VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

2009 Psychology GA 1: Written examination 1

GENERAL COMMENTS

Student performance on the June 2009 Psychology examination was reasonably consistent across the three Areas of Study. As usual, the scores in the multiple-choice section were higher than those in the short answer section.

In the multiple-choice section all three Areas of Study were well answered. The mean score for 'Brain and nervous system' and 'States of consciousness' was 73 per cent. 'Visual perception' had a mean score of 70 per cent. The mean scores were slightly lower than in 2008.

As in previous years, students who did not perform well on the short answer section wrote answers that often lacked precision and completeness in their descriptions and definitions, failed to refer to appropriate psychological information or failed to provide appropriate examples in their answers (even when the requirement for this was explicitly stated in the question). Students had the most difficulty with 'Visual perception', with a mean score of 47 per cent, while 'States of consciousness' had a mean score of 51 per cent. 'Brain and nervous system' was the best answered Area of Study with a mean score of 66 per cent.

Teachers had clearly directed students' attention to key concepts and skills in the *VCE Psychology Study Design*. In general, students demonstrated good knowledge and understanding of the study design. However, it was noted that where a specific context was stipulated in a question, students often ignored the instruction and gave general answers. As in previous years, many students did not achieve full marks because they failed to address all aspects of the question in their answers. This was particularly true in Question 6b. where the context was ignored and in Question 11 where the scenario of the balloons and trees was required. Many answers contained only generic descriptions.

Students need to read the short answer questions very carefully and then check their answers against the requirements of the question. Highlighting the **command terms** before planning a response is good practice.

Short answer questions worth two marks generally require two key terms and/or pieces of information. Short answer questions worth one mark require one, or sometimes two, key terms and/or pieces of information. Questions worth three or four marks have an appropriate number of lines in the answer booklet. It is worth noting, however, that the space provided for an answer should be regarded as a guideline only and it is entirely permissible for students to write in the margins or in blank spaces on the paper, as long as such writing is **clearly identified** as being an answer to a specific question.

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 response, they should mark the response that is their 'best guess'– it is always possible to change a response by carefully erasing and re-shading. Answering all questions also decreases the chance that further answers will be out of synchronisation.

This section of the paper was moderately well answered with a small number of questions resulting in a correct response rate of less than 50 per cent. These questions 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	79	9	11	1	
2	4	79	14	4	
3	1	4	3	92	
4	5	3	70	23	
5	4	45	1	50	It is emphasised that information from each eye is processed in **both** hemispheres of the brain. Information from the left half of the retina in both the left and right eyes is processed in the left hemisphere, and information from the right half of each retina is processed in the right hemisphere.
6	5	1	0	94	
7	19	76	2	3	
8	10	4	5	82	
9	4	1	93	2	
10	3	19	49	28	The Alarm (or Alarm reaction) stage of the General Adaptation Syndrome is characterised by two **phases** – shock, in which the body's resistance to the stressor drops, followed by countershock, in which resistance is increased. Features of shock include reduction in heart rate and body temperature.
11	28	3	48	20	Twenty-eight per cent of students chose option A and 20 per cent chose option D. This suggests that students who chose these options had poor understanding of the General Adaptation Syndrome.
12	3	3	81	13	
13	33	18	8	41	Although there is some debate about the safety of a pacemaker in an fMRI scan, VCE students have been taught that MRI scans in general are not safe when a patient has a pacemaker. It was decided, therefore, that there was no fully correct answer among the options given on the examination paper and all students were credited with the mark for this question.
14	2	4	3	91	
15	5	9	10	76	
16	49	12	29	10	A significant minority of students chose option C 'A case study uses only non-invasive techniques to study the brain'. Since techniques such as split-brain research and ESB (both techniques involving case-studies) had been studied within this Area of Study, this was a surprising statistic.
17	6	60	14	19	
18	18	2	22	58	
Area of Study 2 – Visual perception					
19	4	84	5	7	
20	13	82	3	2	
21	9	4	8	79	
22	41	33	21	4	Option B 'selecting groups of visual data to form a whole image' and option C 'selecting data in the visual field for focusing on the retina' refer to the process of 'reception'.
23	3	13	3	81	
24	85	8	3	5	

Question	% A	% B	% C	% D	Comments
25	46	47	2	5	Students who chose option B did not show understanding of **size constancy**, which states that the size of the retinal image for a familiar object (or one that is moved closer) does not affect perception of the size of the object itself.
26	33	7	59	1	Students who chose option A selected the answer that was exactly opposite to the correct response (option C).
27	1	4	5	90	
28	78	9	2	10	
29	22	59	9	10	
30	68	7	20	5	
31	64	22	1	13	
Area of Study 3 – States of consciousness					
32	96	2	0	2	
33	84	5	2	9	
34	8	85	4	3	
35	6	84	5	5	
36	76	7	4	13	
37	7	2	4	87	
38	3	84	6	6	
39	33	7	36	24	Students who chose option A must be extremely wary of choosing absolute statements. The EMG measures electrical activity in muscles of the body whereas the EOG is used to measure electrical activity in muscles that control eye movement.
40	59	37	2	2	
41	68	9	10	13	
42	2	3	21	74	
43	7	3	42	48	Forty-two percent of students chose option C. This suggests that students are confusing sleep talking, which may occur in any stage of sleep, with sleepwalking, which occurs only in stages 3 and 4 of NREM sleep.
44	6	10	1	83	

Section B – Short answer questions

For each question, an outline answer (or answers) is provided. In some cases the answer given is not the only answer that could have been awarded marks.

Area of Study 1 – Brain and nervous system

This section was generally well answered.

Question 1

Marks	0	1	2	Average
%	14	14	72	**1.6**

Broca; left frontal

This question was well answered. All three pieces of information were required for full marks.

Question 2

As all objects in Questions 2b. and 2d. were visible in both the left and right visual fields, it is possible that a process of 'cross-cuing' would occur, alerting both hemispheres to the identity of the object. Students could indicate that either hand could be used (or not specify a particular hand) and be awarded a mark.

Question 2a.

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

They could name the object.

Question 2b.

Marks	0	1	Average
%	0	100	**1**

They could point to the object.

Question 2c.

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

They could not name the object.

Question 2d.

Marks	0	1	Average
%	0	100	**1**

They could point to the object.

Question 3

Marks	0	1	2	3	Average
%	28	23	26	22	**1.4**

Any of:

- during the base rate phase (while establishing the baseline measures) a person could induce a heightened state of arousal through inflicting pain on themselves
- when answering control questions a person could induce a heightened state of arousal through inflicting pain on themselves and the reading would be high for these questions. Arousal would also be high when a person answers relevant questions, either because of the effects of inflicting pain, or because of heightened arousal through lying. The difference between the control and relevant questions would be negligible and it would appear as if the person was not lying
- during **all** questions, a person could inflict a high level of pain on themselves, causing arousal at a high level. Minor changes due to lying would not be noticeable over the high arousal due to the pain.

Question 4a.

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

Sympathetic

Question 4b.

Marks	0	1	2	Average
%	6	9	84	**1.8**

Two of:

- heart rate increases
- pupils dilate
- dry mouth
- perspiration increases
- increase in blood pressure
- increase in breathing rate
- bronchioles (airways) dilate
- release of sugar (glucose) from storage
- release of fat from storage
- slowing (inhibition) of the digestive process
- release of adrenalin/noradrenalin
- blushing
- goose bumps.

Question 4c.

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

One of:

- heart rate increases to pump blood (and nutrients/oxygen) around the body faster, carrying more oxygen and glucose to the muscles
- blood pressure increases to push blood through capillaries at a faster rate
- breathing rate goes up to take in more oxygen
- bronchioles dilate to allow more oxygen into the lungs
- pupils dilate to let in more light and enhance vision
- digestion is slowed to divert oxygen to muscles to allow a faster response
- release of sugar and fat to provide instant energy to skeletal muscles
- release of adrenalin and noradrenalin to activate muscles and organs to deal with the life-threatening situation.

It should be noted that many students stated that 'the heart beats faster to pump **more** blood around the body'. This is incorrect as the amount of blood in the body remains the same.

Question 5a.

Marks	0	1	Average
%	71	29	**0.3**

X-rays of the brain are taken from different angles. These images are combined by a computer program to produce a cross section image of the brain.

Question 5b.

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

- The CT image is not as detailed or as clear as an MRI image.
- The CT scan is black and white whereas an MRI scan is in colour – there is better contrast in an MRI.
- The CT scan uses powerful X-rays and cannot be repeated within several months as there is a high risk of cancer.
- The CT scan requires an injection of iodine to provide contrast – this is an invasive technique.

Many students suggested that the injection carries radioactive ions. This is incorrect, showing confusion with the PET scan where glucose carries a radioactive marker.

Question 5c.

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

Changes to personality or changes in any of:

- the ability to perform complex mental functions
- the ability to plan/organise (problems with executive function)
- the ability to understand abstract concepts
- the control of emotions
- the expression of emotions
- the production of speech (articulation of words).

Question 6a.

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

- anxiety
- tension
- depression
- anger/irritability/short temper
- hopelessness
- helplessness

- flat effect

Question 6b.

Marks	0	1	Average
%	62	38	**0.4**

Either of:

- the sympathetic nervous system is stimulated during stressful events and slows the digestive system. This is part of the fight/flight survival response where blood flow and oxygen is removed from the stomach and contributes to indigestion
- David's immune system has been accustomed to fighting the stress hormones produced in the fight/flight response. His body's ability to deal with any infection from the environment is reduced. (He may have a bacterial or viral infection).

The question stipulated that the answer should be in terms of the autonomic nervous system. Therefore reference to the sympathetic nervous system, sympathetic arousal or fight/flight response was required.

Area of Study 2 – Visual Perception

Question 7a.

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

The second balloon should be lower in the sky (closer to the horizon) than the first balloon.

Students were not penalised for saying that the second balloon would be drawn smaller as the question indicated that the two balloons were the same size. However, this alone did not earn a mark.

Question 7b.

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

The closer tree should be more detailed than the tree further away in the picture.

The statement 'more texture' was not sufficient. It was necessary to indicate which tree would be shown in more detail.

Question 8

Marks	0	1	2	Average
%	46	36	18	**0.7**

Students were awarded one mark for responding that the car stays the same size despite changes in the retinal image.

Students were also awarded one mark for either of:

- as it gets closer, the retinal image of the car gets larger
- application of size constancy (gives the pictorial depth cue of **relative** size) means we realise that the car is closer to us, not bigger, therefore we do not cross the road.

Responses to this question were extremely poor. Most students referred to 'relative size' but did not relate this to the changing size of the image on the retina and the constancy of perception in spite of the changing image.

Question 9a.

Marks	0	1	Average
%	63	37	**0.4**

Perceptual set refers to a predisposition **either** to perceive a stimulus in a certain way (interpretation) **or** to select certain aspects of the visual field on which to pay attention (selection).

Question 9bi.

Marks	0	1	Average
%	27	73	**0.8**

Any of:

- context
- past experience
- motivation
- suggestion
- mood.

Question 9bii.

Marks	0	1	2	Average
%	46	11	43	**1**

Context **or** past experience: a person shown a series of cards displaying pictures of animals and then presented with a card showing an ambiguous figure that could be perceived as either an animal (rat) or a man, is likely to perceive the figure as an animal due to their **immediate past experience** of viewing animal cards. The experience with previous cards has produced a 'perceptual set' that the next card will also be an animal card.

Context: when researchers Mackworth and Loftus showed people a picture of a farmyard with a giant squid outside the barn, they were unable to recall other details of the scene, selecting the squid as the object to attend to due to the context.

Past experience: elderly people who are shown Leeper's ambiguous 'Wife or mother-in-law' picture tend to perceive the old woman through the experience of mixing with elderly people. Young people tend to perceive the young woman, through experience of being with young people.

To achieve marks for this question the factor and explanation needed to be congruent.

Question 10a.

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

Perception consistently differs from objective reality.

The concept of consistency was required.

Question 10b.

Marks	0	1	2	3	Average
%	19	41	23	17	**1.4**

Appropriate answers included:

- Day's theory of perceptual compromise: we make a perceptual compromise to understand that the length of the two lines is the same, but the length of each whole figure is different
- apparent distance hypothesis: our reading of the illusion is based on our experience with buildings – we perceive the line with feathertails as the 'inward' corner of a room, and the arrowhead line as the 'outward' corner of a building. As the lines form images of the same length, the apparently more distant line (the inward corner of the room, the feathertail line) is perceived as being larger.
- Morgan, Hole and Glennerster's theory that the illusion is at least partly caused by directly misperceiving where the lines end
- the Müller-Lyer illusion is based on the Gestalt principles of convergence and divergence: the lines at the sides seem to lead the eye either inward or outward to create a false impression of length
- the line with arrows pointing inwards may simply appear longer because the arrows themselves extend past the line.
- Saccadic movements – takes longer for fishtails
- greater area of photoreceptors responding.

Any explanation was accepted, provided a comprehensible and appropriate reason was given.

Question 11a.

Marks	0	1	Average
%	48	52	**0.5**

Any of:

- the participants were not randomly selected because students volunteered and the footballers were asked to participate. This selection was not representative of the population
- each individual in the population did not have an equal chance of selection
- she did not use random or stratified sampling.

Question 11b.

Marks	0	1	Average
%	64	36	**0.4**

Participants were not randomly allocated because all students were in the experimental group and all footballers were in the control group. Therefore bias of results may have existed.

Area of Study 3 – States of consciousness

It is emphasised that students should be aware of elements that distinguish altered states of consciousness from normal waking consciousness.

Question 12

Marks	0	1	2	Average
%	26	38	35	**1.1**

Cognitive change

- difficulty paying attention
- memory difficulties or distortions of memory
- problem solving difficulties
- unable to think clearly

Perceptual change

- hallucinations
- altered perception of pain
- heightened sensitivity to other sensory stimuli
- blurred vision
- difficulty judging the passage of time

Responses of ‘enhanced perception’ or ‘reduced perception’ were too general to achieve marks.

Question 13ai.

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

The EOG detects, amplifies and records electrical activity of the muscles that control eye movement.

Responses that referred to ‘muscles of the eye’ were incorrect. ‘Electrical movement’ (movement of electrons) was accepted. The term ‘electrical’ was essential in responses to this question.

Question 13aii.

Marks	0	1	Average
%	46	54	**0.6**

The EEG detects, amplifies and records the electrical activity of the brain in the form of brain waves.

Question 13b.

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

Very little or no electrical activity (due to little or no movement of eye muscles in NREM sleep)

Marks were awarded only for descriptions of what the recording would show – the electrical readings.

Question 13c.

Marks	0	1	2	Average
%	33	25	41	**1.1**

- K-complexes – a single low frequency, high amplitude brain wave
- Sleep spindles – brief bursts of higher frequency brain waves

Question 13d.

Marks	0	1	2	Average
%	27	22	51	**1.3**

Nightmares occur in REM sleep; longer episodes of REM sleep occur towards the morning.

Question 14a.

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

Either of:

- all participants will experience both conditions – meditating and not meditating before going to bed at the start of the night
- all participants will be in both control (not meditating) and experimental (meditating) conditions (groups).

Students are reminded that it is essential to refer to the scenario described in the question.

Question 14b.

Marks	0	1	2	Average
%	58	20	22	**0.7**

Participant effects: the participants' characteristics are the same for both conditions. Therefore, this factor is even across both conditions and should not cause a difference in the results for each condition.

Any nominated personological variable that could reasonably have an effect in **this** study was also acceptable, such as:

- experience with meditation
- body mass
- type of insomnia.

For example, experienced meditators may achieve a trance state much more quickly than others and be more relaxed.

It was essential that the nominated effect and explanation were congruent.

Question 14c.

Marks	0	1	2	Average
%	8	33	60	**1.5**

Any of:

- their rights as a participant
- potential dangers
- withdrawal rights
- right to debriefing
- right to privacy (confidentiality)
- details of the processes involved in the study
- purpose of study (what the results will be used for).