

Oxford Revise | AQA A Level Psychology | Answers

Chapter 6

All exemplar answers given would achieve full marks or the top level.

1. Marks for this question: AO1 = 1

Event related potentials (ERP)

2. Marks for this question: AO2 = 6

This question is level-marked:

Level	Marks	Description
3	5–6	<ul style="list-style-type: none"> Knowledge of the fight or flight response is clear and generally well detailed. Application is mostly clear and effective. The answer is generally coherent with appropriate use of specialist terminology.
2	3–4	<ul style="list-style-type: none"> Knowledge of the fight or flight response is evident. There is some effective application. The answer lacks clarity in places. Specialist terminology is used appropriately on occasions.
1	1–2	<ul style="list-style-type: none"> Knowledge of the fight or flight response is limited. Application is either absent or inappropriate. The answer as a whole lacks clarity and has inaccuracies. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible AO2 application:

- When the amygdala detects a threat (e.g. Jonathan surprising Bianca), it sends a message to the hypothalamus, which uses the sympathetic nervous system to instruct the adrenal glands (adrenal medulla) to secrete adrenaline into the bloodstream.
- The adrenaline has physiological effects on the body such as increased heart rate, blood pressure and respiration, which give punching power (fight) or running power (flight).
- Bianca's fight response was automatic, as evidenced by her not consciously deciding to hit the Jonathan.
- The shaking and sweating are effects of adrenaline.
- She had stopped sweating and shaking by the time they had coffee as her parasympathetic nervous system had been activated as the threat had passed, returning her body back to a resting state.

Credit other relevant material.

3. Marks for this question: AO1 = 4

This question is level-marked:

Level	Marks	Description
2	3–4	<ul style="list-style-type: none"> Knowledge of one study that has investigated plasticity of the brain is accurate and detailed. The answer is clear and coherent. Specialist terminology is used effectively.
1	1–2	<ul style="list-style-type: none"> Knowledge of one study that has investigated plasticity of the brain is briefly stated with little elaboration. The answer may include inaccuracies and be poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible AO1 content:

- Participants who played *Super Mario* for thirty minutes a day for two months had more grey matter in the cortex, cerebellum and hippocampus than participants who didn't play. Video game training had resulted in new synaptic connections in areas of the brain necessary for playing for the game.
- Brain images of medical students three months before and after their final exams showed changes to the posterior hippocampus and parietal cortex as a result of the intense learning for the final exams.
- Researchers sewed a kitten's eye shut and found that the area of the visual cortex associated with the shut eye continued to process information from the open eye demonstrating the brain's ability to reorganise itself. Prior to this it was assumed that area of the brain would be idle, so the research was pioneering.
- London taxi drivers must learn 'The Knowledge' (all the streets and routes in London), which takes 2–3 years. Researchers found that their learning altered the structure of their brains. MRI scans showed that they had significantly larger posterior hippocampi compared to matched controls.
- Rats with brain injuries received transplants of stem cells into the region of the brain affected by injury. Three months later they showed development of neuron-like cells in the area of injury that were accompanied by a stream of stem cells migrating the brain's site of injury. This was not the case for a control group who had a placebo solution infused into their brains.
- Patients with moderate to severe brain injuries were seven times more likely to have disability free recovery if they spent 16 years in education, compared to those that didn't finish high school. Education was taken as an indication of the 'cognitive reserve'; essentially the more learning you do, the better protected your brain is to injury or decline.

Credit the procedure and findings of any relevant study of plasticity of the brain.

4. Marks for this question: AO3 = 3

3 marks for a clear, coherent strength or limitation of the use of functional magnetic resonance imaging (fMRI) as a way of investigating the brain, using appropriate terminology.

2 marks for a strength or limitation of the use of functional magnetic resonance imaging (fMRI) as a way of investigating the brain that lacks some clarity or detail.

1 mark for a brief or muddled strength or limitation of the use of functional magnetic resonance imaging (fMRI) as a way of investigating the brain.

Possible AO3 evaluation:

- fMRI is non-invasive, with no radiation.
- It gives an objective and reliable measure of psychological processes compared to verbal reports.
- It has a high spatial resolution providing clear, detailed activation maps, showing localisation of function.
- Participants must lie very still; it's unsuitable for people with medical issues such as Parkinson's disease.
- It has a poor temporal resolution (there is a lag of a few seconds between the neural activity and the image on the screen).
- A risk of false positives: researchers did an fMRI on a frozen Atlantic salmon and found neural activity.
- Critics argue it's communication *between* the regions that is critical to mental function.

Credit any valid strength or limitation.

5. Marks for this question: AO1 = 6

This question is level-marked:

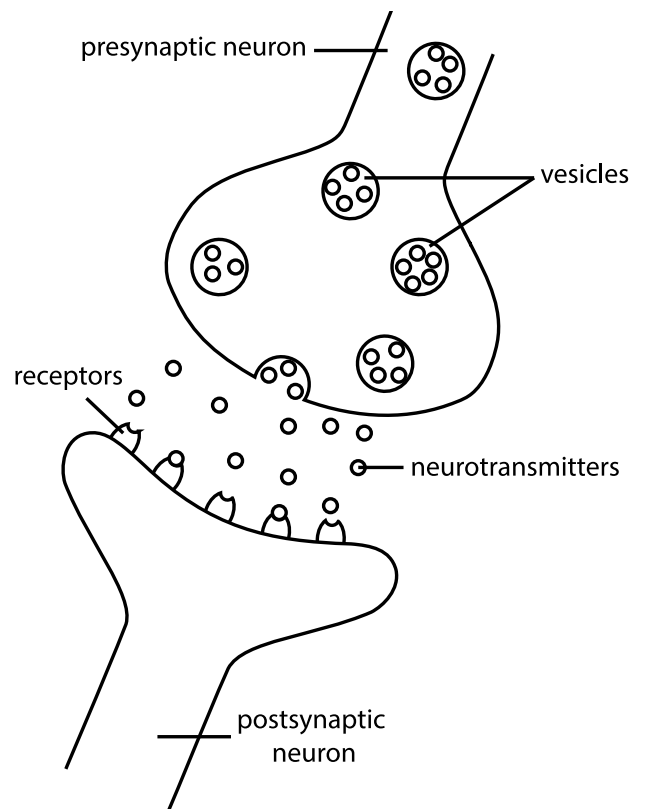
Level	Marks	Description
3	5–6	<ul style="list-style-type: none"> • Knowledge of the process of synaptic transmission is clear and generally accurate. • Specialist terminology is used appropriately.
2	3–4	<ul style="list-style-type: none"> • Knowledge of the process of synaptic transmission is evident but there may be some omissions/lack of clarity. • There is some appropriate use of specialist terminology.
1	1–2	<ul style="list-style-type: none"> • Knowledge of the process of synaptic transmission is evident but there may be serious omissions and/or inaccuracies. • Specialist terminology is either missing or inappropriately used.
	0	No relevant content.

Note: a labelled diagram is acceptable for this question but will still need some text to explain the process.

Possible AO1 content:

- An electrical impulse (action potential) arrives at the presynaptic neuron (axon terminal).
- The impulse stimulates the vesicles to release their neurotransmitter contents into the synaptic gap.
- Neurotransmitters diffuse into the synapse and bind with receptors on the postsynaptic neuron.
- This causes either an excitatory or inhibitory response in the postsynaptic neuron, depending on the type of neurotransmitter.
- The neurotransmitters are taken back up into the presynaptic neuron ('reuptake') and stored again in the vesicles, ready for reuse.

Credit other relevant applications.



6. Marks for this question: AO1 = 2

somatic nervous system

autonomic nervous system

7. Marks for this question: AO1 = 4

2 marks to identify **two** different glands in the endocrine system.

A further **2 marks** for the correct hormone that are secreted by each.

Possible glands and hormones:

- Pituitary – ACTH, LH, FSH
- Adrenal glands – adrenaline
- Pancreas – insulin
- Pineal gland – melatonin
- Testes – testosterone
- Ovaries – oestrogen

Credit other relevant glands and hormones.

8. Marks for this question: AO1 = 3, AO3 = 5

This question is level-marked:

Level	Marks	Description
4	7–8	<ul style="list-style-type: none"> Knowledge of the findings of Sperry's research into hemispheric lateralisation with some detail. Discussion 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	<ul style="list-style-type: none"> Knowledge of the findings of Sperry's research into hemispheric lateralisation is evident but there are occasional inaccuracies or omissions. Discussion is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	3–4	<ul style="list-style-type: none"> Limited knowledge of the findings of Sperry's research into hemispheric lateralisation is present. Focus is mainly on description. Any discussion is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1–2	<ul style="list-style-type: none"> Knowledge of the findings of Sperry's research into hemispheric lateralisation is very limited. Discussion 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 AO1 content:

- If the image or word was presented to the *right* visual field (processed in the *left* hemisphere), the patient would *say* what they saw.
- If the image or word was presented to the *left* visual field (processed in the *right* hemisphere), the patient then reported 'nothing'.
- Patients could *draw* information presented to the left hemisphere with their left hand. (Being able to draw it with their left hand suggests that the patients *can* comprehend something that is processed in the right hemisphere.)

- Touch variation – when a word or image was presented to the left visual field, the patients could select the correct item from a grab bag using their left hand. They processed the information in the right hemisphere, which doesn't have speech.
- The right hemisphere controls the left-hand side of the body, so when information is presented to the left visual field, they can grab the item with their left hand, or an item closely associated to it because the right hemisphere comprehends it and then the controls the opposite side of the body to select it. E.g. Sperry showed them a cigarette, and they selected an ash tray.
- The left hemisphere is specialised for speech and language, and the right for visual-spatial processing and face recognition, but control of behaviour relies on the connectivity of the hemispheres.

Credit other relevant material.

Possible AO3 content:

- Sperry made use of highly specialised and controlled standardised procedures that were well designed, and therefore had high internal validity.
- Issues with the sample – Sperry used 11 right-handed patients with epilepsy as his sample. The epilepsy may have caused changes in the brain (confounding variable) that influenced the findings. The control group had no history of epilepsy, and it's argued that a control group of participants with epilepsy but without a split-brain would have been more appropriate.
- There were also differences in how much the experimental group's hemispheres were disconnected in surgery, which could have influenced the findings, and limits the generalisability of the research.
- Early research found the right hemisphere couldn't handle language, but the case study of JW who can speak about information presented to both the left and right hemispheres disputes this.
- Researchers found HL allowed chickens to perform two tasks simultaneously. However, although it is assumed that using only one hemisphere to perform a function leaves the other hemisphere free to perform another function, there is very little evidence that lateralisation in humans is advantageous to the functioning of the brain.

Credit other valid evaluations.

9. Marks for this question: AO1 = 3, AO2 = 2, AO3 = 3

This question is level-marked:

Level	Marks	Description
4	7–8	<ul style="list-style-type: none"> Knowledge of functional recovery of the brain after trauma is accurate with some detail. Application is effective. Discussion 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	<ul style="list-style-type: none"> Knowledge of functional recovery of the brain after trauma is evident but there are occasional inaccuracies/omissions. Application/discussion is mostly effective. The answer is mostly clear and organised but occasionally lacks focus. Specialist terminology is used appropriately.
2	3–4	<ul style="list-style-type: none"> Limited knowledge of functional recovery of the brain after trauma is present. Focus is mainly on description. Any application/discussion is of limited effectiveness. The answer lacks clarity, accuracy, and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1–2	<ul style="list-style-type: none"> Knowledge of functional recovery of the brain after trauma is very limited. Application/discussion 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 AO1 content:

- If the brain is damaged through injury or illness, it can reorganise itself so healthy areas of the brain can take on the function of the area that is damaged.
- Recovery can be spontaneous at first, but rehabilitation is often then needed to further aid recovery.
- Neuronal unmasking is when ‘dormant’ (secondary) synapses that are not usually used, because neural input to them is too low, are activated or ‘unmasked’ when the area near them is damaged. Neural input increases to the dormant synapses, allowing function lost through damage to continue.
- Stem cells – it is thought that transplanting stem cells into the brain might help restore lost function from brain damage by directly replacing damaged cells. Transplanted cells may form a neural network, linking an uninjured brain site with the damaged region of the brain so that the uninjured area can take on its function.

Possible AO2 application:

- The damage to Rhiannon's brain may have been rescued by neuronal unmasking.
- Her brain may have reorganised itself, so healthy areas took on the lost functions.
- Rhiannon was very young (2 days old) when the damage happened, which increases the chances of recovery.

Possible AO3 discussion:

- The brain's ability to reorganise itself was demonstrated through a study of a kitten whose eye was sewed shut. The area of the visual centre associated with the shut eye continued to process information from the open eye.
- Rats with brain injuries received transplants of stem cells into the region of the brain affected by injury and showed development of neuron-like cells in the area of injury, which were accompanied by a stream of stem cells migrating to the brain's site of injury. The same wasn't found in those who had a placebo solution.
- Our understanding of plasticity has led researchers to theorise that phantom limb pain is due to cortical reorganisation in the somatosensory centre.

Credit other relevant evaluation points.

10. Marks for this question: AO1 = 6, AO3 = 10

This question is level-marked:

Level	Marks	Description
4	13–16	<ul style="list-style-type: none"> • Knowledge of the fight or flight response is accurate and generally well detailed. • Discussion 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	9–12	<ul style="list-style-type: none"> • Knowledge of the fight or flight response is evident but there are occasional inaccuracies or omissions. • Discussion is mostly effective. • The answer is mostly clear and organised but occasionally lacks focus. • Specialist terminology is used appropriately.
2	5–8	<ul style="list-style-type: none"> • Limited knowledge of the fight or flight response is present. Focus is mainly on description. • Any discussion is of limited effectiveness. • The answer lacks clarity, accuracy, and organisation in places. • Specialist terminology is used inappropriately on occasions.

1	1–4	<ul style="list-style-type: none"> • Knowledge of the fight or flight response is very limited. • Discussion 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 AO1 content:

- The fight or flight response is an unconscious, physiological reaction to something dangerous. It evolved to aid our survival. When faced with a threat or stressor, the human body starts a physiological sequence that facilitates punching power (fight) or running power (flight) to survive it.
- When the amygdala detects a threat via sensory signals, it sends a signal to the hypothalamus
- The hypothalamus activates the sympathetic nervous system to send a message to the adrenal glands
- The adrenal medulla secretes the hormones adrenaline and noradrenaline into the bloodstream, which impacts several areas of the body.
- Physiological responses to adrenaline include increased heart rate, increased blood pressure, increased perspiration, and increased respiration.
- These give the body ‘punching power’, which is ‘fight’, or ‘running power’, which is ‘flight’, to avoid the stressor or attack the stressor to aid survival.
- When the threat has passed the parasympathetic nervous system is activated, which restores the body back to its physiological resting state.

Possible AO3 content:

- The fight or flight response aided our survival in evolutionary terms, but today it may put people’s health at risk. Some stressors, such as workplace stress, result in adrenaline being released regularly, which damages blood vessels and can lead to heart disease.
- Researchers argue that there is a third response of ‘freeze’, which is the initial response to danger and readily observed in animals. When a human has the freeze response, they become hypervigilant to their surroundings and can focus their attention to deal with the danger.
- The original research on the fight or flight response was gender biased because the researchers only experimented on male rats. They missed a hormonal response to stress in females, who secrete the hormone oxytocin. In humans, it’s believed this evolved from the need of women to care for their children, because oxytocin binds people together and inhibits ‘flight’. So, when faced with a threat, a female will automatically attend to her child as part of her response. It is also believed that women are better protected if they form alliances with other women. This is called the ‘tend and befriend’ response.

- Researchers argue that men also increase their cooperative and protective behaviour in times of intense stress, for example a terrorist attack. It's thought to be adaptative because humans are social animals, and so helping others in times of crisis, helps the species survive. Despite gender differences, it should be noted that there are individual differences in how people respond to threats and stressors, which may not be gender related.

Credit other relevant evaluations.

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

This question is level-marked:

Level	Marks	Description
4	7–8	<ul style="list-style-type: none"> • Knowledge of localisation of function in the brain is accurate with some detail. • Discussion 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	<ul style="list-style-type: none"> • Knowledge of localisation of function in the brain is evident but there are occasional inaccuracies or omissions. • Discussion is mostly effective. • The answer is mostly clear and organised but occasionally lacks focus. • Specialist terminology is used appropriately.
2	3–4	<ul style="list-style-type: none"> • Limited knowledge of localisation of function in the brain is present. • Focus is mainly on description. • Any discussion is of limited effectiveness. • The answer lacks clarity, accuracy, and organisation in places. • Specialist terminology is used inappropriately on occasions.
1	1–2	<ul style="list-style-type: none"> • Knowledge of localisation of function in the brain is very limited. • Discussion 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 AO1 content:

- Localisation of function is a theory that different functions of the body are localised in specific areas of the brain.

- If the brain is damaged in a particular area, this will negatively impact the functions associated with this area.
- The cerebral cortex is the outer layer of the brain that covers the inner parts. It is responsible for higher-order functions in humans. It is subdivided into eight lobes, four in each hemisphere.
- Lobes: frontal, temporal, parietal, occipital.
- Motor centre: controls voluntary movement; located at the back of the frontal lobe.
- Somatosensory centre: processes sensory information such as touch, pain, and heat; located at the front of the parietal lobe.
- Visual centre: processes visual information such as colour, shape, and movement; located in the occipital lobe.
- Auditory centre: processes information about speech and sounds; located in the temporal lobe.
- Broca's area: language centre for speech production; located in the frontal lobe.
- Wernicke's area: language centre for speech comprehension; located in the temporal lobe.

Possible AO2 content:

- It's likely that Nkosi's stroke affected the left temporal lobe for the following reasons:
 - His difficulty in saying the words he wishes to say is Broca's aphasia, which is an area of the brain located in the left frontal lobe responsible for speech production.
 - His difficulty moving the right-hand side of his body indicates damage to the motor cortex in the left hemisphere, which is located at the back of the temporal lobe. The left hemisphere controls the movement in the right-hand side of the body.

Possible AO3 discussion:

- The case study of HM provides neurosurgical evidence for localisation of function, suggesting the hippocampus is crucial for processing new long-term memories. The cerebellum is vital for procedural memory.
- Brain scan evidence: a wealth of studies using scanning techniques (such as fMRI) demonstrate localisation of function. E.g. researchers found Broca's and Wernicke's areas were active for speaking and reading tasks, respectively.
- Case study of PG: the damage caused by a 1m metal pole shooting through his head provides evidence for and against localisation of function. Despite passing through the frontal lobe, he could still walk and talk (against), but his higher-order functions like personality were permanently changed (for).
- Lashley's experiments on rats suggested the higher-order function of learning appeared to be too complex to be localised: it required all areas of the cortex.
- Plasticity of the brain: the law of equipotentiality is the theory that if an area of the brain is damaged, then other areas can take over to recover the function. The brain can reorganise itself so that an undamaged area can take on the lost function.

Credit other relevant evaluations.

Questions on previous content

1. Marks for this question: AO1 = 2

2 marks for a clear, coherent explanation of 'vicarious reinforcement' using appropriate terminology.

1 mark for a brief or muddled explanation of 'vicarious reinforcement'.

Possible AO1 content:

- Vicarious reinforcement is learning by seeing someone else being rewarded or punished for behaviour.
- Imitation is less likely if a person sees someone else punished for behaviour. If the other person is rewarded, they are more likely to repeat the behaviour they have observed.

2. Marks for this question: AO3 = 3

3 marks for a clear, coherent limitation of Bandura's research using appropriate terminology.

2 marks for a limitation of Bandura's research that lacks some clarity or detail.

1 mark for a brief or muddled limitation of Bandura's research.

Possible AO3 evaluation:

- Boys consistently displayed more aggression than girls in the Bobo study. This suggests there may be hormonal factors, such as higher levels of testosterone in boys, which social learning theory doesn't consider or account for.
- Children in the Bobo doll study may have been displaying demand characteristics because the purpose of a Bobo doll is to knock it over (low internal validity).
- At least one child had heard details of the study from earlier participants (low internal validity).

Credit any valid limitation.

3. Marks for this question: AO3 = 4

This question is level-marked:

Level	Marks	Description
2	3–4	<ul style="list-style-type: none"> • Comparison of the biological approach to the behaviourist approach is generally well explained. • The answer is generally coherent with effective use of specialist terminology.
1	1–2	<ul style="list-style-type: none"> • Comparison of the biological approach to the behaviourist approach is present although there is limited explanation. • Specialist terminology is not always used appropriately or is absent.
	0	No relevant content.

Possible AO3 evaluation:

- Nature versus nurture: the behaviourist approach is on the nurture side of the debate, saying that all behaviour is learned through classical and/or operant conditioning. The biological approach is mainly on the nature side of the debate, saying that behaviour is due to the action of genes, neurotransmitters, hormones, and evolutionary adaptations. However, environmental effects can be passed on through epigenetics.
- Free will versus determinism: both approaches are determinists. The behaviourist approach is environmentally determinist (stimulus-response units/reinforcement history). The biological approach is biologically determinist (behaviour is determined through genes, neurotransmitters, hormones, and evolutionary adaptations).
- Reductionism versus holism: both approaches are reductionist. The behaviourist approach reduces complex phenomena into stimulus-response units and reinforcement history. The biological approach reduces complex phenomena into the action of genes, hormones, neurons, and evolutionary adaptations.

Credit other relevant comparisons.