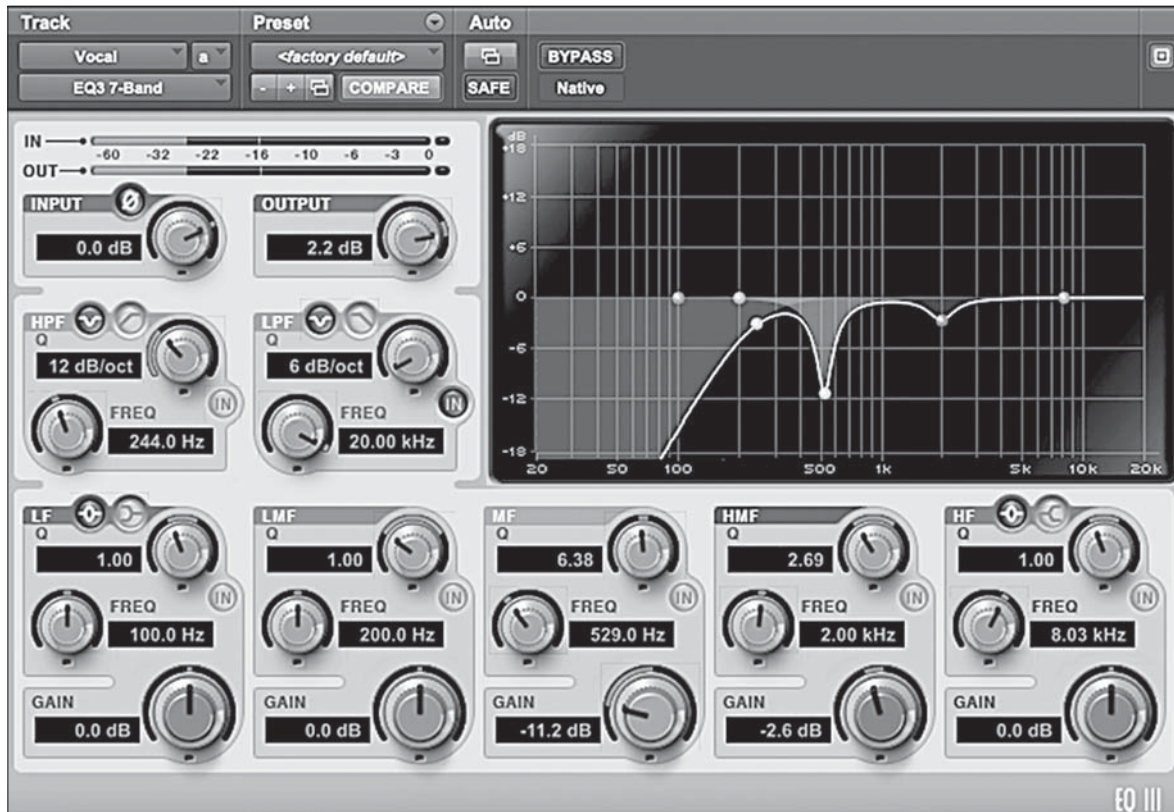
Source: Vincen-cio/Shutterstock.com (microphone);
Park Ji Sun/Shutterstock.com (piano)

List the three components that make up the combined sound as picked up by the microphone.

1. _____
2. _____
3. _____

Question 14 (7 marks)

The following screenshot is of an equalisation plug-in applied to the vocal track of a multitrack mix.



- a. What does HPF stand for? 1 mark

- b. The input and output meters are at approximately the same level even though three frequency bands have been attenuated.
How has this consistency between input and output levels been achieved? Give **one** advantage of doing this. 2 marks

- c. The vocalist has requested that something be done to make their voice sound ‘airier’.
Which frequency band would be boosted to achieve this? 1 mark

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d. During mixing the engineer can hear a constant tone in the vocal track around 280 Hz. The engineer decides to use the LMF band to attenuate this frequency.

i. What type of equaliser is the LMF band and why is it a good choice for this problem? 2 marks

ii. The engineer uses a high Q value to remove the frequency.

Why?

1 mark

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