



GENERAL COMMENTS

The 2013 exam was the first two-and-a-half hour examination that assessed both Units 3 and 4. Following the pattern of previous exams addressing this study design, Sections A and B were not divided into separate areas of study and some questions addressed more than one Area of Study. Section C consisted of a 'Research scenario'. As had been previously advised, this section was worth 15 marks, of which 10 marks were allocated to the extended response.

Responses to the multiple-choice section showed an average correct response rate that was slightly higher than, though comparable with, previous examinations.

Students are strongly advised to respond to each question. Not only is it impossible to achieve a mark if no response is given, but leaving a line blank also increases the likelihood that later answers on the computer-scored sheet will be out of synchronisation and students may miss out on further marks. It is always possible to change a response by carefully erasing and re-shading. It is suggested that use of a ruler, moved down the page as each question is answered, will help to ensure that the correct response line is being completed.

As the paper is marked online, 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 response booklet. If students continue a response in the extra space, they must number the response clearly.

Students must clearly address the questions asked and ensure 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. Substitution of a word, which therefore changes the meaning, will not be accepted. Students should take care to spell scientific terms correctly.

The extended-response question contained additional information, including four dot-points, indicating to students the material that should have been included in their response. This was vital information and guided the allocation of marks. Students who addressed only one of the four dot-points could not achieve high marks.

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 errors resulting in a total 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	0	1	93	6	
2	7	12	80	1	
3	2	2	94	2	
4	3	86	1	10	
5	1	85	7	7	
6	81	9	2	9	
7	16	81	2	1	
8	1	1	97	1	
9	7	71	14	9	
10	4	84	9	3	
11	3	68	25	3	Option C describes the placebo effect. The correct response identifies the actual placebo.
12	52	16	19	12	

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Question	% A	% B	% C	% D	Comments
13	5	24	9	62	
14	4	13	6	77	
15	1	96	2	1	
16	62	11	24	3	Although option A is the generally accepted level for statistical significance, this means that the result would be obtained by chance alone fewer than five times in one hundred. The correct alternative (< 0.01, option C) indicates that it would occur less than once in one hundred – a much stronger level of significance.
17	1	86	0	13	
18	0	98	1	1	
19	3	3	82	12	
20	88	2	2	7	
21	8	82	8	1	
22	88	3	2	6	
23	2	75	13	9	
24	59	4	10	27	The significant number of students who chose option D was surprising, since ‘reflexes’ and ‘fixed action patterns’ are both listed in the study design as unlearned behaviours.
25	2	88	6	4	
26	82	1	5	11	
27	10	10	31	49	Students who chose option C ignored the fact that a child’s brain is subject to both developmental and adaptive plasticity.
28	10	16	39	35	If students had simply thought of Pavlov’s original observations they would have obtained the correct answer.
29	1	1	3	96	
30	1	1	97	2	
31	12	17	40	30	This question related to the role of the association cortex in each lobe. Students who chose option C (occipital lobe) may have been thinking of the location of the primary visual cortex. It is in the temporal lobe that recognition occurs.
32	9	2	84	5	
33	67	20	8	6	
34	10	7	74	9	
35	72	7	2	19	
36	15	66	17	2	Primacy and recency effects will occur only with immediate, random and recall. After a delay, the recency effect will not occur.
37	22	14	50	14	The comments above apply to this question also.
38	6	2	3	89	
39	11	10	24	55	Students who chose option C confused the roles of the hippocampus and the amygdala.
40	1	8	22	68	
41	1	0	14	85	
42	52	36	7	5	The episodic buffer is the link between working memory and long-term memory.
43	3	7	0	90	
44	19	48	6	27	Option D was incorrect since ‘consolidation into short-term memory’ does not occur.
45	1	1	75	22	The context referred to the external environment. Peter’s feelings of hunger represent a state of being.
46	6	88	4	2	
47	95	1	1	3	
48	24	14	51	11	This question required knowledge of the syndrome of left neglect, the result of damage to the right parietal lobe.
49	14	1	76	9	

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Question	% A	% B	% C	% D	Comments
50	10	85	4	1	
51	2	10	4	84	
52	46	42	12	0	
53	5	79	10	5	
54	11	33	12	44	As the experimental design used was independent groups, counterbalancing (option B) was not an option.
55	2	12	84	2	
56	71	7	16	6	
57	17	51	10	22	Students who chose option A did not understand the physiology of a neuron in which axon terminals release neurotransmitters and dendrites contain receptor sites. Those who chose option D did not understand the functioning of a single neuron, which does not involve higher mental processes.
58	15	84	1	0	
59	2	2	88	8	
60	2	3	7	88	
61	8	3	6	82	
62	26	56	2	15	The instructions for Section A advised students to choose the response that is correct or that best answers the question. Punishment (option A) was too general. Response cost was the most precise response. It is surprising that 15% of students chose 'negative reinforcement' (option D), as many previous exam reports have emphasised the difference between punishment/response cost (weakening a response) and negative reinforcement (strengthening a response).
63	1	18	5	75	
64	24	4	16	56	Option A cannot relate to this scenario as response cost is aversive and weakens a response.
65	17	68	14	1	

Section B – Short-answer questions

Question 1

Marks	0	1	2	Average
%	22	51	26	1.1

- difficulty articulating speech
- sentences short and consisting mainly of nouns and verbs

The fact that James would still understand what was said to him is not a symptom of Broca's aphasia – most people understand what is said to them but this does not mean that they suffer from Broca's aphasia.

Question 2

Marks	0	1	2	Average
%	34	55	11	0.8

The tongue contains a greater concentration of pain receptors than the elbow. Since each receptor requires a representative cell in the primary somatosensory cortex, a greater area of that cortex will be devoted to the tongue than to the elbow.

Many students referred to movement of the tongue, which was related to the primary motor cortex.

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Question 3

Marks	0	1	2	3	Average
%	32	10	17	41	1.7

- learning French as a child: circuit formation
- not speaking French as an adult: pruning
- speaking French in retirement: re-routing or bushing

This question was well answered by many students.

Question 4

Marks	0	1	2	Average
%	36	46	18	0.8

A child's brain is in the process of developmental plasticity and re-routing is readily achieved. An adult can only recover through adaptive plasticity, which limits the progress of recovery.

It is important for students to realise that when a question requires a comparison, reference should be made to both subjects – in this case to children and to adults.

Question 5a.

Marks	0	1	Average
%	12	88	0.9

Token economy

This question was well answered.

Question 5b.

Marks	0	1	2	Average
%	37	25	38	1

A ratio schedule would lead to the highest response rate. This is because Ruth would need to participate in order to achieve reinforcement. In an interval schedule she would just need to wait for reinforcement and not necessarily participate at all.

In general, those who attempted this question provided good answers.

Question 6

Marks	0	1	2	3	Average
%	44	9	21	27	1.3

Driving a car is a controlled process requiring selective attention; therefore Bernie's ability to drive would be less impaired. A crossword is a simple task enabling divided attention; therefore Bernie's ability to complete a crossword would be greatly affected by his sleep deprivation.

Students gained credit for identifying either driving or completing a crossword as a simple or complex task. The marks were gained for showing understanding that simple tasks are most affected and the ability to perform complex tasks would be relatively unchanged.

Question 7

Marks	0	1	2	3	4	Average
%	10	13	29	17	32	2.5

- Hannah would have had reduced awareness of the passage of time and thought that less time had passed than was really the case, therefore allowing the cake to overcook.
- Hannah may have reduced sensory awareness and may not have noticed the smell of the burning cake.

This question was well answered. A common error was due to misreading of the question; Hannah was 'waiting for the cake to cook', thus responses referring to weighing or mixing ingredients were incorrect.

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Question 8

Marks	0	1	2	3	Average
%	26	18	26	30	1.6

- Multiple-choice questions are answered through recognition.
- Short-answer questions require (free) recall.
- Recognition is a more sensitive process of retrieval than recall.

Question 9

Marks	0	1	2	3	Average
%	21	28	33	18	1.5

Short-term memory (STM) holds (on average) five to nine items. Mobile phone numbers exceed this limit, having 10 digits. Chunking enables us to group individual digits together so that each group (chunk) occupies one of those locations. 0-4-0-3-8-5-6-2-2-4 (10 individual items) is too large, whereas three groups 0403-385-224 occupies only three of the five to nine locations.

Students tended to miss out on marks on this question due to imprecise wording. It was essential to show the limited capacity of STM and the fact that using chunking reduces the number of items.

Question 10

Marks	0	1	2	3	Average
%	7	21	42	30	2

- Toby went straight to sleep, so consolidation could occur without interruption.
- Roger studied Politics after History, so retroactive interference may have occurred.

As in previous questions, students needed to refer to both individuals in order to provide a complete answer.

Question 11

Marks	0	1	2	3	Average
%	18	35	41	6	1.4

Amanda is suffering cue-dependent forgetting, as there are insufficient cues to enable her to access the required information from her semantic network. She could listen to the song 'Twinkle Toes' or revisit the dance hall where the competition occurred in order to assist her memory.

A common error was to refer to state-dependent cues (remembering how she felt) rather than context-dependent cues (the external environment).

Question 12a.

Marks	0	1	2	3	Average
%	37	18	32	14	1.2

Information presented to the right visual field is processed in the left hemisphere and vice versa. Where verbal information is processed in the left hemisphere it does not have to cross via the corpus callosum before being articulated, as the left hemisphere contains the language centres of the brain and is therefore responded to more quickly than information processed in the right hemisphere. Similarly, recognition of a picture occurs more rapidly if the picture is processed in the right hemisphere.

Question 12b.

Marks	0	1	2	Average
%	32	11	57	1.3

These results demonstrate that hemispheric specialisation does occur: the left hemisphere is more specialised for verbal tasks and the right hemisphere for non-verbal tasks.

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Question 13

Marks	0	1	2	3	4	5	6	Average
%	32	2	9	13	19	15	10	2.7

episodic buffer

- Mr Simpson: retrieving memory codes from long-term memory to enable him to read the words on the report
- Mrs Davis: encoding information from what is said into her long-term memory

central executive

- Mr Simpson: deciding which information to give Mrs Davis
- Mrs Davis: paying attention to what Mr Simpson is saying and screening out other stimuli

phonological loop

- Mr Simpson: mentally/sub-vocally rehearsing what he will say to Mrs Davis
- Mrs Davis: storing the sound of Mr Simpson's words before interpreting what is said

visuo-spatial sketchpad

- Mr Simpson: storing the vision of the letters that form the words on the report before they are interpreted
- Mrs Davis: either no significant role in this scenario or storing a memory of Mr Simpson's image as he is talking

Students obtained full marks for descriptions of any two components and the role played.

Question 14

Marks	0	1	2	3	4	Average
%	47	24	17	9	3	1

Biofeedback involves a patient being given real-time information about one or more of their autonomic responses and controlling these by psychological means.

- Jeannie's doctor could teach her relaxation strategies such as controlled breathing or meditation.
- Jeannie could then be attached to a biofeedback machine that shows her blood pressure or heart rate.
- Jeannie could use the strategies she has been taught to induce relaxation while watching the read-out on the machine.
- When she has mastered the technique of controlling the autonomic response she can use the techniques at work to reduce her stress levels.

This question was very poorly answered. Teachers should emphasise the four steps outlined above. Few responses included more than one or two of these.

Question 15

Marks	0	1	2	3	4	Average
%	32	27	25	12	3	1.3

Stephanie is experiencing an increase in her allostatic load since moving out of home. Her difficulties with work, university, money and lack of support are all harmful and she is experiencing allostatic overload. Allostatic overload means that a build-up of stress hormones leads to decreased efficiency of the immune system. Prolonged allostatic overload also puts increased strain on bodily systems such as the cardiovascular system. As a result of these, Stephanie is at risk of developing stress-related illnesses such as bacterial or viral infections, stroke, heart attack or cancer.

It is emphasised that there is a range of stress-related illnesses, as indicated above. Many students failed to refer to decreased immunity or to increased pressure on physiological systems.

Question 16a.

Marks	0	1	2	Average
%	52	42	6	1.6

- Aversion therapy is used to eliminate an undesired behaviour. This is not such a scenario.
- Aversion therapy often does not generalise – it may work in the doctor's office but is unlikely to work in the outside world or with all dogs.

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Question 16b.

Marks	0	1	2	3	Average
%	34	36	24	6	1.1

Flooding involves continuing exposure to the fear-inducing stimulus until **extinction** of the fear response occurs.

Devika could be placed in a room with the 'conditioned stimulus' (the dog) which will produce the 'conditioned response' of fear (of the dog). After continuing exposure to the conditioned stimulus, but never again pairing it with the 'unconditioned stimulus' (the bite), Devika's fear response will be extinguished.

Many students erroneously suggested that Devika could be introduced to a gentle dog so that she could 'realise that most dogs are nice and there is no need to be afraid of them'. This reasoning completely missed the point of the process and did not refer to classical conditioning.

Question 17

Marks	0	1	2	3	Average
%	40	27	22	11	1

- Raffi's barking is a voluntary behaviour.
- Raffi and Mac are both active participants.
- Mac is providing a consequence for Raffi's barking.

Responses that referred to Mac's behaviour as the learned response were also correct.

Question 18

Marks	0	1	2	Average
%	31	60	9	0.8

Narrative chaining involves incorporating the words to be remembered into a story in the same order as that in which they are to be recalled. For example, students could make up a story: 'I untied my horse from the tree, put the fish I had caught in the saddlebag and said 'Go Diamond!' Diamond trotted home and we had cauliflower, cheese and fish for dinner.' To retrieve the memory, students then recite the story.

Many students used only two or three of the words, did not explain how the mnemonic works or did not use the words in the correct sequence.

Section C – Research scenario

Question 1

Marks	0	1	Average
%	46	54	0.6

Convenience sampling

Question 2

Marks	0	1	Average
%	39	61	0.6

Quantitative

Question 3

Marks	0	1	Average
%	63	37	0.4

Any of

- there was detailed examination of the individuals
- there was no hypothesis
- there was no cause-and-effect relationship being investigated.

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Question 4

Marks	0	1	2	Average
%	22	47	32	1.1

Any two of

- the sample was too small (this was a case study)
- the sample was not representative of any population
- Dement was only involved for the last three days of the exercise.

Question 5

Marks	0	1	2	3	4	5	6	7	8	9	10	Average
%	11	8	11	12	14	14	12	9	5	3	1	4.1

Following is an example of an appropriate response to this question.

Research hypothesis

That adolescents experiencing increasing levels of sleep deprivation will show increasing irregularity in their sleep recovery patterns.

Method

Participants

Participants are 200 adolescents (100 male and 100 female) selected at random from 800 volunteer Year 10 students. Parental informed consent has been obtained.

Potential participants were given a sleep-survey questionnaire and any suffering sleep disorders were disqualified prior to selection to avoid confounding variables.

Measures

Participants were given a smart phone app (Sleep Cycle Alarm Clock) that analyses stages of sleep, and were taught how to create a somnogram from it.

Procedure

A repeated-measures within subjects design was used, so random allocation was not required.

All participants were asked to record their somnograms for one week to provide a baseline measure.

In the sleep deprivation condition, on

- Day 1 they set the alarm to awaken them at four-hour intervals
- Day 2 they slept normally with no interruption
- Day 3 they set the alarm to awaken them every hour
- Day 4 they slept normally with no interruption
- Day 5 they set the alarm to awaken them every 30 minutes
- Day 6 they slept normally with no interruption.

Somnograms from the baseline condition and from Days 2, 4 and 6 were then compared to determine the average time spent in 1. REM sleep and 2. slow-wave NREM sleep.

To eliminate contextual confounds, all students slept in their own bed at home on each of the nights.

Assessment criteria

- Identify and describe the key terms/theories/issues
- Explain the relevant terms/theories/issues and make connections between psychological concepts and data and research
- Use appropriate examples and evidence to support the response
- Interpret and analyse the issues/data/information
- Evaluate issues/data/information and draw appropriate conclusions

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Students' responses were not required to be in essay form, and dot points or tables covering some or all aspects of the question were acceptable.

The mean score (4.08 out of 10) reflected a number of issues.

- 10.6 per cent of students did not make any real attempt to answer the question and did not obtain any marks.
- A large number of students wrote extensively on only one or two of the dot-points in the question and ignored the other requirements specified. It is emphasised that these dot-points were included in order to help students to structure their responses appropriately and ensure that they incorporated all required information.
- Students still seemed to be unaware of the distinction between 'variable' and 'operationalised variable'. In a research hypothesis statement, variables need not be stated in operational terms, but if the operationalisation is given then the variable name must also be given.
- Many students answered this question with respect to the Dement research described earlier. This was not in the instructions for this question and students who used this method tended to gain fewer marks as they were describing a case study rather than an experiment as required. The few who achieved reasonable marks when responding in this way were those who suggested a single-subject repeated measures design.