2017 VCE VET Music Industry: Sound Production examination report

General comments

Overall, students performed very well on the 2017 VCE VET Music Industry: Sound Production examination. However, there are some areas for improvement:

- terminology: the language used by many students indicated that they had little experience with the concepts and meanings of the terms used in the study
- the relationships between concepts: very few students had a good grasp of the various aspects and concepts as they relate to the understanding of the physics of sound at this level or how basic electricity works
- aural understanding of processing and effects: few students could identify the difference between the effects and processing used in Section A. This study is a technical study and accordingly the students' answers should be of a technical nature. Many students used terms not considered appropriate at this level.

Students should be directed towards further revision and practice examinations. There are many tools available both on the VCAA website and through other sources. Students should be encouraged to revise Units 1 and 2 as these contain underpinning knowledge essential to successful completion of Units 3 and 4.

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.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

Section A

Question 1a.

Marks	0	1	2	3	Average
%	1	22	46	30	**2.1**

1. 2 kHz

2. 250 Hz

3. 8 kHz

Question 1b.

Marks	0	1	Average
%	26	74	0.8

Any type of equaliser

Question 2a.

Marks	0	1	2	3	Average
%	2	22	46	30	2.1

1. white noise

2. sine wave

3. triangle wave

Question 2b.

Marks	0	1	Average
%	31	69	0.7

Sine wave

Question 3

Marks	0	1	2	3	4	Average
%	13	17	28	15	27	2.3

1. Method: DI/pick-up, Explanation: sharper sound, less ambience

2. Method: microphone, Explanation: fuller sound, natural guitar sound

Many students did not identify the DI recording as readily as the microphone recording of the guitar; quite a large number of students suggested that two different microphones had been used. However, their description of the recording quality was generally done well but at times students should have used more technical terms.

Question 4a.

Marks	0	1	Average
%	23	77	0.8

Delay

Question 4b.

Marks	0	1	Average
%	75	25	0.3

Feedback

Question 4c.

Marks	0	1	Average
%	52	48	0.5

Increased

Many students did not know the different parameters on the various effects units being used.

Question 5a.

Marks	0	1	Average
%	67	33	0.4

Reverb added to snare drum (drums)

Question 5b.

Marks	0	1	Average
%	20	80	0.8

Bass guitar muted

Question 5c.

Marks	0	1	Average
%	48	52	0.5

Delay added to guitar

Question 5d.

Marks	0	1	Average
%	51	49	0.5

PFL, solo function, rude solo, group mute

Some students identified most changes in the mix. However, many students were challenged by this question and struggled to accurately place the effect.

Question 6a.

Marks	0	1	Average
%	75	25	0.3

Compressor/limiter

Question 6b.

Marks	0	1	Average
%	87	13	0.2

Amplitude, volume, loudness, dynamic range, etc.

Question 6c.

Marks	0	1	Average
%	75	25	0.3

Reduced dynamic range, made softer components louder, removed bass frequency or reduced it, tinny, distorted audio

Many student responses related to eq. rather than compression.

Question 7

Marks	0	1	2	3	Average
%	3	8	20	69	2.6

Problem – feedback

Solution (any one of):

- turn microphone down
- reposition microphone or speaker
- eq. out the offending frequency
- reduce gain.

Most students gave a good response.

Section B

Question 1

Marks	0	1	2	3	4	Average
%	15	14	32	24	15	2.1

Recording studio

Reasons (any one of)*:* greater control, reduce spill, minimise room sound, proximity effect, increased bass response, maximise signal input level and greater control in post-production

Live sound reinforcement

Reasons (any one of)*:* reduce spill, maximise signal level, minimise feedback

Many students used terms such as ‘full volume’, ‘natural sound’ or ‘clear sound’ when they should have used correct terms such as ‘signal-to-noise ratio’, ‘maximise signal level’, ‘minimise spill’, etc.

Responses that referred to capturing accurate sound or capturing the sound accurately inferred that other methods are inaccurate, which was not an acceptable response.

Question 2

Marks	0	1	2	3	4	Average
%	5	15	31	30	18	2.4

Recording a drum kit with a single high-quality microphone

Benefits (any one of):

- no phase issues
- quicker mixing
- easier/simpler

- faster set-up.

Recording a drum kit with multiple different microphones

Benefits (any one of):

- ability to process each microphone channel separately
- utilise stereo field
- ability to adjust the level of each microphone after recording
- specific microphone qualities.

Many students answered with non-technical reasons and did not refer to the various sound engineering reasons. Responses such as ‘creating more room in the mix’ and using terms such as ‘natural and organic’ were not specific enough.

Question 3a.

Marks	0	1	Average
%	34	66	**0.7**

Pop shield, pop filter

Question 3b.

Marks	0	1	2	Average
%	12	29	59	**1.5**

Situation: recording vocals (any type)

Explanation: remove plosives and breathing noises

Many students recognised the pop filter and its use in the recording studio.

Question 4

Marks	0	1	2	3	4	5	Average
%	6	12	13	20	25	24	**3.2**

- Overdub: re-record the same part, punch in, record another track over the top of recorded tracks, any track recorded after the original multi-track recording session
- Overdrive: distortion, clipping, gain to the point of distortion
- Talkback: system used for communication between studio and control room
- Dry signal: signal with no effect applied
- Plug-in: signal processor (or similar) or effects including software

Many students were familiar with these concepts and provided a suitable meaning for most terms. Most students struggled to give a description of a ‘dry signal’. These students used phrases such as ‘natural sound’, which is not a technical term.

Question 5a.

Marks	0	1	Average
%	45	55	**0.6**

Earth loop/induction, faulty cable shield, sharing power with lighting, running sound and lighting cables together

Question 5b.

Marks	0	1	Average
%	32	69	**0.7**

Parametric or notch eq., HPF low shelving eq., graphic eq.

Many students recognised the earth hum issue and responded appropriately.

Question 6

Marks	0	1	2	Average
%	28	47	25	**1**

To make the sound more punchy:

- gate
- top microphone
- eq.
- drum replacement programme/samples
- compression

To remove the ringing sound: eq.

Most students were not aware of the term ‘punchy’ or what the mix engineer might do to make it so. Most talked only about eq.

Question 7a.

Marks	0	1	2	3	4	Average
%	16	23	28	20	13	**1.9**

Four steps (any of the following): PFL signal from stage, including talking, microphone scratching, check meters on desk, ensure everything is turned on, check correct patch, bring up fader to verify signal (FOH or headphones)

Many students interpreted this as the sound check. Line check is the procedure before a gig goes live. Many students confused the difference between volume and gain.

Question 7b.

Marks	0	1	2	3	4	Average
%	6	14	29	29	22	**2.5**

- There is no signal from the overhead condenser microphones above the drum kit: phantom power, mute, assign, microphone lead
- There is a microphone on the top and bottom of the snare drum. When both faders are brought up, the snare sound becomes thinner: out-of-phase microphones, etc.
- The active DI for the acoustic guitar is functioning correctly, but when the guitarist plays, there is no signal: the guitar volume is low, guitar is not plugged into the DI, guitar battery is flat, faulty lead.
- Bass guitar sound is coming out of the bass amp onstage, but there is no signal from the DI, which is functioning correctly: bass not plugged in through the DI, faulty lead

Many students answered this question reasonably well. However, most students were not able to give the reason for the bass guitar issue. Students did not demonstrate adequate knowledge about the signal flow or how the signal would get to the mixing desk.

Question 8a.

Marks	0	1	Average
%	39	61	**0.6**

Microphone picks up sound from a speaker, which is then fed back through that speaker, creating a feedback loop.

Question 8b.

Marks	0	1	2	Average
%	12	28	61	**1.5**

Any one of:

- turn it down
- reposition microphone/speaker
- eq. out the feedback frequency
- use a feedback suppressor.

Question 8c.

Marks	0	1	2	Average
%	16	35	49	**1.4**

Any two of:

- hearing damage
- equipment damage
- disruption to performance.

Many students did not explain what was happening to the audio signal. The fact that microphones and speakers are in close proximity does not necessarily cause feedback. It was not acceptable for students to give only ‘squeal/noise’ as the answer.

When identifying damage to equipment that might be caused, students should provide accurate technical terminology.

Having high-pitched and loud frequencies is not always a negative consequence, for example, in heavy metal music.

Question 9

Marks	0	1	2	3	4	Average
%	31	35	25	4	5	**1.2**

Reason 1: poor microphone technique

Solution 1: insert a compressor across the vocals, ride the gain

Reason 2: post-fader aux send is being used

Solution 2: repatch/select pre-fader aux send

Many responses did not relate to the equipment or the technical processes that the sound engineer had at their disposal.

Many students did not consider the pre/post function on the mixing desk.

Question 10a.

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

3 400 W (watts)

Question 10b.

Marks	0	1	Average
%	55	45	**0.5**

2 300–2 400 watts

Question 10c.

Marks	0	1	Average
%	85	15	**0.2**

Use one subwoofer instead of two.

No marks were given for an alternative power source, i.e. a generator.

Many students responded well to this question. Many did not notice that there were two FOH speakers and two subwoofers, and so their maths was incorrect.

Question 10d.

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

When identifying damage to equipment that might be caused, students need to provide more accurate technical terminology.

Students would have benefited from drawing the signal flow as many of the explanations given would not have achieved the desired result: audio coming out of the FOH speakers. Students would benefit from more exposure to signal flow diagrams looking at different audio situations.

Question 10e.

Marks	0	1	2	3	4	Average
%	13	15	17	23	32	**2.4**

1. microphones
2. stage box/multicore or microphone cable
3. mixing desk (console)
4. FOH graphic equaliser
5. powered active subwoofer
6. FOH speakers

Question 11a.

Marks	0	1	Average
%	48	52	0.5

Low frequency, bass, sub or 20–250 Hz

Question 11b.

Marks	0	1	Average
%	50	50	0.5

High frequencies are being absorbed by the building, whereas low frequencies are better transmitted through a structure due to the wavelength/energy.

Many students responded well to this question.

Question 12

Marks	0	1	2	3	Average
%	27	28	24	20	1.4

Gain structure through the plug-ins, channel fader level, master fader level

Many students did not respond to this question. Those who did attempt to answer the question identified at least two of the checks.

Question 13

Marks	0	1	2	3	4	5	6	7	8	9	10	11	12	Average
%	16	12	13	9	8	8	9	9	7	4	3	1	0	3.9

Problem	Signal processor/plug-in	Key parameters
The kick drum sound is ringing on too long.	Expander/gate	1. threshold 2. ratio/release time
The hi-hat track has bass guitar spill in it.	HPF/low shelf eq.	1. cutoff frequency 2. slope/attenuation
The floor tom sounds thin.	LF shelving, peaking, sweepable or parametric eq.	1. frequency 2. boost/gain
The level of the acoustic piano varies too much.	Compressor/limiter	1. threshold 2. ratio

Students need more exposure to signal processors as it was evident that they do not have a good grasp of the parameters of the different processors and they lack the knowledge of which processor to use to correct the different problems.

Question 14a.

Marks	0	1	2	Average
%	34	35	31	**1**

Any two of:

- less load/stress on computer/CPU/DAW processor
- changing reverb parameters (for example, time, pre-delay, etc.) only needs to be done once – faster workflow
- all reverb return signal is in one channel

Question 14b.

Marks	0	1	Average
%	78	22	**0.2**

100% wet

Students often explained the concept or made assertions that were equally true of Method A. Many students did not clearly explain the advantages of Method B.

Question 15

Marks	0	1	2	3	Average
%	14	20	33	33	**1.9**

Added effect: reverb, slapback echo

Key parameters 1 and 2: decay time, RT60, size, reverb time, wet/dry, diffusion, pre-delay, early reflections

Many students understood what was required, although, once again knowledge around the parameters was an issue and requires improvement.

Question 16a.

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

Thickens sound, ensemble/chorus effect, may obscure pitch or timing issue

Question 16b.

Marks	0	1	Average
%	58	42	**0.5**

To enhance the stereo image of the thickened sound, to provide better separation from centred sounds (such as vocals), width/excitement

Some students had experience with this process and provided clear responses. Many, however, were unable to respond correctly and instead gave responses without sufficient detail.

Question 17

Marks	0	1	2	3	Average
%	8	6	16	70	**2.5**

Three of: track names, microphones used, signal processing used when tracking, take numbers, audio and other file locations/sizes/formats, session file format/software used, song section markers, track groups, track list, reference track for desired final sound, project due date, artists requests

Question 18

Marks	0	1	2	Average
%	11	43	47	**1.4**

Any two of: make microphones equidistant, more than 1 mic to be at least 3:1 distance ratio, mute one mic, polarity reverse switch, use one mic only

Most students seemed to have a reasonable understanding of the various methods of miking up and dealing with out-of-phase audio signals.