A-level
PSYCHOLOGY
7182/2

Paper 2 Psychology in context

Mark scheme

June 2019

Version: 1.0 Final

196A7182/2/MS

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. Answers in the standardising materials will correspond with the different levels of the mark scheme. These answers will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the standardised examples to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Section A

Approaches in psychology

0 1 According to the biological approach, which of the following statements is **TRUE**?

[1 mark]

Marks for this question: AO1 = 1

A Environment may influence the expression of the genotype.

0 2 According to operant conditioning, which of the following statements is **TRUE**?

[1 mark]

Marks for this question: AO1 = 1

B Negative reinforcement and positive reinforcement increase the likelihood that a behaviour will be repeated.

0 3 Briefly describe **one** role of the unconscious according to the psychodynamic approach.

[2 marks]

Marks for this question: AO1 = 2

2 marks for a clear, elaborated description of one role of the unconscious according to the psychodynamic approach.

1 mark for a limited or muddled description.

Possible roles:
- the unconscious is the driving/motivating force behind our behaviour/personality
- the unconscious protects the conscious self from anxiety/fear/trauma/conflict.

Possible elaboration:
- traumatic (repressed) memories drive our behaviour
- defence mechanisms, eg repression, denial, displacement, are used unconsciously to reduce anxiety
- the underlying unconscious drive is sexual
- if a conflict is experienced during the development through the psychosexual stages, eg oral, anal, phallic, latent, genital, a fixation (that resides in their unconscious mind) can affect an adult's personality

Accept other relevant elaborations.

Note - answers which only describe the tripartite structure of personality are not creditworthy

0 4 Explain how the Tiger advert might influence viewers' mediational processes.

[6 marks]

Marks for this question: AO2 = 6

Level	Marks	Description
3	5–6	Application of knowledge of the mediational processes is clear, effective and generally well detailed. The answer is generally coherent with appropriate use of terminology.
2	3–4	Application of knowledge of the mediational processes is evident with some effectiveness. The answer lacks clarity in places. Terminology is used appropriately on occasions.
1	1–2	Application of knowledge of the mediational processes is limited. The answer as a whole lacks clarity and has inaccuracies. Terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

Attention:
- recognition of a celebrity/'England rugby player' captures our attention
- the advert is funny/unusual, capturing our attention, eg 'rugby player draws tiger stripes on his face, roars'
- television is intrinsically interesting and therefore captures our attention.

Retention:
- the advert is humorous/unusual, eg 'rugby player draws tiger stripes on his face, roars', strengthening the memory and making it more likely to be stored in long-term memory (LTM)
- the advert is simple, making it easy to encode/remember
- simple catchphrase at the end ('anyone can battle stains with a Tiger on their side') is easy to store/encode.

Motor reproduction:
- squirting a bottle of spray on a stain and wiping it clean is easy to replicate
- viewers can easily perform the behaviour shown in the advert, 'sprays Tiger onto the stain and then easily wipes off the stain'.

Motivation:
- the viewer will want to perform the behaviour as it leads to the successful removal of difficult stains with little effort, 'easily wipes off the stain'
- the behaviour is rewarded – the little 'boy claps' providing positive vicarious reinforcement.

Note - students do not need to cover all four mediational processes to achieve full marks.

0 5 The company paid the rugby player a lot of money to be in the advert.

Use your knowledge of social learning theory to explain why the company wanted to use a famous rugby player in the advert.

[2 marks]

Marks for this question: AO2 = 2

1 mark for each of the following points:
- people are more likely to identify with high status/highly attractive/celebrity role models
- sales should increase/people are more likely to imitate the rugby player.

0 6 Calculate the percentage increase in sales of Tiger to male customers. Give your answer to **two** significant figures.

Show your workings.

[3 marks]

Marks for this question: AO2 = 3

Marks are for calculations and/or numerical answer – no need to show unit (%)

3 marks for the correct answer given to two significant figures: 86 (even if no correct workings are shown).

2 marks for correct answer not given to two significant figures, eg 85.8842189 or 85.9; or if incorrect answer is provided even if all working is correct.

1 mark if workings are partially correct, eg one of the correct workings.

0 marks if the incorrect answer is given to two significant figures.

Correct workings:
4688 – 2522 = 2166
100 × (2166/2522) = 0.85884219 × 100 = 85.8842189
Answer = 86%

0 7 Using your knowledge of social learning theory, suggest how the advert could be modified to increase the sales of Tiger to female customers.

[1 mark]

Marks for this question: AO2 = 1

1 mark for suggesting that a female actor/role model should be used as the model in the advert.

Accept alternative modification which would increase identification in female viewers.

0 8 Outline **and** evaluate Wundt's role in the emergence of psychology as a science.

[8 marks]

Marks for this question: AO1 = 3 and AO3 = 5

Level	Marks	Description
4	7–8	Knowledge of Wundt's role in the emergence of psychology as a science is accurate with some detail. Evaluation is thorough and effective. Minor detail and/or expansion of argument is sometimes lacking. The answer is clear, coherent and focused. Specialist terminology is used effectively.
3	5–6	Knowledge of Wundt's role in the emergence of psychology as a science is evident but there are occasional inaccuracies/omissions. Evaluation is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	3–4	Limited knowledge of Wundt's role in the emergence of psychology as a science is present. Focus is mainly on description. Any evaluation is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1–2	Knowledge of Wundt's role in the emergence of psychology as a science is very limited. Evaluation is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- Wundt founded the Institute of Experimental Psychology
- Wundt published one of the first books on psychology, helping to establish the subject as an independent branch of science
- description of Wundt's approach – structuralism
- the use of the scientific method to study the structure of sensation and perception
- the use of introspection in controlled studies
- use of controlled environments to establish general theories about mental processes
- Wundt's identification of higher mental processes (learning, language, emotions, etc.) that could not be studied in a strictly controlled manner
- the development of the field of cultural psychology based on general trends in behaviour of groups of people.

Possible evaluation points:

- discussion of the subjectivity of Wundt's methods in contrast to the objectivity of the scientific process and the difficulty modern psychologists have trying to objectively study unobservable matter
- introspective methods were not reliably reproduced/Wundt's difficulty with replication due to subjectivity
- focus on mental processes through introspection can be seen as a forerunner of the cognitive approach
- discussion of the validity of introspection – many aspects of our minds are outside of our conscious awareness, eg research by Nisbett & Wilson, 1977; however, it is still sometimes used in modern scientific psychological research, eg Csikszentmihalyi & Hunter, 2003

- greater contributions to the development of psychology by early behaviourists, eg Pavlov, than by Wundt, as they produced reliable findings with explanatory principles that were generalisable – much more in keeping with the scientific approach.

Credit other relevant material.

Section B

Biopsychology

0 9 Which method of studying the brain would most accurately identify specific brain areas activated during a cognitive task?

[1 mark]

Marks for this question: AO1 = 1

C Functional magnetic resonance imaging (fMRI)

1 0 . 1 Which neuron is only found in the brain/visual system/spinal cord?

[1 mark]

Marks for this question: AO1 = 1

A

1 0 . 2 Which neuron carries nerve impulses from the brain/spinal cord to muscles/glands?

[1 mark]

Marks for this question: AO1 = 1

C

1 0 . 3 Which neuron carries nerve impulses between neurons?

[1 mark]

Marks for this question: AO1 = 1

A

1 1 Using an example of a gland and hormone, outline the function of the endocrine system. Do **not** use the adrenal gland/adrenaline as your example.

[4 marks]

Marks for this question: AO1 = 4

Level	Marks	Description
2	3–4	Knowledge of the endocrine system is clear and mostly accurate. The answer is generally coherent with effective use of terminology. Reference is correctly made to one gland and one hormone.
1	1–2	Some knowledge of the endocrine system is evident. The answer lacks accuracy and detail. Use of terminology is either absent or inappropriate. OR knowledge of the endocrine system is at level 2 but the answer does not refer to one gland/hormone.
	0	No relevant content.

Possible content:

- the endocrine system helps to regulate the activity of cells and organs in the body
- the endocrine system communicates chemical messages to the organs of the body
- the thyroid gland produces thyroxine, which increases heart rate and metabolic rates
- the pineal gland produces melatonin, which may help regulate the wake-sleep cycle
- the anterior pituitary gland secretes Luteinizing hormone (LH) & Follicle-stimulating hormone (FSH), which stimulate ovaries to produce oestrogen & progesterone
- the anterior pituitary gland secretes LH & FSH, which stimulate the testes to produce testosterone & sperm
- the posterior pituitary releases oxytocin, which stimulates the uterus to contract during labour and also plays a role in bonding
- the pancreas secretes insulin and glucagon, which help regulate blood sugar levels.

Credit other relevant material.

Note – the gland and hormone referred to do not need to be related.

Note – simply naming a gland and hormone max **1 mark**

1 2 Discuss research into localisation of function in the brain and/or hemispheric lateralisation. Refer to Kieran and Sam's discussion in your answer.

[16 marks]

Marks for this question: AO1 = 6, AO2 = 4 and AO3 = 6

Level	Marks	Description
4	13–16	Knowledge of localisation of function in the brain and/or hemispheric lateralisation is accurate and generally well detailed. Application is effective. Discussion of hemispheric lateralisation is thorough and effective. Minor detail and/or expansion of the argument is sometimes lacking. The answer is clear, coherent and focused. Specialist terminology is used effectively.
3	9–12	Knowledge of localisation of function in the brain and/or hemispheric lateralisation is evident but there are occasional inaccuracies/omissions. Application and/or discussion is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	5–8	Limited knowledge of localisation of function in the brain and/or hemispheric lateralisation is present. Focus is mainly on description. Any application and/or discussion is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1–4	Knowledge of localisation of function in the brain and/or hemispheric lateralisation is very limited. Discussion/application is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

- localisation of functions in the brain such as the somatosensory cortex, motor cortex, primary visual cortex, primary auditory cortex, Broca's area and Wernicke's area and research supporting these functional divisions.
  Note – examiners should be aware that candidates may refer to other specific areas such as the hippocampus and amygdala which would be creditworthy
- hemispheric lateralisation refers to the notion that certain functions are principally governed by one side of the brain
- case studies, eg Phineas Gage, Leborgne (Tan), Lelong, etc., or imaging studies suggesting particular functions are dealt with by one hemisphere, eg Fink, Hallingan et al, 1996, Clarke, Assal & de Tribolet, 1993, etc.
- Sperry's (1968) split brain research studies
- case studies involving damage to the corpus callosum, eg Kim Peek
- Broca's discovery that the speech production area was in the left hemisphere
- Wernicke's discovery that the area for understanding language was in the left hemisphere.

Possible application: - Do not credit application unless it goes beyond material in the stem

- Sam's argument is in line with researchers who suggest that the two hemispheres work together to form most tasks as part of a highly integrated system
- Sam could be referring to the corpus callosum that enables information to be communicated between the two hemispheres
- Kieran is referring to the fact that Broca's area is usually found in the left hemisphere and is considered to play a vital role in speech production. This suggests that language is subject to hemispheric lateralisation
- Kieran is referring to the fact that Wernicke's area is usually found in the left hemisphere and is considered to play a vital role in understanding language. This suggests that language is subject to hemispheric lateralisation.

Possible discussion points:

- gender differences, eg Harast et al (1997)
- lateralisation patterns shift with age, eg Szaflarski et al 2006, with most tasks generally becoming less lateralised in healthy adulthood
- functions such as language are too complex to be assigned to just one area and instead involve networks of brain regions
- support for functional differentiation from aphasia cases used as a counter-argument
- equipotentiality theory – Lashley 1930
- issues with generalising from non-human animals to humans in lesion studies
- findings from plasticity studies that show compensation by undamaged regions on the opposite hemisphere, eg Danelli et al 2013
- issues generalising from case studies or from 'abnormal' patients, eg participants in the split brain research
- discussion of patient J.W. who could speak about information presented to the left or right brain (Turk et al, 2002)
- issues with generalising from studies with small participant numbers.

Credit other relevant material.

Section C

Research methods

1 3 Which of the following does reliability refer to?

[1 mark]

Marks for this question: AO1 = 1

B The consistency of the data

1 4 Which of the following is **not** a role of peer review in the scientific process?

[1 mark]

Marks for this question: AO1 = 1

B To ensure only significant results are published

1 5 Give **one** reason why it is important for scientific reports to include a referencing section?

[1 mark]

Marks for this question: AO1 = 1

1 mark for an appropriate reason why scientific reports should include a referencing section.

Possible content:
- enables readers to track down the sources used
- to give credit to other researchers/acknowledge their ideas
- can avoid plagiarism.

Credit other relevant material.

1 6 Which of the following is correct?

[1 mark]

Marks for this question: AO2 = 1

B Groups A and B are conditions of the independent variable and happiness is the dependent variable.

1 7 Would a directional or non-directional hypothesis be more suitable for the researcher to use? Explain your answer.

[2 marks]

Marks for this question: AO2 = 2

1 mark for identifying that the hypothesis should be non-directional/'two-tailed'.

Plus

1 mark for explanation that a non-directional ('two-tailed') hypothesis is suitable because there was no previous evidence available for the researcher to predict the direction of the results. Accept alternative wording.

1 8 Write a suitable hypothesis for this experiment.

[3 marks]

Marks for this question: AO2 = 3

3 marks for a clear and appropriate operationalised non-directional hypothesis:
'There will be a difference in the improvement in happiness score after playing team sports than after independently exercising.' Accept alternative wording.

2 marks for a non-directional statement with the IV and the DV that lacks clarity **OR** a clear non-directional statement which has only one variable operationalised, eg improvement/change in happiness at the end of the study compared to the beginning is not made clear/Group A and Group B are used to describe the conditions of the IV.

1 mark for a non-directional statement with the IV and the DV that lacks clarity and only has one variable operationalised or for a clear, non-directional statement with the IV and the DV but neither is fully operationalised.

0 marks for expressions of aim/questions or statements with only one condition of the IV or for a directional hypothesis.

Credit appropriate operationalised null hypothesis.

1 9 Identify the type of sampling method used in this experiment. Explain **one** limitation of using this sampling method in this study.

[3 marks]

Marks for this question: AO2 = 3

1 mark for opportunity sample

Plus

2 marks for a clear, elaborated explanation of the limitation of using opportunity sampling in this study.

1 mark for a limited/muddled explanation of the limitation of using opportunity sampling.

Possible content:
- bias/unrepresentative of the target population, eg the type of students who happen to be in the student café may be more confident/outgoing and therefore may be more likely to enjoy team sports, providing a greater effect of team sports on happiness than if more introverted shy participants took part.

Credit other relevant material.

2 0 Identify **one** variable on which participants should be matched in this matched-pairs design. Explain how the researcher could assign matched participants to either **Group A** or **Group B**.

[4 marks]

Marks for this question: AO2 = 4

1 mark for identifying an appropriate variable that participants could be matched for, eg personality type, happiness, type of sport they usually participate in.

Plus

1 mark for **each** of the following:
- explanation of how the participant variable will be measured, eg participants could be paired together for happiness using the initial happiness questionnaire **OR** participants could be paired together for the type/frequency of sport they usually participate in by asking them to complete a sports survey
- participants with the two highest scores are paired, then the next two highest score are paired and so on until all participants are paired (10 pairs)
- one participant from each pair would be randomly allocated to a different condition of the experiment (so that there were 10 participants in each group).

2 1 Explain **one** strength of using a matched-pairs design rather than a repeated measures design.

[2 marks]

Marks for this question: AO3 = 2

2 marks for a clear and elaborated strength of using a matched pairs design rather than a repeated measures design.

1 mark for a limited/muddled strength of using a matched pairs design rather than a repeated measures design.

Possible content:
- in a matched pairs design participants only take part in a single condition so order effects are less of a problem than in a repeated measures design, improving the validity of the results
- in a matched pairs design participants only take part in a single condition so demand characteristics are less of a problem than in a repeated measures design as they are less likely to guess the aims of the study.

Credit other relevant material.

2 2 Calculate the value of **S** in this study. Show your workings.

[2 marks]

Marks for this question: AO2 = 2

2 marks for correct answer: 3 (even if no workings are shown).

1 mark if incorrect answer is provided but workings are correct.

	Team sports Group A	**Independent sport Group B**	**Difference (A-B)**
Pair 1	0	2	–2
Pair 2	14	8	+6
Pair 3	4	4	0
Pair 4	–1	1	–2
Pair 5	3	3	0
Pair 6	12	5	+7
Pair 7	8	7	+1
Pair 8	15	8	+7
Pair 9	7	8	–1
Pair 10	3	2	+1

Total number of + = 5 Total number of – = 3
Also credit workings for B – A, Total number of + = 3 Total number of – = 5

Therefore the calculated value of **S** = 3.

2 3 Explain whether or not there was a significant difference in the improvement in the scores between the two groups. Use your answer to **Question 22** and **Table 3**.

[2 marks]

Marks for this question: AO2 = 2

1 mark for **each** of the following points:
- the critical value of S is 0/correct part of the table is clearly identified
- therefore the difference is not significant (because the calculated value of S is 3 which is more than the critical value)

Note - credit answers stating there is a significant difference if this tallies with an incorrect calculated value of zero provided in response to Q22.

2 4 Explain what it means for a test to have high concurrent validity.

[2 marks]

Marks for this question: AO1 = 2

2 marks for a clear and elaborated explanation of what it means for a test to have high concurrent validity.

1 mark for a limited/muddled explanation of what it means for a test to have high concurrent validity.

Content:
- high concurrent validity is where there is close agreement between the data produced by the new test compared to the established test. Close agreement is indicated if the correlation between the two sets of data produced by the two tests exceeds +0.8.

Note - award 1 mark only for a definition of concurrent validity (the extent to which a psychological test/scale/measure relates to an established psychological test/scale/measure).

2 5 The questionnaire had high concurrent validity.

Validity was still a concern because the researcher knew which participants were in each experimental group.

Explain how this could have affected the validity of the study.

[4 marks]

Marks for this question: AO2 = 4

Level	Marks	Description
2	3–4	Explanation is clear and coherent, showing sound understanding of how investigator effects/researcher bias could have affected the validity of the study. The material is applied appropriately. There is effective use of terminology.
1	1–2	The explanation shows some understanding of how investigator effects/researcher bias could have affected the validity of the study. Application is not always effective. The answer lacks clarity and coherence. Use of terminology is either absent or inappropriate.
	0	No relevant content.

Possible content:

- knowing which experimental group each participant was in could lead to investigator effects/researcher bias
- the researcher may have unconsciously/consciously influenced responses given by the participants eg by smiling more/less or using a more/less pleasant tone/etc. to the participants assigned to one of the groups whilst they were completing their happiness questionnaire
- this would have made them more/less likely to rate themselves as happier
- the increased happiness in the team sports group may therefore be due to investigator effects/researcher bias as opposed to the change in the IV (effect of team sports over independent exercise) invalidating the results of the study.

2 6 Using your answer to **Question 25**, suggest **one** way in which the researcher could modify the study to improve the internal validity of the study. Justify your answer.

[4 marks]

Marks for this question: AO2 = 2 and AO3 = 2

2 marks for a clear, elaborated suggestion of how the study could have been modified to minimise the impact of investigator effects/researcher bias to improve the validity of the study.

1 mark for a limited/muddled suggestion of how the study could have been modified to minimise the impact of investigator effects/researcher bias to improve the validity of the study.

Plus

2 marks for a clear justification for their suggestion.

1 mark for a limited/muddled justification for their suggestion.

Possible content:

- they could ensure neither the participants nor the investigators know which condition the participants are in (double blind procedure). If the researcher did not know what condition the participants were in they would not be able to consciously/unconsciously give clues
- the participants could have completed the questionnaires without the presence of the researcher by sending them the questionnaire by post or electronically with instructions provided including how to return the completed questionnaires. If the researcher was not present whilst the participants carried out the questionnaire then their presence would not affect the results obtained
- the researcher could have asked an assistant to conduct the experiment who was unaware (blind) to the conditions the participants were assigned to. If the assistant did not know the conditions to which the participants were assigned then their presence would not affect the results obtained.

Credit other relevant material.

2 7 Suggest an appropriate statistical test the psychology teacher could use to analyse the data. Justify your choice of test.

[4 marks]

Marks for this question: AO2 = 2 and AO3 = 2

Award **1 mark** for **each** of the following points:

- identifying the Mann-Whitney as a suitable statistical test for the data obtained by the psychology teacher
- stating that the chosen test is suitable for a test of difference
- stating that the chosen test is suitable for an unrelated/independent groups design
- stating that the chosen test is suitable for ordinal non-parametric/data.

Note - accept an alternative appropriate statistical test if correct justification of the data is given.

Note - appropriate reason can be credited even if an incorrect test is named or no test is given.

Note - where more than 3 reasons are given, only the first 3 should be marked.

2 8 Design an independent groups experiment that the psychology teacher could conduct.

In your answer you should provide details of:
- the aim of the experiment
- identification and manipulation of variables including details of the task
- controls to minimise the effects of extraneous variables
- data handling and analysis – use of descriptive statistics and/or data presentation.

Justify your design choices.

[12 marks]

Marks for this question: AO2 = 6 and AO3 = 6

Level	Marks	Description
4	10–12	Suggestions are generally well detailed and practical, showing sound understanding of experimental techniques. Justifications are appropriate. The answer is clear and coherent. Specialist terminology is used effectively. Minor detail and/or explanation sometimes lacking. All four elements are addressed.
3	7–9	Suggestions are mostly sensible and practical, showing some understanding of experimental techniques. There is some appropriate justification. The answer is mostly clear and well organised. Specialist terminology is mostly used effectively. At least three elements are addressed.
2	4–6	Some suggestions are appropriate but others are impractical or inadequately explained. Justifications are partial, muddled or absent. The answer lacks clarity, accuracy and organisation on occasions. At least two elements are addressed.
1	1–3	Knowledge of experimental techniques is limited. The whole answer lacks clarity, has many inaccuracies and is poorly organised. At least one element is addressed.
	0	No relevant content.

Four elements of design to be credited:
- the aim of the experiment – a clear statement that describes the purpose of the study, eg 'To investigate whether group work improves students perceived level of happiness'
- identification & manipulation of variables – identification of the IV and DV, how the IV will be manipulated with justification, operationalisation of the IV (task the participants have to carry out) & DV, identification of appropriate extraneous variables and/or confounding variables
- controls to minimise extraneous variables – random allocation of participants to conditions, standardisation of procedure – with justifications
- data handling and analysis – suitable measure of central tendency with justification, suitable measures of dispersion with justification, choice of tables and/or types of graphs used to display data, eg bar charts to present group averages with justifications.

Note – Although unlikely, in the event that students design an independent groups experiment not related to group tasks and/or happiness, they can still achieve full credit. No credit if the design is merely a repetition of the stem given in Question 16 (group/independent exercise).