

2015 VCE Psychology examination report

General comments

The 2015 Psychology exam was a two-and-a-half hour examination that assessed Units 3 and 4 of the *VCE Psychology Study Design*. The exam consisted of three sections (A–C). Section A comprised 65 multiple-choice questions. Section B comprised 14 short-answer questions and was worth 60 marks. Section C involved a research scenario and comprised two short-answer questions worth a total of 5 marks, and an extended-response question worth 10 marks.

Areas of the study design in which students demonstrated significant strength included:

- developmental plasticity
- classical and operant conditioning
- biological factors contributing to mental illness
- eustress and distress, and the roles of the parasympathetic and sympathetic nervous systems
- controlled processing
- altered states of consciousness
- stages of sleep
- the corpus callosum in split-brain surgery
- the primacy effect
- context-dependent memory
- retrograde and anterograde amnesia
- the roles of the primary motor and somatosensory cortices
- social learning
- research methods and ethics
- recall and recognition memory
- acrostics and acronyms
- the DSM and categorical approaches to mental illness
- assumptions of the biopsychosocial framework
- mean, median and mode as measures of central tendency
- the role of the medial temporal lobe and the hippocampus in declarative memory
- procedural memory versus declarative memory
- synaptic changes related to memory formation
- the role of the right parietal lobe in spatial neglect
- physiological responses to anxiety as measured by electroencephalograph (EEG), heart-rate monitor, galvanometer and electromyograph (EMG).

Areas of the study design in which students demonstrated significant weakness included:

- the characteristics of Ebbinghaus's forgetting curve
- the strengths and weaknesses of the Lazarus and Folkman's Transactional Model of Stress and Coping
- effects of exercise on the autonomic nervous system
- application of a given scenario to semantic network theory; the mechanisms determining the speed of retrieval in semantic network theory
- physiological aspects of the stress response that may be helpful for performance

- application of knowledge regarding spatial neglect to a given scenario
- application and interpretation of theory in relation to experimental results in Section C.

Students must clearly address the questions asked and ensure that any examples given are specific to the question asked. Students must also ensure that they answer each part of each question.

Students are reminded that, although spelling errors are not penalised, the meaning of the response must be clear and unambiguous. Students should take care to spell scientific terms correctly.

As marking is completed online using scanned images of the exam paper, it is emphasised that students should write within the marked boundaries on the paper for each question and clearly indicate if a question is to be continued in the extra pages provided at the end of the question and answer book. If students continue a response in the extra space, they must number the response clearly.

Specific information

Note: Student responses reproduced in this report have not been corrected for grammar, spelling or factual 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 – Multiple-choice questions

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
1	3	5	7	86	
2	6	19	16	59	
3	7	69	22	2	
4	7	9	9	75	
5	0	0	5	94	
6	55	30	12	2	Students who chose option B recognised that stress relating to unpleasant events (distress) is related to a sympathetic nervous system response, but did not recognise that stress relating to excitement or anticipation is also governed by the sympathetic nervous system.
7	86	4	4	6	
8	4	2	93	1	
9	12	20	63	6	
10	9	76	13	2	
11	95	1	3	1	
12	88	8	2	2	
13	1	6	60	33	
14	3	3	77	17	
15	1	2	12	85	
16	87	3	10	1	
17	4	5	5	86	

Question	% A	% B	% C	% D	Comments
18	3	77	2	18	Students who selected option D confused visual fields with eyes. The stem of the question asked specifically for the initial location for processing information that is presented only to the left visual field. Each eye takes in information from both the left and right regions of the visual world, and so processes information from both visual fields (that is, for the left eye, the left region of visual space is processed on the nasal retina and the right region of visual space is processed on the temporal retina). When information is presented selectively to the left visual field, the information is presented to the nasal retina of the left eye and the temporal retina of the right eye. After the retina, the initial cortical region that processes information from the left visual field is the contralateral (opposite) occipital cortex; that is, the right occipital cortex. Information from the left visual field is subsequently shared across both hemispheres via the corpus callosum, but this is not the initial cortical region of processing.
19	88	2	8	2	
20	1	3	90	6	
21	75	10	10	5	
22	2	4	44	50	Students who chose option D are likely to have been distracted by the information presented at the end of the scenario relating to a classically conditioned response that developed subsequent to the operantly conditioned response. The scenario was used as the basis for several questions, some of which addressed knowledge of classical conditioning and some operant conditioning. Question 22 specifically asked how Misha learned to perform the behaviour of sitting on command. As sitting on command is a voluntary response, the answer must be operant rather than classical conditioning. The scenario stated that Misha was rewarded for every correct performance, so the correct answer was option C, operant conditioning with continuous reinforcement.
23	87	4	9	0	
24	3	5	62	29	
25	2	3	93	2	
26	9	67	13	11	Review of this question indicated that there was an ambiguity with regard to which behaviour, sitting or salivating, was the target of the question. Given this ambiguity, both option B and option C were accepted.
27	2	6	7	86	
28	97	1	1	0	
29	1	1	1	98	
30	1	4	7	87	

Question	% A	% B	% C	% D	Comments
31	3	88	5	4	This question had a clear focus on observational/social learning and vicarious (that is, observed, and so indirectly experienced) reinforcement. Motivation is a component of observational learning that involves a willingness to reproduce a modelled behaviour that has been observed to be positively reinforced/rewarded. Max's observation of Merran's praise of Patsy's effort in completing the car served as a vicarious reinforcer for him to reproduce Patsy's behaviour. It is important to note that the scenario did not mention Max subsequently playing with the car, nor did it mention Patsy playing with the completed car, so these potential motivators are not answers that can be inferred from the scenario. Therefore, option B was the best response based on the information provided in the scenario.
32	45	18	3	33	All options listed the four component processes that Bandura proposed to mediate between the environment and behaviour. However, only option A listed them in the order that Bandura proposed.
33	20	69	4	7	
34	5	3	88	4	
35	1	1	10	88	
36	5	5	4	87	
37	23	1	68	8	
38	10	56	31	2	
39	5	57	29	9	
40	1	6	87	6	
41	88	4	6	2	
42	2	1	6	90	
43	7	53	9	30	
44	71	12	9	8	
45	10	9	73	8	
46	11	10	7	72	
47	4	24	64	9	
48	2	87	9	2	
49	6	88	2	4	
50	92	7	1	1	
51	22	61	12	5	
52	12	17	2	68	
53	3	81	9	8	
54	5	2	68	25	
55	2	82	12	3	
56	1	8	3	88	
57	4	92	2	3	
58	71	11	4	14	
59	7	3	88	2	

Question	% A	% B	% C	% D	Comments
60	35	6	9	50	Recognising that a stressful situation cannot be changed is an example of an emotion-focused coping strategy because the focus is not on what can be done to alter the outcome (problem-focused), but on what can be done to manage the feelings or emotions associated with the situation. In this scenario, acceptance of the situation is the coping strategy that follows from a process of appraisal or reappraisal.
61	83	4	2	11	
62	13	75	6	6	
63	12	85	1	2	
64	13	12	53	22	
65	69	4	7	20	

Section B – Short-answer questions

Question 1a.

Marks	0	1	Average
%	30	70	0.7

The hippocampus was the structure within the medial temporal lobe that most likely caused Henry's problem with memory.

Marks	0	1	Average
%	35	65	0.7

Anterograde amnesia was the memory disorder associated with Henry's post-surgical inability to store and retrieve new facts and episodes.

Question 1c.

Marks	0	1	Average
%	35	65	0.7

Procedural memory was the type of long-term memory preserved in Henry. Non-declarative memory or implicit memory was also accepted, although these terms are not specific to the preservation of skills referred to in the scenario.

Question 2

Marks	0	1	2	Average
%	23	30	47	1.3

Students were required to identify two possible changes that occur at the synapse during the formation of new memories. A broad range of answers was accepted, including:

- release of neurotransmitters (serotonin, glutamate)
- decrease in the release of neurotransmitters
- increase in the release of neurotransmitters
- sprouting
- rerouting

- pruning.

Question 3

This question focused on Ebbinghaus's original work on memory.

Question 3a.

Marks	0	1	2	Average
%	23	26	51	1.3

This question required students to explain why Ebbinghaus used simple consonant-vowel-consonant syllables to study memory. Answers that demonstrated an understanding that these simple nonsense syllables were chosen to provide matched/controlled stimuli that were relatively free of prior knowledge or meaning were awarded full marks.

Some responses were quite sophisticated. For example, referring to nonsense syllables allowing for maintenance rehearsal only, removing elaborative rehearsal strategies and so removing the effect of prior knowledge in long-term memory affecting learning.

Responses stating that the syllables were used to 'prevent them being encoded into long-term memory' were not rewarded, as an answer such as this displayed a misunderstanding of the research. Ebbinghaus's aim was to study the factors affecting the retention of new information in long-term memory, but to do so while controlling for the potential influence of prior knowledge from long-term memory.

Answers that simply stated 'because they were meaningless' did not demonstrate sufficient understanding for any marks to be awarded. Those that identified the syllables as being 'easier to learn' were not correct (Ebbinghaus demonstrated that meaningful stimuli are easier to learn and remember than meaningless stimuli). Responses stating that Ebbinghaus used these syllables to test whether meaningfulness affected retention/learning/recall were awarded one mark. Answers such as 'to ensure they were not already stored in memory' and 'to control extraneous variables that may influence remembering the words' were awarded only one mark as they captured only one aspect of the two key elements required. There were no penalties for a response such as 'to control for participants' prior knowledge', despite the fact that this answer indicated a lack of understanding that Ebbinghaus's only participant was himself.

Question 3b.

Marks	0	1	2	Average
%	48	34	18	0.7

Students were required to describe two key features of the forgetting rate reported by Ebbinghaus. This question was not well answered.

For full marks, students were required to describe two features of the curve that demonstrated their understanding that the initial rate of forgetting was very rapid/steep, and that the rate of forgetting then slowed markedly and plateaued. Students were awarded one mark for any valid statement about the rate of forgetting observed by Ebbinghaus.

Students who gave responses such as 'initially rapid rate of forgetting then stabilises' were awarded one mark.

Students who stated that the rate of forgetting was fastest in the first 20 minutes were correct; Ebbinghaus lost about 42% of information in this time. If they followed this statement with comments related to the rate slowing dramatically after eight hours, or after one day, they were awarded full marks. Some students incorrectly stated that '58%' or 'approximately 60%' of

information was lost in the first 20 minutes. These responses showed confusion about the amount lost with the amount that was retained in 20 minutes.

Responses such as 'most forgetting occurred in the first 20 minutes, then there was a steady decline' received only one mark, as the rate of forgetting remained steep over at least the following 8 hours and then plateaued.

Responses that referred to retention/forgetting 'after 30 days/1 month' were not based on any available data, so no marks could be awarded (the final point on Ebbinghaus's forgetting curve was 20% retention at 31 days).

Question 4

Marks	0	1	2	3	4	Average
%	37	23	19	14	7	1.4

This question asked students to identify two strengths and two limitations of Lazarus and Folkman's Transactional Model of Stress and Coping. This question was not well answered.

Any two strengths from the following were awarded a maximum of two marks:

- focuses on psychological determinants of the stress response over which we have control
- stresses the personal nature and individuality of the stress response
- views stress as an interaction with the environment in which the individual has an active role
- respects personal appraisals of a situation, thereby interpreting the situation from an individual's perspective
- explains why individuals respond in different ways to the same sorts of stressors
- allows for the fact that stressors and the circumstances under which they occur can change over time
- allows us to change our thinking about a stressor and our response
- proposes different methods for managing psychological responses to stressors.

Any two limitations from the following were awarded a maximum of two marks:

- difficult to test through experimental research because of the subjective nature of individual responses to stress
- individuals may not always be conscious of all the factors causing them to experience a stress response
- we can experience a stress response without ever having thought about a situation or event (appraisal not necessary)
- overlooks physiological responses
- the linear approach does not allow for individual variation in progression through the stages
- primary and secondary appraisals can interact with one another and are often undertaken simultaneously
- primary and secondary appraisals are difficult to isolate for study as separate variables.

Question 5

Marks	0	1	2	3	Average
%	9	21	38	33	2

This question related the story of Toby, whose wife died a year previously. The scenario described Toby's behaviour as being out of character for the past six months, including reclusiveness, non-responsiveness to communications from friends, failure to function in society (for example, unable to shop for himself and hold down his job), lack of personal hygiene, loss of job due to absences, lack of pleasure in activities he used to enjoy, etc. Students were asked to provide three reasons

why these behaviours may cause his psychologist to conclude that he had a mental illness. The question required students to demonstrate their knowledge of the distinction between a normal grieving response and mental illness. It was not acceptable to simply repeat three observations from the scenario as some students did; students needed to clearly indicate three independent reasons why these behaviours would be seen as abnormal by Toby's psychologist. Generic responses were not acceptable; students were required to refer to the scenario.

Answers could have been expressed in terms of relative distress to oneself or others, dysfunction and/or deviance. Acceptable responses included any three of the following reasons:

- Mental illness is often more serious or prolonged than grief. In this case Toby had been acting out of character for six months.
- Inability to function independently/not coping independently: Toby asked his parents to do his shopping for him, he wasn't able to attend work and was wearing the same clothes.
- Inability to carry out social relationships: He has not responded to friends' text messages or phone calls.
- Changes in thoughts/feelings/behaviours or lack of interest/apathy: Toby hasn't left the house for several weeks, hasn't showered for several days, wears the same clothes, doesn't attend work, no longer exercises despite previously completing marathons, avoiding friends.
- Whether thoughts/feelings behaviours are atypical: It was not typical for Toby not to shower for several days and wear the same clothes, not to respond to text messages or phone calls, not typical not to leave the house for several weeks.

Question 6

This question related to a scenario about Ernie, who had recently begun a new job working regular night shifts in a factory that required him to operate machinery.

Question 6a.

Marks	0	1	2	3	Average
%	32	22	24	23	1.4

This question referred to an increase in the number of memorable and vivid dreams Ernie experienced when he was sleeping during the day and asked students to explain why this increase might have occurred, with reference to the characteristics and patterns of sleep.

While the question related to REM rebound as a result of sleep deprivation, a significant proportion of students interpreted the question as relating to the acquisition of new skills required for the new job, and the role of dreaming in consolidating new memories. This interpretation was also acceptable.

In terms of REM, full marks were awarded as follows:

- Ernie will experience an increase in REM due to partial sleep deprivation.
- REM rebound occurs with sleep deprivation, with an increase in time spent in REM sleep.
- REM sleep is when dreaming occurs and results in an increase in (vivid/memorable) dreams.

In terms of the acquisition of new skills, acceptable answers indicated that the new learning required by Ernie's job would result in a need to consolidate and store new information, which would lead to an increase in REM sleep and an associated increase in the experience of dreaming.

Question 6b.

Marks	0	1	2	Average
%	37	16	46	1.1

Students were required to identify two characteristics of Ernie's brain wave patterns when he experienced vivid dreams. For full marks, students were required to demonstrate their knowledge that the two characteristics of brain waves during REM sleep are that they are low in amplitude and high in frequency. 'Beta waves' was not acceptable, nor was 'beta-like waves' sufficient on its own unless students included the two characteristics of these waves. 'Saw-tooth waves' or 'saw-tooth pattern' was acceptable for one mark, but for full marks students needed to describe the two characteristics indicative of the saw-tooth pattern.

Question 6c.

Marks	0	1	2	Average
%	37	8	55	1.2

Students were required to state one physiological effect of long-term sleep deprivation and to indicate why this may increase the likelihood of Ernie being involved in an accident at work injuring himself or others. For full marks students needed to correctly state one physiological effect of long-term sleep deprivation and then clearly link this to the potential for Ernie to have an accident that relates specifically to his work context. Generic responses were not acceptable.

Any one of the following effects and reasons for why it may cause an accident was acceptable:

- decreased alertness – cannot respond quickly or move out of the way of danger in the factory setting
- cognitive impairment, poor concentration, memory impairment resulting in accident while operating machinery
- drowsiness or fatigue, microsleeps or droopy eyelids, resulting in errors in operating machinery
- slower reflexes – cannot operate machinery effectively
- poor hand-eye coordination/hand tremors – cannot operate machinery effectively
- headaches – may cause difficulty concentrating and errors in operating machinery
- blurred vision/difficulty focusing eyes – may have difficulty seeing and impair operation of machinery
- cardiovascular changes/increased blood pressure – increased likelihood of cardiac arrest while operating machinery
- increased activation of sympathetic nervous system – if he is highly stressed, this may impair his cognition/judgment when operating machinery
- hallucination – may cause interference with operating machinery.

Question 7

Marks	0	1	2	3	4	Average
%	33	13	34	7	14	1.6

This question referred to a scenario about Dean, a police officer with a stressful job who found jogging useful for reducing his stress. Students were asked to identify two effects of exercise on the autonomic nervous system and to state how each may reduce Dean's experience of stress.

Acceptable responses included:

- Exercise reduces levels of the body's stress hormones, such as adrenaline and cortisol, which reduces the experience of stress.
- Exercise helps to reduce muscle tension associated with elevated sympathetic nervous system reactivity.
- Exercise increases the efficiency of the cardiovascular system/flexibility and stamina for encountering future stressors.
- Exercise results in the release of beta-endorphins, reducing pain and stress levels.
- Exercise leads to focus on breathing and perfecting a repetitive motion, leading to calm feelings like meditation.

Question 8

This question related to a scenario describing Slater's conversation with Melody, who he had not seen since they attended primary school together 15 years earlier. The scenario described Slater's ability to retrieve the names of all the teachers from their primary school.

Question 8a.

Marks	0	1	2	3	Average
%	46	15	19	20	1.2

Students were required to refer to semantic network theory to describe how the knowledge relating to the names of Slater's primary school teachers could be stored in his long-term memory. The key part of this question was that it related to the way in which Slater's memories are **stored**, not specifically to retrieval. Students received full marks if they correctly identified the three key features of the semantic network architecture and related these to Slater's memories. The three key features required were that memories are stored as nodes in a hierarchical network, with connections between nodes representing the relationships between the concepts stored at each node. For example, the names of Slater's primary school teachers would be stored as nodes in a network, which might then be linked via connections to nodes representing the year levels of primary school, which might in turn be linked to a node representing the name of the primary school.

Many students conflated the role of nodes with links/connections. Students needed to indicate the distinct role of each. Nodes store information (concepts) and can act as cues to spread activation throughout the network. Links are the pathways along which activation travels/spreads between nodes (that is, they are the connections between nodes by which one concept can trigger activation of associated concepts or related knowledge about a concept). Responses stating that links 'store information' were not awarded marks.

A common error was the failure to identify the hierarchical structure, often despite a correct reference to nodes and connections (links). Another common error was to refer to the processes of retrieval in semantic networks rather than addressing the question, which related specifically to storage.

Question 8b.

Marks	0	1	Average
%	72	28	0.3

Students were required to explain what determines the speed with which Slater can retrieve his memories according to semantic network theory. To gain one mark, students needed to state that it is the distance between nodes that determines the speed of retrieval. More specifically, the fewer

levels of the hierarchy that need to be traversed, the faster the response. No other answers were acceptable.

Question 9

This question referred to a scenario about Josie who had been diagnosed with spatial neglect syndrome after suffering a stroke.

Question 9a.

Marks	0	1	2	Average
%	16	25	59	1.5

This question asked students which part of Josie's brain (lobe and hemisphere) was most likely to be damaged. One mark each was awarded for identifying the parietal lobe and the right hemisphere. While neglect can be experienced for the right region of space (left hemisphere damage), this is much less likely.

Question 9b.

Marks	0	1	2	Average
%	47	23	31	0.9

Question 9b. related to an occupational therapist (OT) placing Josie's arm in a sling as a method to treat the spatial neglect syndrome. Students needed to identify that Josie's spatial neglect was most likely for the left region of space and explain that restricting the right arm in a sling would force Josie to attend to and use her left arm, increasing her attention to the neglected side of space (or increasing her attention to the neglected side of her body). Many students found it difficult to apply their knowledge of spatial neglect to this aspect of the scenario, and instead focused on adaptive plasticity as if the purpose of the sling were to return function to her left arm; this ignored the fact that the question related specifically to the treatment of spatial neglect.

Question 10

This question described a scenario in which Najida is reluctant to do her homework and the strategies her parents used to try to change this behaviour. The questions required students to demonstrate their understanding of the principles of operant conditioning, and particularly to distinguish negative reinforcement (10a.) from punishment (10c.), and to explain how a token economy can be used to motivate a desired behaviour (10b.).

Question 10a.

Marks	0	1	2	3	Average
%	32	7	13	48	1.8

Question 10a. related to the effect on Najida's behaviour of her father's pestering her to do her homework. Najida eventually does her homework to make the pestering stop. Students were asked to name the learning principle and to state why it caused her to produce the desired behaviour. One mark was awarded for correctly identifying negative reinforcement as the learning principle. Two further marks could have been awarded if the student explained that the pestering is an unpleasant stimulus that will stop if the desired behaviour (homework) is produced – it is the cessation (i.e. negative) of the unpleasant stimulus that acts as a reward (i.e. reinforcement) to motivate performance of the desired behaviour.

Question 10b.

Marks	0	1	2	3	Average
%	31	9	39	21	1.5

Question 10b. asked students to describe how Najida's father could use a token economy to encourage her to do her homework. The token economy acts as a form of positive reinforcement for Najida doing her homework. For example, whenever Najida completes her homework without her father pestering her, she is rewarded with a token, such as a star on a chart. A contract is agreed to whereby a certain number of tokens (e.g. stars) can be exchanged for a desired reward (e.g. being allowed to do a favourite activity).

Question 10c.

Marks	0	1	2	Average
%	24	11	65	1.4

Question 10c. described an alternative method to change Najida's behaviour, employed by her mother, in which Najida is withdrawn from a favourite weekend activity every time she does not do her homework. Students were asked to name the learning principle and to state why this may be effective in getting Najida to do her homework.

Students could gain one mark for identifying punishment (or negative punishment) as the learning principle. Positive punishment was not an acceptable response (this relates to application of a negative stimulus, rather than taking away a desired stimulus). The act of taking away a desired activity/positive reinforcer as a consequence for an undesirable behaviour (i.e. not completing homework) is what makes this punishment, rather than negative reinforcement. Students could then gain another mark if they explained how punishing the undesirable behaviour (i.e. not doing homework) might be effective in producing the desired response. This aspect of the question focused on motivating a desired response. The best response to this aspect of the question was to indicate that punishment of the undesirable behaviour may motivate Najida to do her homework so as to avoid this punishment.

Question 11

Marks	0	1	2	3	4	Average
%	27	2	13	25	32	2.4

The question related to a scenario in which Miley was lost in London without a map or a mobile phone, so she asks a stranger for directions. Students were asked to name two components of Baddeley and Hitch's model of working memory, and to describe the role of each in Miley remembering the instructions to find her way to a cafe.

Students could gain up to two marks for correctly naming any two of the four components of the working memory model – phonological loop, visual-spatial sketchpad, central executive, episodic buffer. Students could then gain up to two further marks – one for each relevant description of how the two named components could be used in the scenario.

Students who described the phonological loop and visual-spatial sketchpad needed to ensure that they focused on the active (i.e. working) aspects of these systems, rather than just on passive storage of information. For example, it was not sufficient to say that the phonological loop 'stores auditory (or verbal) information'; rather, it was important to indicate how the loop is used to maintain, rehearse or encode the spoken directions. References to 'repeating the directions over in her mind/inner voice' were acceptable. It was also acceptable to refer to the crucial role of the loop in maintaining the correct order of instructions. For the visual-spatial sketchpad it was not sufficient

to say that it 'stores visual/spatial information'; rather, responses needed to indicate how it is used to create a mental map of the directions and/or to generate a visual image of the route and/or landmarks.

Students who chose to refer to the central executive needed to demonstrate knowledge that the executive is involved in orienting attention, selecting information to be attended, in directing resources to the slave systems (loop and sketchpad) and/or for directing information from the loop, sketchpad and long-term memory to the episodic buffer.

Students who chose to refer to the episodic buffer needed to demonstrate an understanding that the buffer is a multidimensional workspace that enables the temporary representation of an integrated episodic memory of the current situation, including information from both the phonological loop and the sketchpad as selected by the central executive, and any relevant information retrieved by the central executive from long-term memory. Attending to this integrated memory trace in the buffer increases the likelihood of it being stored as a more durable memory trace of the event in episodic memory. Responses referring to an active role of the buffer in selecting or retrieving information were not strictly correct – it is the central executive that selects and retrieves, whereas the buffer is simply a temporary storage space for representing an integrated representation of the episode.

Question 12

Marks	0	1	2	3	4	Average
%	32	14	21	10	22	1.8

The question related to a scenario about Annie, who was described as being generally able to function well in everyday life, but is stressed about her driving test scheduled for today. Students were asked to give two reasons why this level of stress may be helpful when Annie takes her driving test, referring to the physiological aspects of the stress response.

Students were awarded one mark for each correctly identified physiological aspect of the stress response (up to a maximum of two marks) and another mark associated with each physiological aspect if they also provided a correct reason for why this response could be helpful in performing the driving test.

Acceptable responses included any two of the following:

- release of adrenaline makes her more alert and able to concentrate on the road
- redistribution of blood supply to muscles gives her more energy
- dilated pupils enable her to see better and foresee hazards
- increased glucose secretion gives her increased energy.

Question 13

The question related to a scenario about Lou, who has experienced ongoing stress since losing his job six months ago.

Question 13a.

Marks	0	1	2	Average
%	32	40	28	1

Students were asked to give two reasons why ongoing stress may be harmful to Lou's health, referring to the physiological aspects of the stress response. Students could refer to only one physiological response as long as two reasons were provided for why this might result in a harmful effect on Lou's health. Acceptable responses included any two of the following:

- If hormones such as adrenaline, noradrenaline and cortisol stay at high levels for a long time, the immune system becomes less effective, making Lou more susceptible to illness.
- Intense or prolonged arousal may cause dizziness, rashes, heart palpitations and fatigue.
- Diversion of blood away from the digestive organs may produce indigestion or ulcers.
- Prolonged stress leads to a persistent elevated heart rate, which could result in heart attack/heart disease.

Question 13b.

Marks	0	1	2	3	4	Average
%	7	13	21	29	30	2.6

Students were asked what the readings of an electroencephalograph (EEG), a heart-rate monitor, a galvanometer and an electromyograph (EMG) would indicate about Lou’s physiological responses when in a state of heightened anxiety.

To gain one mark for each measure it was sufficient for students simply to state what each instrument would indicate about Lou’s physiological state when he was highly anxious.

Acceptable responses included:

- EEG – the readings of the EEG would indicate the presence of beta waves/would be indicative of a stress response, increased electrical activity or high frequency/low amplitude waves
- heart-rate monitor – the readings of the heart rate monitor would indicate elevated heart rate
- galvanometer – the readings of the galvanometer would indicate increased skin conductivity, and/or increased sweating
- electromyograph – the EMG would indicate increased (amplitude of) electrical activity in the muscles and/or increased muscle tension/muscle twitching.

Question 14

Marks	0	1	2	3	Average
%	11	33	42	14	1.6

This question asked students to identify one similarity and two differences between daydreaming and dreaming.

Acceptable response included:

One of any of the following similarities between dreaming and daydreaming:

- Both are altered states of consciousness.
- Cognitive and perceptual distortions are similar in each.
- Content is unlimited in both.

Any two of the following differences between dreaming and daydreaming:

- Dreaming occurs during sleep (usually REM); daydreaming does not.
- Dreaming produces irregular beta-like waves; daydreaming has slower alpha waves.
- Daydreaming exists closer to normal waking consciousness on a continuum, whereas sleep is closer to unconsciousness (but it is not true to say that people are unconscious when they dream).
- Daydreams are associated with minimal eye movements; dreams have more eye movements.
- Cataplexy in dreaming, not in daydreaming.
- Heart rate slows in daydreaming, but increases slightly in REM.
- Galvanic skin response decreases in daydreaming, but increases in REM (dreaming).

Section C – Research scenario

The research scenario described an experiment designed to investigate how the introduction of false information affects people’s eyewitness testimonies. The experiment described in the scenario was based on actual experiments conducted by Elizabeth Loftus and her colleagues. Question 3 required students to write a discussion section for the experiment, following the usual conventions. Students were required to ‘Interpret the results in relation to the theory being tested’ and ‘Evaluate the results in relation to eyewitness testimony in a real-world context’. These two higher-order learning outcomes were required for students to score marks in the higher end of the marking scheme.

Question 1

Marks	0	1	2	3	Average
%	17	31	46	5	1.4

Students were asked to construct a research hypothesis for the study. A research hypothesis should state a prediction relating to the expected effect of an independent variable on a dependent variable as a means for testing a theory, or for answering a specific research question. To score full marks for this question, students needed to:

- include reference to the initial manipulation of memory (i.e. the independent variable)
- include reference to the subsequent test of memory, with percentage, likelihood or number of false memories/false ‘yes’ responses as the dependent variable
- indicate the direction of the predicted effect – that is, the way in which the two groups were predicted to differ on the dependent variable (not simply that there would be a difference).

Students could express their hypothesis in fully operationalised terms or in broader terms.

Reference to a specific population was not required in this case related to human memory performance in general (i.e. the first line of the scenario stated that the researcher wanted to ‘investigate how the introduction of false information affects people’s eyewitness testimonies’), and so it was implicit that the hypothesis pertain to people in general. Most experimental work in psychology is concerned with deriving general principles/theories about human behaviour and performance, rather than being focused on specific populations, unless a particular population (e.g. people experiencing depression) is the stated focus of the research question. It was not correct to identify university students as the population; university students comprised the sample (albeit a non-representative sample of people in general, a point to make in the limitations section of the discussion).

The most common error was a tendency to refer to the initial questioning phase as if it were also the final test phase. That is, there was often no clear separation of the initial manipulation of memory (the independent variable) and the subsequent test phase five days later (the dependent variable). For example, many responses stated a variant of the following: ‘Participants who were asked misleading questions would be more likely to respond “yes” to objects or items that did not appear in the video than those who were asked open questions.’ Responses such as this could score no more than two marks.

A number of example research hypotheses for this question have been provided below. All of these examples meet the three criteria required to obtain full marks. Reference to the initial manipulation of memory (independent variable) is in **bold font**; reference to the subsequent test of memory (dependent variable) is in *italic font*, and reference to the direction of the effect is underlined. Note the use of past tense for expressing hypotheses, which is appropriate because research reports always refer to work that has already been conducted. The use of past tense

phrasing was not required, but students and teachers should note that this is the standard practice in scientific report writing.

Example research hypotheses

- It was hypothesised that the **participants in Group B who initially answered misleading questions in which the word ‘the’ was used to refer to objects and events that did not actually appear in the video** would produce a higher percentage of false ‘Yes’ responses to the same questions phrased in open form on a memory test conducted five days later than those in Group A who were initially asked the questions in open form using ‘a’.
- It was hypothesised that **people who were asked questions referring to events that did not actually occur in a witnessed scene that were phrased misleadingly (e.g. ‘did you see the ...’)** would be more likely to say that they did witness those events on a subsequent test of memory than people who were asked the same initial questions in an open form using the words ‘did you see a ...’.
- It was hypothesised that **the phrasing of questions as either leading (‘did you see the ...’) or non-leading (‘did you see a ...’) in an initial interview referring to events that did not actually occur** would influence subsequent performance on a memory test five days later, such that those in the leading question condition would be significantly more likely to produce false ‘Yes’ responses than those in the non-leading question condition.
- It was hypothesised that **initial leading questioning regarding events or objects that did not actually appear in a witnessed event** would result in the reconsolidation of false information for the events such that those exposed to misleading questions *would subsequently be significantly more likely to recall events that did not occur than people who were initially asked non-misleading (open) questions.*
- **Participants who were asked open questions about objects and events that did not occur in a video** would be less likely to respond ‘Yes’ to objects/events that were not present than those asked misleading questions when all participants were questioned again with open questions one week later.

Other phrasings of the research hypothesis were also acceptable if they included all three crucial elements (and did not identify the population as university students).

Question 2

Marks	0	1	2	Average
%	22	25	53	1.3

This question asked students to identify either one deceptive element or one potentially harmful element in the experiment, and to suggest a measure that could be taken to address this so that the experiment is conducted ethically.

The potentially deceptive element of the study was the use of misleading questions referring to events that did not occur, and the potentially harmful element was exposure to a video of a distressing event.

Responses that stated that the misleading element could be addressed by not asking misleading questions did not recognise the point of the experiment, which depended on deception. The key ethical observation to make regarding an experiment that requires deception is that the deception must be fully disclosed after the study by debriefing participants (and participants are usually given the option to withdraw their data at this stage if they wish, but this level of knowledge is not required for VCE).

With regard to the distressing content of the video, the best ethical treatment for this situation is to ensure informed consent at the outset, advising participants regarding the content of the video

and/or screening participants who might be affected by a prior road trauma, and advising them that they are free to withdraw at any stage if they find the content distressing. Participants should also be fully debriefed afterwards to determine the impact of the content and be provided with sources for follow-up counselling/care if required. Another alternative some students suggested was to ensure the video was staged, rather than real, and to inform participants that no-one was injured. Others suggested using a scene that did not involve any form of accident or crime, although this may compromise the external validity of the experiment, so was not as strong a response. Any one of these suggestions for ethical treatment of the distressing content was accepted. There was some confusion regarding debriefing and informed consent. No marks were awarded for the incorrect statement that debriefing should be used at the start of the experiment to warn the participants of the content.

Generic responses to the first part of the question (e.g. 'deception', 'harm', 'beneficence') were not awarded a mark. However, students could be rewarded if the response identified the specific instance of deception/harm in the scenario and included the suggested measure. Responses where both the first and second parts were generic were not awarded marks.

Responses to the first part of the question such as 'debriefing', 'informed consent' and 'right to withdraw' were not considered valid.

Responses to the first part of the question such as 'failure to debrief' and 'failure to give informed consent' could not be awarded any marks as the scenario provided no evidence as to whether these actions were taken.

Question 3

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	5	8	14	19	19	15	10	5	2	0	1	3.7

This question provided an opportunity for students to demonstrate their higher-order thinking and reasoning skills. Student responses should have attempted to link the data to the appropriate psychological theory. However, the majority of responses showed a limited attempt to link and interpret the data in relation to the appropriate psychological theory. This is an area for improvement.

The majority of responses consisted of a piece of connected text, sometimes with use of sub-headings, which broadly followed the conventions for writing a discussion section. These responses demonstrated the knowledge that, while dot points are allowable in principle for Section C, it would not be appropriate to write a discussion section using dot points.

Further notes:

- Loftus did not have to be mentioned by name in order for the response to be credited with interpreting the results with reference to theory, although the higher-scoring responses mentioned her name. It was sufficient that there was an indication that the results were consistent with theories of memory that emphasise the reconstructive/fallible/malleable nature of memory, and/or that there was reference to, or effectively a description of, reconsolidation theory.
- The dependent variable was the mean (or average) percentage for each group of incorrect 'Yes' responses to the questions regarding objects/events that did not appear, **not** the mean (or average) percentage of participants in each group responding 'Yes' to questions about objects/events that did not appear. In the description of results, responses stating that 'significantly more participants responded "Yes" to misleading questions in Group B than in Group A' misinterpreted the dependent variable.

- Students should be cautious when using phrases such as ‘the results prove that...’. It is better to say that the results ‘support’ or ‘are consistent with’ the hypothesis.

A potential limitation other than the non-representative sample that was also indicative of a high-scoring response was the observation that a matched participant design would be better than simple random allocation to groups, especially suggestions to match participants between groups on memory performance (in addition to age, gender, etc.). Suggestions for a repeated measures design needed to consider whether this would potentially compromise the validity of the study by providing one memory condition before the other and whether counterbalancing could address this sufficiently).

The following is an example of a high-scoring response. Comments printed in bold within parentheses identify the required elements of the response.

*The aim of this experiment was to test Loftus’s theory of the constructive nature of memory by investigating the effect of intentionally misleading questioning immediately after a witnessed event on participants’ later memory for that event. **(The aim of the experiment has been recapped at the outset of the discussion)**. The experiment investigated whether phrasing questions about events or objects that did not appear in a video in either a leading (did you see the...?) or open (did you see a...?) format would affect participants’ tendency to recall these events as occurring.*

*The results provided support for the hypothesis that those in the leading question condition would be significantly more likely state that they had seen the absent events or objects when all participants were subsequently asked the same questions again one week later in the open format. **(This provides a statement of the results in the student’s own words and relates these to the hypothesis/theory being tested.)** Indeed, participants in the leading question group (Group B) were more than twice as likely to report having seen the absent objects/events when asked the same questions again in the open question format one week later than those who were initially questioned in the open question format condition (Group A). **(This elaborates on the statement of results and makes it clear that the student understands the effect of the independent variable on the dependent variable. The results are described in plain language as is appropriate for a discussion, rather than restating actual mean scores and p values, which would be included in the results section.)***

*The results were consistent with Loftus’s theory that memories for events can be modified (or reconstructed) to include false information through a process of reconsolidation that occurs when people retrieve their memories for an event. Whilst reference to events or objects that did not occur potentially influenced subsequent recall for both groups (i.e. even those in Group A recalled some false information), the use of the word ‘the’ to refer to the absent objects/events actually implied their presence and made it more likely that the misleading information would be incorporated into the memory trace for the event. **(This paragraph identifies the target theory and links the results to the theory. The highest-scoring responses included reference to the mechanism of reconsolidation, making it clear that the student understood the importance of the initial questioning phase as being a time when the retrieval of the memory causes it to be reconsolidated and makes it susceptible to being updated with the false information).***

*One limitation of this study is that the sample consisted purely of university students. Given that University students are not typical of the general population, tending to be from a restricted age group that is mostly middle class and westernized, it may be that the results cannot be generalized to describe general principles of human memory processes. Future studies should seek to replicate the results using a sample that is more representative of the general population. **(This paragraph satisfies the requirement to discuss the limitations of the experiment.)***

*Despite the limited sample, the results nevertheless provide a compelling demonstration of the surprising power of subtle linguistic cues to suggest memories for object/events that did not occur, and provide support for the theory that memory is a constructive process, and particularly that memories are susceptible to incorporating false information during the process of retrieval and reconsolidation. If the results can be replicated in more representative samples, then they will provide us with important information regarding the methods that should be used for questioning eyewitnesses in real-world accident and/or crime scene contexts, and suggest that it is crucial that the form of questioning used in such contexts be open rather than leading. **(This final paragraph summarises the results and meets the requirement to evaluate the results in relation to their real-world implications.)***