VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2006 Psychology GA 1: Written examination 1

GENERAL COMMENTS

Students generally performed well on the June 2006 paper, with results, on average, that were comparable with examination 1 in previous years.

In the multiple-choice section all three areas of study were well answered. 'States of consciousness' was the best answered section, with students achieving a mean score of 77.5 per cent. The mean performance for 'Brain and nervous system' was slightly higher than the mean for 'Visual perception', which was least well-answered section.

As in previous years, students did not perform as well on the short-answer questions. This was often due to a lack of precision and completeness in descriptions and definitions, failure to refer to appropriate psychological information or failure to provide appropriate examples even when examples were explicitly required by the question. Students had the most difficulty with 'Visual perception', achieving a mean score of 58 per cent. 'States of consciousness' followed, with a mean of 66 per cent, and 'Brain and nervous system' was the best answered area of study, with a mean score of 70.5 per cent.

Teachers had clearly instructed and directed students' attention to key knowledge and skills in the *Psychology VCE Study Design*. In general, students demonstrated good knowledge and understanding of the curriculum, although, as in previous years, many did not achieve full marks because they failed to address all aspects of the questions in their answers. For example, when required to name **and** explain the ethical principle broken in Question 13, many students gave only the name or a description of an ethical principle, rather than both.

Students need to ensure that they read the short-answer questions carefully and then check their answers against the question's requirements. Some questions may require a two-part response even though this is not specifically stated; for example, responses to Question 9 should have both nominated the threshold involved and explained why the sister had not noticed the dimming of the light. Similarly, responses to Question 14 needed to refer to both attention and processing.

Short-answer questions worth two marks generally require at least two key terms and/or pieces of information, while those worth one mark generally require one (or sometimes two) key terms and/or pieces of information. Questions worth multiple marks have an appropriate amount of numbered lines in the answer booklet.

SPECIFIC INFORMATION

Section A – Multiple-choice questions

Students should answer all questions in the multiple-choice section of the paper. If they are unsure of the answer, students are advised to mark the response that is their 'best guess' for any question – it is always possible to change a response by carefully erasing and re-shading. Answering all questions also decreases the likelihood that further answers will be out of synchronisation.

This section of the paper was very well answered, with only three questions resulting in a correct response rate of less than 50 per cent. These questions, along with some other moderately difficult ones, are discussed below.

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
Area of Study 1 – Brain and nervous system					
1	71	5	23	0	The large number of students who chose alternative A failed to understand the sensitivity of the cerebral cortex. Although it does cover the cerebral hemispheres, its function is not to protect the brain. The only completely correct response was alternative C.
2	70	16	12	2	
3	2	1	97	1	
4	6	3	73	18	

Question	% A	% B	% C	% D	Comments
5	4	92	3	1	
6	47	22	29	1	An image in the centre of the field of view will be processed in both hemispheres because the image will fall on the left and right sides of the retina in each eye.
7	51	18	27	4	An object in the right visual field only will be cast on the left side of each retina and processed in the occipital lobe of the left hemisphere. Alternatives C and D were incorrect; however, it might be possible for Carmela to identify the wombat by either naming it verbally (using Broca's area in the left hemisphere frontal lobe) or by drawing it with her right hand (controlled by the left hemisphere primary motor cortex in the frontal lobe).
8	75	6	12	6	
9	15	8	12	65	
10	10	4	22	64	
11	1	97	1	1	
12	97	1	1	1	
13	8	1	89	1	
14	94	4	1	1	
15	4	94	1	1	
16	9	84	2	5	
17	16	53	29	2	The key word that identified alternative B as the correct response was 'prepares'. In the resistance stage, the organism is already dealing with the stressor.
18	60	7	27	6	
Area of Study 2 – Visual perception					
19	17	1	79	3	
20	2	5	18	74	
21	30	5	60	5	30% of students identified 'photoreceptors' as being the **neurons** in question. It is apparent that the work of Hubel and Weisel needs to be better understood.
22	8	84	1	7	
23	3	11	5	81	
24	1	15	43	41	43% of students identified 'similarity and proximity only' as the correct answer; however, figure-ground is the Gestalt principle most clearly used in distinguishing black shapes on a white background. Measurement indicates no difference in the horizontal and vertical separation of some of the shapes in the diagram.
25	5	3	89	3	
26	66	11	11	12	Alternatives A and D stated the same thing, although in different ways, therefore both responses were accepted.
27	3	1	7	90	
28	11	73	9	8	
29	5	48	5	42	42% of students wrongly indicated that the shapes at the end of the lines result in a change in the retinal image of the line, which suggests that many students do not understand that visual illusions are illusions of perception, not distortions of stimuli.
30	17	7	6	71	
31	2	1	3	94	
Area of Study 3 – States of consciousness					
32	1	95	3	1	
33	5	5	4	86	
34	90	7	1	2	
35	10	78	4	8	
36	14	81	3	2	
37	64	6	28	2	Stage 1 is a stage of N-REM sleep and is characterised by a mixture of brainwaves, with theta and alpha waves dominating. Students who chose alternative C may have believed that REM sleep is part of stage 1 sleep.

Question	% A	% B	% C	% D	Comments
38	1	4	75	19	
39	18	68	12	1	
40	13	5	20	62	
41	16	73	2	8	
42	76	1	3	20	
43	3	81	15	1	
44	68	15	10	6	

Section B – Short-answer questions

Brain and nervous system

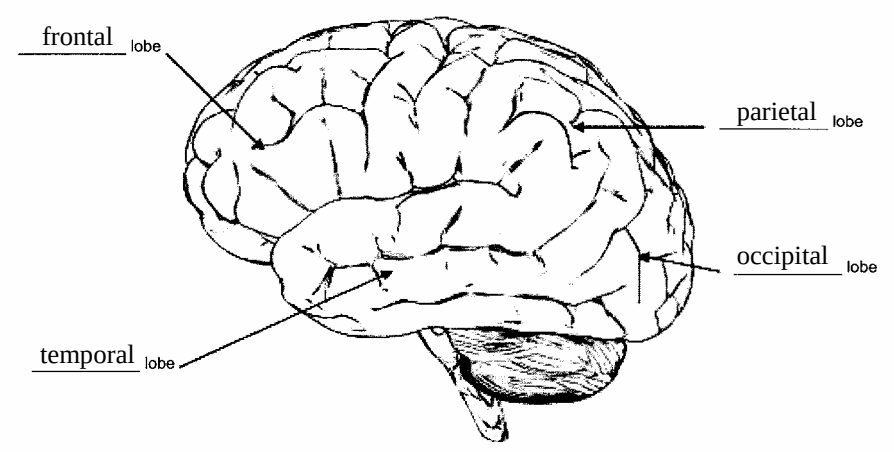
The organisation of the primary motor cortex and primary somatosensory cortex were not well explained.

Most students were not able to adequately explain the implications of severing the corpus callosum, indicating that hemispheric specialisation requires further attention. There was also widespread misunderstanding of the fact that the corpus callosum is not the **only** connection between the two hemispheres.

Apart from these two areas of weakness, this area of study was generally well-answered

Question 1

Marks	0	1	2	3	4	Average
%	0	1	3	4	92	**3.9**



Spelling was important in these answers. If students substituted another word (for example, 'parental' or 'partial' for 'parietal'), no mark was awarded. When labelling diagrams, students are expected to spell the terms correctly to gain the marks.

Question 2

Marks	0	1	2	Average
%	9	44	47	**1.4**

Functions of Wernicke's area include:

- storing the receptor codes for language
- enabling comprehension of speech/language
- enabling interpretation of the written word
- locating words from memory to express a particular meaning
- creating meaningful and/or grammatically correct speech.

Any **two** of the above functions were accepted.

Question 3a.

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

The PET scan:

- is more invasive
- involves injecting a radioactive substance into the body.

Question 3b.

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

MRI or fMRI scanning

Question 4a.

Marks	0	1	Average
%	80	20	**0.2**

- Some of the questions are neutral and some are 'probable lie' questions that are intended to slightly increase arousal. This is so that the physiological responses for each can be compared.
- Questions demanding both positive and negative responses are included. This is so that relevant questions demanding either response may be validated.

Many students responded by indicating what control questions are or why they are used; however, this did not answer the question asked.

Question 4b.

Marks	0	1	2	Average
%	11	61	27	**1.2**

- He may have a naturally high but fluctuating heart rate or breathing rate and may have been interpreted as lying.
- He may be on medication, such as cortisone, which can vary the rate of metabolic function.
- He may have been running a fever, which would change indicators of apparent arousal.
- The baseline may have been incorrectly set by the operator.
- He may have been in a state of arousal through an emotion such as anxiety/anger/excitement and the arousal has been wrongly interpreted as lying.

Many students did not read the question properly and answered as though it were 'Anthony was shown to be telling the truth when in fact he was lying'.

Question 5a.

Marks	0	1	Average
%	25	75	**0.8**

Stress hormones/hormones/chemicals (adrenaline and, eventually, cortisol) that were released during Zoe's phase of resistance to the stressors of examinations have been counteracted by her immune system, which has become weakened in the process of reducing the level of these hormones. The immune system has therefore become weakened, leaving Zoe more prone to infectious diseases.

Students did not need to specify the name of a hormone in order to gain a mark.

Question 5b.

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

resistance or exhaustion

Both stages were accepted as the scenario described did not explicitly distinguish between the effects of the original stressor and the additional stressor.

Question 5c.

Marks	0	1	Average
%	41	59	**0.6**

- to boost Zoe's level of immune system functioning
- to reduce Zoe's level of stress
- to reduce Zoe's levels of sympathetic (autonomic) arousal

Question 6

Marks	0	1	2	Average
%	20	46	34	**1.2**

The flight-fight response provides physical responses of autonomic arousal such as increased heart rate, blood channelled to the muscles and inhibited digestion, which all prepare an organism to deal with a threat by either running away (flight) or confronting it (fight). This means that the organism is better prepared to survive and thus live on and procreate (breed).

Students should try to avoid using a term as part of its own definition. 'Confront a threat' or 'run away to escape a threat' adequately substituted for 'fight or flee from a threat'.

Question 7

Marks	0	1	2	Average
%	14	42	44	**1.3**

The participant needs to know:

- the nature of the study – what they will be required to do
- the rights of the participant – confidentiality, withdrawal, debriefing, etc.
- any potential risks involved for the participants.

Many students discussed 'voluntary participation' or 'withdrawal rights' instead of 'informed consent'.

Visual Perception

This was the weakest of the three areas of study in the short-answer section. The relatively poor performance on Question 10 emphasises the need for students to apply their answers to the specific question rather than make generic statements when an application of a concept is required. In this case, the question even highlighted in bold type that the depth cues needed to be applied to '**this** picture'.

Question 8

Marks	0	1	2	Average
%	9	16	74	**1.7**

optic; occipital

As this area of study is **Visual** perception, only the answers given above were acceptable.

Question 9

Marks	0	1	2	Average
%	31	30	40	**1.1**

The amount by which the light was dimmed did not reach the Differential Threshold (or Just Noticeable Difference), so Leisel's sister could not tell that it had been dimmed. The amount by which the stimulus intensity is reduced (changed) needs to be more than $\frac{1}{60^{th}}$ of the original intensity.

Question 10

Marks	0	1	2	3	4	Average
%	19	8	20	14	38	**2.5**

The pictorial depth cues used in this picture were:

- linear perspective

- interposition (overlap)
- height in visual field (height in plane)
- texture gradient (gradients of texture)
- relative size.

The explanations had to detail how the cues were applied with reference to this specific picture. The depth cue named and the description needed to match in order to earn the marks. Many students confused 'height in plane' with 'relative size' when describing how depth was shown using the trees.

Many students provided generic answers that were not sufficient; for example, stating that 'closer objects obscure more distant objects in the cue of interposition' is not applicable to this picture.

Question 11a.

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

convergence or retinal disparity

James would have been able to use 'convergence' for a short time when first wearing the eye patch and would then have become unable to use this cue. Therefore, as the question specified that the duration of the treatment was 'several weeks', convergence was an acceptable answer.

A comment on a related question in the 1999 Assessment Report states that, 'Convergence continues to operate for some time after one of the eyes is covered. However, retinal disparity is instantly unavailable when one eye is covered or closed'.

Question 11b.

Marks	0	1	2	Average
%	53	23	24	**0.7**

accommodation

When within approximately 1.5 metres of the viewer, the lens bulges in order to fine-focus the image on the retina. The brain senses the amount of bulging and flexing of the lens and from this judges distance. The greater the bulging, the closer the object.

Students were required to provide a specific response, as shown above. Many students incorrectly stated that '…the eye bulges …'

Question 12

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

A visual illusion occurs when perception consistently differs from objective reality.

The consistency of the occurrence of the illusion was important. Many students simply identified a visual illusion as a visual mistake, therefore failing to distinguish illusions from mirages or errors due to perceptual set. Other answers indicated that the illusion is a 'trick of the eye', which is fundamentally wrong, as the 'trick' is in the interpretation.

Question 13

Marks	0	1	2	Average
%	20	26	54	**1.4**

The ethical principles broken were:

- voluntary participation – the students were pressured to take part in the experiment because of the incentive offered (credit towards coursework)
- withdrawal rights – the students were told that they could not withdraw from the experiment during the sleep deprivation phase

- professional conduct – the researcher used her position at the university to offer the students an advantage in their coursework if they took part in the study. She also used her authority to insist on students remaining until the end of the experiment.

Many students failed to distinguish between informed consent, withdrawal rights and voluntary participation.

States of Consciousness

Students appeared to have a reasonable knowledge of this area of study, although they did not always answer the questions accurately or fully. For example, Question 17 required the **name** and **description** of the unique brain wave features, but many students failed to provide a description.

Question 14

Marks	0	1	2	Average
%	22	50	29	**1.1**

Driving is a complex task, a **controlled process** that requires **selective attention**. In attempting to perform these two tasks at once, Yusef would be using **divided attention** and would not be able to concentrate sufficiently on driving, thus causing danger.

Students needed to refer to both **attention** and **processing** in order to score full marks for this question.

Question 15

Marks	0	1	2	3	Average
%	26	17	20	37	**1.7**

Three psychological characteristics the patient may report include:

- differences in attention; for example, a very narrow focus on one thought to the exclusion of all others, or openness to a wide range of stimuli
- heightened or reduced awareness compared with non-waking consciousness (NWC)
- distortions in perception (sensory thresholds) from NWC
- distortions in cognition/memory/thought processes
- distortions in the perception of time (may seem to pass faster or slower) from NWC
- distortions/changes in time orientation
- changes in emotional feeling (greater or less than in NWC)
- changes in self control (greater or less than in NWC)
- changes in openness to suggestibility (greater or less than in NWC)
- changes in perception of pain (may be perceived as more or less intense than in NWC).

The answer did not need to refer to hypnosis as the question asked about altered states of consciousness in general.

Question 16

Marks	0	1	2	Average
%	20	23	57	**1.4**

beta (with ‘saw-tooth’ pattern); low

Question 17

Marks	0	1	2	Average
%	51	30	19	**0.7**

The unique brain wave features that are characteristic of stage 2 sleep are:

- sleep spindles – brief bursts of higher frequency brain waves
- K complexes – single sharp bursts (rise then fall) in amplitude (and lower frequency).

Theta waves are not ‘unique brain wave features’ characteristic of stage 2 sleep as they also occur in stage 1 and dominate in stage 3.

Question 18

Marks	0	1	2	Average
%	8	33	59	**1.5**

Sleep deprivation can cause:

- impairment of memory processes
- a decrease in ability to perform cognitive tasks
- illogical/irrational thought
- lapses in attention and/or concentration
- difficulty focusing the eyes (which hinders reading)
- hallucinations
- micro-sleeps, which would interrupt his train of thought
- drowsiness (he may fall asleep in the exam)
- hand tremors (making it difficult to write answers)
- irritability (therefore he may give up easily or get angry during the exam)
- increased experience of pain, which may hinder concentration on the exam.

Other appropriate, negative effects of sleep deprivation were also accepted. Two responses were needed to gain full marks.

Question 19

Marks	0	1	2	3	Average
%	20	24	28	27	**1.6**

- Night terrors usually occur earlier in the night than nightmares.
- Nightmares are usually more frequent than night terrors.
- Nightmares are more likely to be remembered than night terrors.
- A person experiencing night terrors suddenly wakes up and is extremely upset; someone experiencing nightmares may not wake up.
- Night terrors are usually more upsetting than nightmares.
- Nightmares are more likely to occur in REM (therefore sleep paralysis), whereas night terrors occur in stage 4 N-REM (violent movements can occur).
- Differences in EEG (beta-like waves with sawtooth pattern indicate REM and therefore nightmares; delta waves indicate stage 4 and therefore night terrors) and EOG patterns (high activity indicates REM and therefore nightmares; low activity indicates stage 4 and therefore night terrors).

REM sleep and delta-wave sleep are both forms of deep sleep (which is why REM can be referred to a ‘paradoxical sleep).

Many students gave generic answers to this question; however, responses had to relate to Bobbie and her four-year-old daughter to gain full marks. Comments such as ‘Nightmares may occur throughout life and night terrors are more common in young children’ were not correct as they did not describe a method that would enable Bobbie to decide the nature of the sleep disturbances. As students were asked to **distinguish** one from the other, they needed to state characteristics of both conditions to gain full marks.