2019 VCE VET Music Industry: Sound Production examination report

General comments

Students generally performed well in the 2019 examination; however, there are always areas for improvement, which have been outlined below.

Most students had difficulty with concepts related to the physics of sound. The difference between effects and processing used in Section A is an area requiring improvement. As this is a technical study, students' responses should be of a technical nature, using appropriate terminology, and be clear and concise.

Students are encouraged to complete adequate revision and self-assessment. Past examinations and audio examples, available on the VCAA website, may be helpful to students in their preparation. Students are also encouraged to revise Units 1 and 2 as these contain the underpinning knowledge essential to Units 3 and 4.

Where possible, students would benefit from opportunities to practise the practical elements of the study. This could be done by setting up the sound production equipment for school assemblies or performances. These practical tasks reinforce the terminology included in the study, as well as providing opportunities to practise running cables, being aware of electricity and other safety issues during installation for events.

Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

Section A

Question 1

Students were required to identify a series of four variations to the same original mix excerpt. The first part of each excerpt finished with a fade, which made the audio seem louder during the second part. Some students may have had difficulty distinguishing this apparent change from the variation. Most students responded well to this question.

Question 1a.

Marks	0	1	Average
%	61	39	**0.4**

The snare drum was muted.

Question 1b.

Marks	0	1	Average
%	37	63	**0.6**

The bass guitar was muted.

Question 1c.

Marks	0	1	Average
%	53	47	**0.5**

The variation was LF cut or HPF.

Question 1d.

Marks	0	1	Average
%	20	80	**0.8**

Reverb was applied.

Question 2

Most students were able to identify delay, but many did not show a good understanding of the FX parameter.

Question 2a.

Marks	0	1	Average
%	12	88	**0.9**

Students were required to identify an effect that had been applied to the second and third parts of a three-part flute excerpt.

Question 2bi.

Marks	0	1	Average
%	59	41	**0.4**

Feedback or echo was the parameter that had been changed.

Question 2bii.

Marks	0	1	Average
%	44	56	**0.6**

The parameter had been increased.

Question 3

Students were required to identify from an excerpt the most likely cause of an audible problem in a lapel microphone and suggest a solution. Most students were able to recognise the cause of the audible problem and recommend an appropriate solution.

Question 3a.

Marks	0	1	Average
%	40	60	**0.6**

The most likely cause of the audible problem was the microphone rubbing on the announcer's clothing/poor positioning of the microphone.

Question 3b.

Marks	0	1	Average
%	43	57	**0.6**

The solution would be to reposition the microphone.

Question 4

Students were required to identify which effect processor had been used for each of four effects applied to a saxophone solo. Students were able to achieve very well on this task.

Question 4a.

Marks	0	1	Average
%	8	92	**0.9**

Acceptable answers were vintage graphic EQ / EQ / graphic EQ.

Question 4b.

Marks	0	1	Average
%	3	97	**1.0**

Acceptable answers were tape delay / delay.

Question 4c.

Marks	0	1	Average
%	4	97	**1.0**

Acceptable answers were H-Reverb / hybrid reverb / reverb.

Question 4d.

Marks	0	1	Average
%	8	92	**0.9**

Acceptable answers were Fuzz-wah / auto wah / wah.

Question 5

Students were required to state the correct term for unwanted audio in a snare drum track from a multi-track recording, describe why it may make the track harder to mix, and identify the types of effect processors that would minimise the unwanted audio, explaining how.

Question 5a.

Marks	0	1	Average
%	16	84	**0.9**

Acceptable answers were spill / bleed. Most students were able to identify the unwanted audio as instrument bleed.

Question 5b.

Marks	0	1	Average
%	53	47	**0.5**

Changes to balance or effects processing applied impacts on the target sound as well as the spill. This reduces control over the mix and makes it more difficult to achieve an optimal result. Many students did not recognise the importance of minimising bleed for processing and controlling the mix.

Question 5c.

Marks	0	1	2	3	4	5	6	Average
%	1	2	6	8	15	22	45	**4.8**

Most responses identified the three types of effect processors that would minimise the bleed. Fewer were able to adequately explain how these processors would achieve that outcome.

Type of effect processor	How unwanted audio is minimised
expander/gate	is able to remove quieter sounds/sounds below a certain volume threshold
equaliser	is able to cut some frequencies that do not belong to the snare or boost those that do
select and delete edit functions	enables selection and deletion of the unwanted sections, leaving only the snare waveform

Question 6

Students were required to identify the waveform envelope of each of two excerpts. Most students were able to identify the correct waveform envelope in each case.

Question 6a.

Marks	0	1	Average
%	32	68	**0.7**

The correct waveform envelope was Envelope 2.

Question 6b.

Marks	0	1	Average
%	4	96	**1.0**

The correct waveform envelope was Envelope 4.

Question 7

Students were required to identify the effect that had been applied to the main mix output in two final mix files, and identify which parameter had been adjusted between the two mixes. Many students were not able to identify the adjusted parameter.

Question 7a.

Marks	0	1	Average
%	50	50	**0.5**

Acceptable answers were compression / limiting.

Question 7b.

Marks	0	1	Average
%	79	21	**0.2**

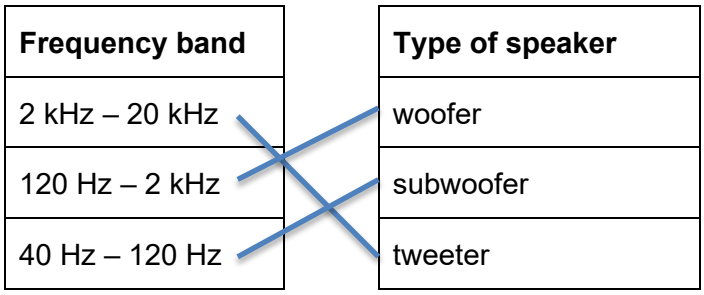
The parameter that had been adjusted was threshold.

Section B

Question 1

Marks	0	1	2	Average
%	9	13	78	**1.7**

Students were required to match each frequency band to the correct type of speaker by drawing a line between the matched items. The correct answer was as follows.



Question 2

Marks	0	1	2	3	Average
%	0	5	31	64	**2.6**

Students were required to list three benefits of rolling microphone cables correctly. Acceptable answers included any three of the following.

- lowered risk of cable failure
- ease of storage
- greater economy
- ease in unrolling/running cable
- reduction of trip hazard, with the cable lying flat.

Students demonstrated a good understanding of coiling cables and why correct coiling is important.

Question 3

Students were required to identify a problem, state why it occurs and suggest a resolution. Most students attempted this question, but few scored highly. Practical experience in a range of audio recording scenarios assists students in gaining experience of a variety of problems.

Question 3a.

Marks	0	1	Average
%	83	17	**0.2**

The cause of the problem was latency.

Question 3b.

Marks	0	1	Average
%	91	9	**0.1**

This is caused by the time taken for the DAW processor to convert the audio from analogue to digital and back again.

Question 3c.

Marks	0	1	Average
%	89	11	**0.1**

A suggested solution could be one of the following:

- send only the direct signal to the headphones
- change the hardware settings
- decrease buffer
- remove plug-ins.

Question 4a.

Marks	0	1	Average
%	88	12	**0.1**

Students were required to determine the output in decibels of a given compressor and ratio. Acceptable answers for the output level were – 68 dB / 2 dB higher than the threshold.

Question 4bi.

Marks	0	1	Average
%	73	27	**0.3**

For an infinity:1 ratio acceptable answers for the output level were – 70 dB or 0 dB change.

Question 4bii.

Marks	0	1	Average
%	67	33	**0.3**

Students were required to state why the infinity:1 ratio is known as ‘limiting’. This is because output is limited to the threshold value.

Question 4biii.

Marks	0	1	Average
%	58	42	**0.4**

Examples of why limiting might be used over the front-of-house output of a PA system in a live context include:

- to protect speakers from distortion or damage
- to prevent sound pressure from exceeding acceptable levels
- to protect hearing.

Question 5

In responding to a practical scenario about using effects on individual instruments, some students scored well, but many provided responses that were not relevant.

Question 5a.

Marks	0	1	Average
%	58	42	**0.4**

Students were required to identify how a mix would be likely to be unbalanced when a given compressor is applied to a guitar track. The guitar volume was likely to be reduced.

Question 5b.

Marks	0	1	Average
%	86	14	**0.2**

The central meter showed gain reduction.

Question 5c.

Marks	0	1	Average
%	38	62	**0.6**

Acceptable answers for the dial to be used to rebalance were make up / output / output gain.

Question 6

Most students scored quite well for Questions 6a–6e., but some students could not adequately demonstrate an understanding of the ‘safe’ noise exposure standard. When discussing safety checks of electrical equipment, many students overlooked basic tasks or did not clearly explain their point.

Question 6a.

Marks	0	1	Average
%	49	51	**0.5**

WorkSafe Victoria’s average noise exposure standard for an eight-hour period is 85 dB.

Question 6b.

Marks	0	1	Average
%	3	97	**1**

Acceptable options for personal protective equipment to counteract noise pressure were ear plugs / ear muffs / ear defenders / ear buds.

Question 6c.

Marks	0	1	Average
%	3	97	**1**

Effects of exposure to hazardous sound pressure levels could include ringing in the ear / tinnitus / hearing loss / pain.

Question 6d.

Marks	0	1	2	3	Average
%	18	31	33	18	**1.5**

Acceptable answers for things the stagehand should check for included any three of the following.

- in date test and tag label/test and tag label
- frayed insulation
- exposed wiring
- burn marks
- broken pins
- visible damage

Question 6e.

Marks	0	1	Average
%	11	89	**0.9**

Almost all students were able to identify equipment that would reduce the risk of injury from manual handling, such as the following.

- trolley
- dolly
- lift
- ramp
- hoist
- forklift

Question 7a.

Marks	0	1	Average
%	65	35	**0.4**

Many students were not able to name the microphone accessory known as a wind sock / wind jammer / dead cat / windscreen or pop shield.

Question 7b.

Marks	0	1	Average
%	18	82	**0.8**

Most students were able to correctly identify the use of the accessory for wind noise prevention outdoors.

Question 7c.

Marks	0	1	2	Average
%	14	49	37	**1.2**

Advantages of the hypercardioid microphone on a boom could be any two of:

- it achieves good rejection of extraneous/unwanted sounds
- it can be positioned out of frame so that it is not a visual distraction
- it has high sensitivity on the axis.

Many responses did not mention this type of microphone allowing audio to be captured out of camera shot. This may indicate that the question was not read carefully enough.

Question 8

Most students were unable to correctly identify the standard pin numbers, which is vital information for anyone on a path to becoming a systems technician. Similarly, many students did not recognise the symbol for ground/earth.

Question 8a.

Marks	0	1	Average
%	10	90	**0.9**

The correct name for this type of microphone cable is an XLR or cannon connector.

Question 8b.

Marks	0	1	2	Average
%	51	20	29	**0.8**

The pin numbers in order were: 1, 2, 3. Most students were unable to identify the three standard pin numbers, which is essential knowledge for a systems technician.

Question 8c.

Marks	0	1	2	Average
%	19	1	80	**1.6**

The alternate names for + are hot or positive. The alternate names for – are cold or negative. Most students were able to correctly identify these.

Question 8d.

Marks	0	1	Average
%	30	70	**0.7**

A number of students were not able to recognise the common symbol for earth, ground or shield.

Question 9

Marks	0	1	2	Average
%	9	61	30	**1.2**

Students were required to suggest two actions a sound engineer could take to maximise vocal foldback level in a given situation. Acceptable answers were any two of the following.

- reposition the microphone/foldback wedge
- apply EQ to the foldback send
- remove the feedback frequency

Most students recognised that the microphone and drum fill needed to be on the same side. A significant number of students did not reference EQ in their responses and suggested actions to avoid the feedback that were not relevant.

Question 10a.

Marks	0	1	2	3	4	Average
%	9	12	20	27	33	**2.6**

Students were required to identify connections and switch settings to be made for a microphone and stereo laptop to be connected to two speakers with a given rear panel. Many students did not factor into their responses the requirement for the microphone and the laptop to be used concurrently, suggesting a need to read the question more carefully.

The correct connections and switch settings were as follows.

Connection for stereo laptop: L R

Connection for microphone: MIC/LINE A

MIC/LINE switch setting: MIC

Connection for additional speaker: LINE OUT

Question 10b.

Marks	0	1	Average
%	50	50	**0.5**

The label ‘FLAT’ means no EQ is applied.

Question 11a.

Marks	0	1	Average
%	20	80	**0.8**

A square bracket drawn between any two repeating parts of the waveform was correct.

Question 11b.

Marks	0	1	Average
%	21	79	**0.8**

Most students correctly identified this type of waveform as a sine.

Question 12

Marks	0	1	Average
%	53	47	**0.5**

The effect is patched into a mixing desk so that the same effect can be applied across multiple channels.

It was clear that many students had applied this mixing technique in a practical setting and were able to explain why the reverb effect is applied in this way.

Question 13

Marks	0	1	2	Average
%	8	50	42	**1.4**

Advantages of assigning all of the drum microphones to a group channel/bus are any two of the following.

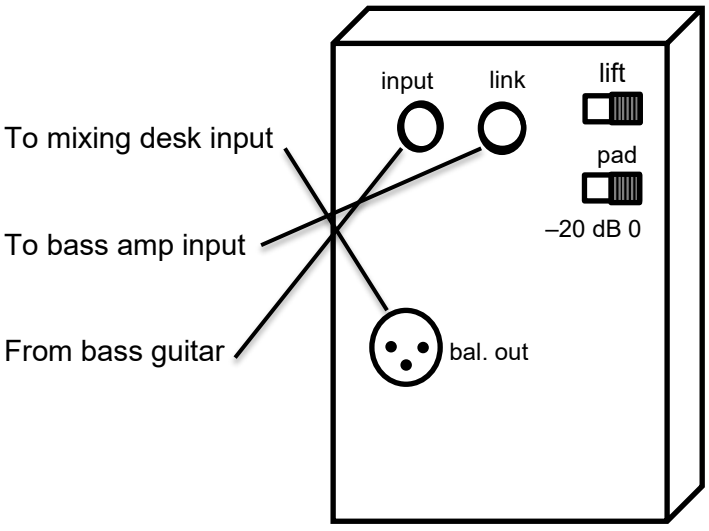
- to apply processing to the drums as a whole
- to turn the drums up/down or mute using only the group
- to create a sub-mix for a recording or stage mix

Some students responded well to this question, but some may have lacked experience with live or recorded audio, as evidenced in some responses.

Question 14a.

Marks	0	1	2	Average
%	5	15	80	**1.8**

Most students displayed a good understanding of connecting a DI box. Correct connections were as follows.



Question 14b.

Marks	0	1	Average
%	79	21	**0.2**

Many students did not attempt to identify the audible problem that would require the 'lift' switch, or did not answer correctly. It would be required to eliminate / reduce unwanted hum/50Hz.

Question 14c.

Marks	0	1	Average
%	35	65	**0.7**

Most students could identify a situation when the 'pad' switch would need to be set to – 20 dB. This is when the input signal is too loud / powerful / strong / hot or clipping.

Question 15ai.

Marks	0	1	2	Average
%	24	60	16	**0.9**

The two pieces of equipment that require the 48 V button to be used are the condenser mic and active DI.

Most students were able to identify both pieces of equipment; however, students who did not specify that the DI box was 'active' were unable to achieve full marks.

Question 15aii.

Marks	0	1	Average
%	10	90	**0.9**

The common name for the function of the 48 V button is phantom power.

Question 15b.

Marks	0	1	Average
%	51	49	**0.5**

Inverting the signal is used to correct the sound when the signal is out of phase / cancels another channel's signal. Many students did not attempt this question.

Question 15c.

Marks	0	1	Average
%	49	51	**0.5**

The gain control has two scales to show the gain amount when the pad is switched in or out.

Question 15d.

Marks	0	1	Average
%	44	56	**0.6**

The control that would be used to removed unwanted frequencies below 100 Hz is:

HPF or ~~100 Hz~~ or 100 Hz or ~~low cut~~

Many students did not connect their answers to the 100 Hz pad switch.

Question 15e.

Marks	0	1	Average
%	19	81	**0.8**

The difference between the two controls is that they operate on different frequency ranges. Most students were able to outline the difference.

Question 15fi.

Marks	0	1	Average
%	36	64	**0.7**

The function is to boost or cut by 15 dB.

Many responses were lengthier than required for a one-mark question. Students are encouraged to keep their responses clear and concise.

Question 15fii.

Marks	0	1	Average
%	21	79	**0.8**

The unit of measurement is dB or decibels.

Question 15g.

Marks	0	1	Average
%	50	50	**0.5**

The maximum number of independent foldback sends that this desk can provide when used for front-of-house and foldback simultaneously is six.

Question 15h.

Marks	0	1	Average
%	70	30	**0.3**

The PRE buttons would be set Up / off / post.

Question 15i.

Marks	0	1	2	Average
%	47	24	29	**0.8**

The PAN control would be set: ODD / L / left

The Group/bus assign switch would be set: 1–2 depressed

Responses to this question indicated that many students required more experience with assigning groups.

Question 15j.

Marks	0	1	2	Average
%	43	26	31	**0.9**

Any two useful applications for the PFL button are as follows.

- monitor through headphones
- observe signal on PFL or main meter
- identify problems on a channel during a song/performance
- checking channel level

Responses to this question showed that many students had a good understanding of the PFL function.

Question 16a.

Marks	0	1	2	3	4	Average
%	1	16	39	34	10	**2.4**

The four channels most likely to contain unwanted spill were:

1. drums overhead L

2. drums overhead R

3. acoustic guitar

4. vocals

Most students treated the two overhead drum channels as a single channel and therefore could not identify all four channels for this question. This could have been avoided by more careful reading of the question.

Question 16b.

Marks	0	1	2	Average
%	17	34	49	**1.3**

Two different ways by which unwanted spill could be reduced before reaching the DAW could be two of the following.

- Increase the physical distance between the quiet and loud sound sources.
- Use the absorption panels to reduce spill by placing them in between loud and quiet sound sources.
- Substitute the keyboard and bass mics and amplifiers with the DI boxes and use the headphones.

Some responses were technically sound but did not reference the provided list of components.

Question 16c.

Marks	0	1	2	3	4	5	6	Average
%	5	10	18	26	23	13	5	**3.1**

New selections that would be more likely to result in less spill and that would capture the full range of frequencies for the vocalist and each instrument are shown below.

Instrument /channel	Original microphone	New microphone/DI box selection
kick drum	small diaphragm dynamic cardioid	large diaphragm dynamic cardioid

snare drum	small diaphragm dynamic cardioid	small diaphragm dynamic cardioid
drums overhead L	large diaphragm condenser cardioid	small diaphragm condenser cardioid
drums overhead R	small diaphragm condenser cardioid	small diaphragm condenser cardioid
bass guitar amp	large diaphragm dynamic cardioid	DI box
electric guitar amp	small diaphragm dynamic cardioid	small diaphragm dynamic cardioid
acoustic guitar	small diaphragm dynamic cardioid	small diaphragm condenser cardioid
keyboard amp	small diaphragm condenser cardioid	DI box
vocals	small diaphragm condenser omnidirectional	large diaphragm condenser cardioid