2023 VCE VET Music: Sound Production external assessment report

General comments

To assist students to gain more confidence and skills it is recommended that they have more regular and consistent access to events, performances and other functions that require technical support. This is by far the most appropriate means for students engaged in a vocational study to absorb and retain the information required to be able to operate both live equipment and audio recording hardware.

The elements and procedures taught in Units 1 and 2 are the cornerstones of underpinning knowledge for the whole study, and students would benefit from being directed to undertake extra-curricular practical assignments.

Results in Section A indicated that students are listening attentively to what is being played. Issues arose in Section B, where students had to draw on their critical listening skills to respond to questions about phase cancellation issues, feedback problems or front-of-house equalisation dilemmas and other questions where critical listening is of vital importance. Students at times did not read questions thoroughly and gave multiple answers to questions that asked for a single answer. This often led to students giving conflicting answers, which meant they were not able to access the mark.

The [five units of competency](https://www.vcaa.vic.edu.au/Documents/exams/vetmusic/vetmusic-SP-specs-w.pdf) that make up this study are divided into nominal hours and degrees of difficulty. This information is readily available to all teachers and gives a very clear indication of focus points and depth of cover required. All students need to do revision of all units, read more and do extra practical sessions. Areas of concern include, but are not limited to:

* audio processing
* effect identification
* cable identification
* health and safety
* basic electricity principles as they relate to live audio.

Suggested reading materials include:

* Sound Reinforcement Handbook written for Yamaha by Gary Davis and Ralph Jones
* Live Sound Mixing by Duncan Fry
* The Recording Studio Handbook by John M. Woram

These books all receive regular updates to keep pace with technology. The important thing is that the specifics of processing, electricity and procedures have not changed.

Specific information

Note: 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 of more or less than 100 per cent.

Section A

Question 1a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 0 | 100 | 1.0 |

Piano/keys

Question 1b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 34 | 66 | 0.7 |

LPF / low pass filter / treble / HF cut / reduction / roll-off / attenuation

Question 1c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 12 | 88 | 0.9 |

Reverb/verb

‘Echo’ was not an acceptable answer.

Question 1d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 9 | 91 | 0.9 |

Double bass / bass

Question 1e.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 3 | 97 | 1.0 |

Drums / drum set / drum kit / kit / percussion etc.

Question 2a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 56 | 44 | 0.4 |

Phase / phasing / phase cancellation / time alignment error / slight delay

Question 2b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 63 | 37 | 0.4 |

Two mics are within the 3:1 rule / mics too close together / mics not spaced evenly from the sound source / mics not distanced/spaced properly

The answer needed to relate to positioning issues. ‘Reposition mics’ and ‘signals are out of phase’ were not acceptable answers.

Question 3a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 0 | 100 | 1.0 |

Synth trumpet / trumpet / melody

Question 3b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 13 | 87 | 0.9 |

Delay / echo (not reverb)

Question 3c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 2 | 98 | 1.0 |

Hand claps / claps

Question 3d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 2 | 98 | 1.0 |

Kick drum / kick or bass drum

Question 3e.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 36 | 64 | 0.6 |

Delay / echo

‘Reverb’ was not an acceptable answer.

Question 3f.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 75 | 25 | 0.2 |

Chorus / modulation / vibrato / pitch modulation / pitch shift

Question 4a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 10 | 90 | 0.9 |

Distortion / overdrive / fuzz clipping / saturation

Question 4b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 68 | 32 | 0.3 |

Tremolo / amplitude modulation / vibrato (because some amps label it as such)

Question 4c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 60 | 40 | 0.4 |

WAH / EQ filter sweep (not just EQ)

Question 5a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 19 | 81 | 0.8 |

LPF / low pass / high cut / reduction / roll-off / attenuation

Question 5b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 17 | 83 | 0.8 |

HPF / high pass / rumble filter / lo cut / reduction / roll-off / attenuation

Question 5c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 87 | 13 | 0.1 |

Band pass / resonant filter

‘Notch’ was not an acceptable answer.

Question 6a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 49 | 51 | 0.5 |

Quantise / align to grid

‘Re-recorded’ or ‘played in time’ were not acceptable answers.

Question 6b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 7 | 93 | 0.9 |

Kick drum / bass drum / kick

Question 6c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 43 | 57 | 0.6 |

Electronic keyboard patch/program/sound/timbre/tone/voice/sample/waveform has changed.

Question 6d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 60 | 40 | 0.4 |

Pitch bend / mod wheel

Question 7a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 30 | 70 | 0.7 |

Loop is out of time/tempo. / Loop has been cut short. / Loop doesn’t play through fully.

Question 7b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 69 | 31 | 0.3 |

Recut/re-edit the loop / trim/reveal the audio / quantise transients / align hits to grid / apply a groove template.

‘Add silence’, ‘make it in time’ or ‘re-record’ etc. were not acceptable answers.

Section B

Question 1

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 15 | 85 | 0.8 |

4 kHz

Question 2

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 72 | 28 | 0.3 |

10dB is the only acceptable answer (units did not have to be included in the answer).

Question 3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 79 | 9 | 12 | 0.3 |

Any two of:

* guitar pickup
* microphone
* speaker
* VU or audio meter
* record player cartridge
* rumble pack

Question 4

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 69 | 31 | 0.3 |

Anything in the range of 120–140 dB SPL (units did not have to be included).

Question 5

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 85 | 15 | 0.2 |

144 (units not required)

Question 6

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Average |
| % | 3 | 6 | 11 | 22 | 22 | 17 | 10 | 7 | 3.8 |

|  |  |
| --- | --- |
| DAW term | Definition |
| arming a track | Make the track ready to record / arm the track ready for recording. |
| record loop function | Automatically repeating the same section over and over until a satisfactory take has been captured.  ‘It loops the recording etc.’ was not acceptable. |
| solo | Mute all other tracks / listen to selected tracks only. |
| track marker (or locator) | Saved point in a song / marks a particular point on a track or in a song/recording for future reference / memory location / saved point on a timeline.  ‘Circular’ responses, e.g. ‘for marking the track’, were not acceptable. |
| group track function | Links all selected track or channel faders together (not ‘Groups the tracks’ or similar) / Performs certain functions on one track to the whole group. |
| L–R Pan | Allows the track to be placed across the stereo/left-right field (not ‘for panning the sound’). |
| quantise | Aligns events to a grid or note value, snap to grid. ‘Used for quantising’ was not acceptable. |

Question 7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 26 | 43 | 30 | 1.0 |

Any two of:

* make tracks (songs) sound coherent / like they belong together / the same overall volume
* trim start and end of song
* add fades to end of song
* normalise tracks / track order
* compression / multi-band compression
* EQ
* stereo width
* mono compatibility
* process track for a variety of listening devices
* process the track/song into required file types.

‘Makes it sound better’ was not an acceptable answer.

Question 8a.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 2 | 4 | 13 | 24 | 57 | 3.3 |

B: large diaphragm condenser

C: active DI

G: pencil condenser

I: lectern condenser

Question 8b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 79 | 21 | 0.2 |

Condenser microphones have lower mass / lighter diaphragms. / Diaphragms using voltage tend to be more sensitive to frequency response.

Question 8c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 9 | 91 | 0.9 |

F (large diaphragm cardioid dynamic)

Question 8d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 20 | 80 | 0.8 |

The direction(s) at which the microphone is most sensitive / true to specifications.

Question 8e.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 51 | 49 | 0.5 |

Condenser microphones produce more signal volume/output and therefore could overload a recording system when used with a high SPL source. On board mic-preamp can overload. Dynamic mics generally can handle extremely high SPL; a condenser mic is more sensitive.

Question 9

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 3 | 0.3 | 3 | 22 | 71 | 3.6 |

|  |  |  |
| --- | --- | --- |
| Type of hazard | Example of hazard | Hazard reduction or removal |
| manual handling | lifting and moving heavy equipment on and off stage | * team lift * use trolley or other manual handling aids (forklift etc.) |
| electricity | damaged electrical cable | * test and tag * replace faulty cable * check cables and remove if faulty * get cable repaired |
| high sound pressure levels | sustained loud sounds | * ear plugs * take breaks * reduce volume * measure SPL and reduce if necessary |
| physical injury | negotiating backstage areas in low light environments | * tape down cables * use cable trays * run cables away from walkways * have designated walk areas * use white/fluoro tape on steps/floor level changes/corners * torches (other lighting etc.) |

Question 10

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 56 | 31 | 13 | 0.6 |

Any two of:

* easier to patch
* easier to install
* thinner cable
* lighter cable
* easier to roll cable
* no ground loop issues (for the digital one)
* less bulky
* neater cabling.

Question 11a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 19 | 81 | 0.8 |

It is easier to determine any faulty or incorrectly installed/patched equipment before the band plays.

Question 11b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 5 | 27 | 67 | 1.6 |

Any two of:

* band has foldback levels correctly set
* FoH mix is correct (or close to) prior to the performance starting
* give the engineer an opportunity to hear the band play
* ensure all PA equipment / stage gear will work correctly at performance level
* give the band a chance to do any last-minute rehearsing (alleviate any performance concerns) to ensure the band / tech crew are happy with their on-stage set-ups / to reveal any acoustic/PA tuning issues with the PA in the venue.

Students needed to identify an issue that requires the engineer to add/adjust effects.

Question 11c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 34 | 66 | 0.7 |

To avoid re-setting the stage / give maximum time for the headline act to sound check

Question 12a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 56 | 44 | 0.4 |

D

Question 12b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 6 | 94 | 0.9 |

B

Question 12c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 57 | 43 | 0.4 |

F

Question 12d.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 63 | 37 | 0.4 |

Any one of:

* AUX1 OUT
* AUX2 OUT
* AUX3 OUT
* AUX OUT

Question 13

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 40 | 13 | 11 | 21 | 16 | 1.6 |

Advantages (any two of):

* less restriction of movement by performer
* no trip hazards
* reduced stage cabling
* less need for long mic cables
* neater stage appearance
* can be body-worn mics in theatre

Disadvantages (any two of):

* flat batteries
* radio interference
* range issues
* more complicated set-up
* wireless dropouts
* (not transportable)

Question 14a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 29 | 71 | 0.7 |

Blow a fuse / trip the circuit breaker / cause power to switch off / could be unsafe / overheat / equipment damage.

Question 14b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 34 | 66 | 0.7 |

Generator / 3-phase / higher current power source / use multiple GPOs (on different circuits) overload.

Question 15

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 77 | 13 | 11 | 0.3 |

Any two of:

* USB
* firewire
* optical
* S/PDIF
* TDIF
* ADAT
* Toslink
* coaxial
* ethernet
* LAN
* HDMI
* AES/EBU
* Thunderbolt
* SCSI
* Lightning.

DVI, DMX or CAT 5/6 were not acceptable.

Question 16

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 26 | 49 | 25 | 1.0 |

Any two of:

* allows the engineer to move around the venue and control the PA at the same time
* can access certain functions/views on the tablet that are not available on the physical desk
* desk may not have a touchscreen
* more than one engineer can operate at the same time
* mixing desk does not have to be located in the audience
* can setup routing/plugins or other mixing functions without having access to the mixing desk
* monitor engineer can use the desk side of stage while the FoH engineer is in the audience
* monitors can be set while standing next to the performer
* do any stage duties while controlling the desk
* solo set up.

Question 17a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 9 | 91 | 0.9 |

Feedback

Question 17b.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 16 | 84 | 0.8 |

Do a sound check / turn down before unmuting / tune the foldback system / check location of mic and monitor / reposition equipment / EQ feedback frequency.

Question 18a.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | Average |
| % | 5 | 12 | 35 | 34 | 13 | 2.4 |

* drummer’s vocal mic: needs to be on or very close to the drum kit riser
* guitar amp: upstage from the guitarist vocal microphone
* foldback wedges: one downstage from the guitarist mic, the other close to the drummer mic (not on the other side of the riser from the drummer vocal mic).

A diagram of a guitar chord

Description automatically generated

Question 18b.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | Average |
| % | 2 | 2 | 16 | 80 | 2.7 |

|  |  |  |
| --- | --- | --- |
| Channel number | Instrument | DI or mic type |
| 1 | kick drum | large diaphragm dynamic mic |
| 2 | snare | dynamic instrument mic |
| 3 | overhead 1 | pencil condenser |
| 4 | overhead 2 | pencil condenser |
| 5 | bass guitar | DI |
| 6 | guitar | dynamic instrument mic |
| 7 | drum vocal | dynamic vocal mic / vocal mic / dynamic mic |
| 8 | guitar vocal | dynamic vocal mic |

Question 18c.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 27 | 73 | 0.7 |

FoH / front of house / dance floor / mosh pit / audience space

Question 18d.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 76 | 21 | 3 | 0.3 |

Two of the following:

* in-built pop shield
* in-built shock mount
* bass roll off on vocal mic
* reduce handling noise
* instrument microphones can have a clip to attach to an instrument.

Question 19a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 52 | 48 | 0.5 |

To measure gain reduction caused by compression. Note that there are input and output meters on either side of the plug-in.

Question 19b.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Average |
| % | 28 | 9 | 9 | 8 | 7 | 12 | 11 | 6 | 9 | 3.2 |

|  |  |
| --- | --- |
| Control | Function |
| threshold | The level where gain is reduced / the point at which compression occurs. |
| ratio | Ratio of output to input level above the threshold / the intensity or amount of compression being applied. |
| make up | Increases the overall level of the signal post compression. |
| knee | Affects how the compression is applied when threshold is reached (suddenly or gradually) / transition area between compression and no compression.  Students may refer to a visual line (smooth or hard). |
| attack | The time the compressor takes to react to the incoming signal above the threshold. |
| release | The time the compression is applied for after the input falls below the threshold. |
| limiter | Prevents the signal from exceeding the set level/ratio of infinity:1 |
| mix | Sets the proportion of compressed and uncompressed signal sent to the mix/blend of compressed and direct signal. |

Question 20

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 27 | 73 | 0.7 |

Speakers may emphasise different frequencies / have different frequency response/colouration / previews how the mix will sound on different systems, near-field and far-field / replicates cheaper/consumer stereo systems / can reduce listener fatigue, mono 1-way speaker.

Students did not need to suggest changes to be made but needed to identify a reason for listening to a mix on different monitors.

Question 21

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 39 | 61 | 0.6 |

Familiarisation with the studio monitoring system, matching the mix with the reference track.

Question 22a.

|  |  |  |  |
| --- | --- | --- | --- |
| Marks | 0 | 1 | Average |
| % | 28 | 72 | 0.7 |

LF / low frequencies / bass

Question 22b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 12 | 47 | 42 | 1.3 |

Any two of:

* multiband compressor
* EQ
* high pass filter
* adjust the balance of tracks with low frequency content range: 20–350Hz

Question 23

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marks | 0 | 1 | 2 | Average |
| % | 34 | 47 | 19 | 0.9 |

Any two of:

* no room reflections/reverberation
* very distinct stereo separation
* headphones can conduct through skull
* headphones have a different frequency response (EQ) to speaker monitors

‘Closer to ears’ was not acceptable.