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**

   Ultradian

2. **Marks for this question: AO2 = 6**

   This question is level-marked:

Level	Marks	Description
3	5–6	• 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	• 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	• 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

4 marks for a clear, coherent outline of a study that has investigated circadian rhythms, using appropriate terminology, with details of the procedure and findings.

3 marks for a clear outline of a study that has investigated circadian rhythms that lacks some clarity or detail, using appropriate terminology, with details of the procedure and findings.

2 marks for a basic outline of a study that has investigated circadian rhythms, with brief details of the procedure and findings.

1 mark for a brief or muddled outline of a study that has investigated circadian rhythms, that lacks details of the procedure and/or findings.

Possible AO1 content:

- Procedure: Siffre spent several months living in a cave without any exogenous zeitgebers to investigate circadian rhythms.
- His body clock was 'free running' because there were no environmental changes to influence it.
- Findings: he found that he maintained a sleep/wake cycle, but his free-running circadian rhythm was 25 hours rather than 24.
- Suggests the sleep/wake cycle is driven by our endogenous pacemakers but entrained by exogenous zeitgebers.

Credit any relevant study.

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.

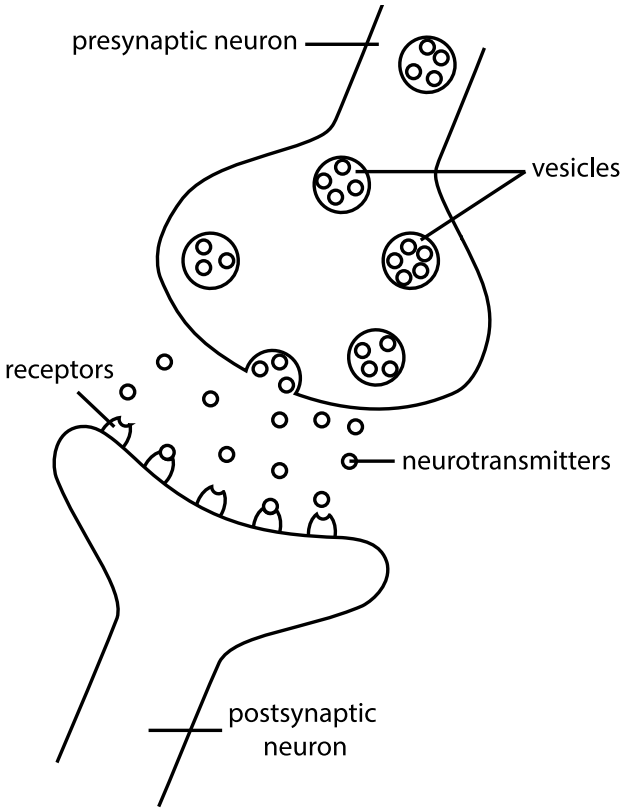
Credit any valid strength or limitation.

5. Marks for this question: AO1 = 6

This question is level-marked:

Level	Marks	Description
3	5–6	• Knowledge of the process of synaptic transmission is clear and generally accurate. • Specialist terminology is used appropriately.
2	3–4	• 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	• 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: AO3 = 4

This question is level-marked:

Level	Marks	Description
2	3–4	• One strength **AND** one limitation of research using split-brain patients to investigate hemispheric lateralisation is clear, appropriate, and effective. • There is appropriate use of specialist terminology.
1	1–2	• One strength **AND** one limitation of research using split-brain patients to investigate hemispheric lateralisation is limited or muddled. • Use of specialist terminology is either absent or inappropriate. **OR** only one strength **OR** one limitation is explained at Level 2.
	0	No relevant content.

Possible strength:

- Sperry made use of highly specialised and controlled standardised procedures that were well designed, therefore had high internal validity.

Possible limitations:

- 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.
- 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 any valid strengths and limitations.

8. Marks for this question: AO2 = 4

This question is level-marked:

Level	Marks	Description
2	3–4	• Knowledge of language centres in the brain is clear and mostly accurate. • The material is applied appropriately. • The answer is generally coherent with effective use of specialist terminology.

1	1–2	• Some knowledge of language centres in the brain is evident. • Application is not always appropriate. • The answer lacks accuracy and detail. • Use of specialist terminology is either absent or inappropriate.
	0	No relevant content.

Possible AO2 application:

- Mahmood's grandad has Broca's aphasia. It's likely his grandad's stroke happened in the left hemisphere in the frontal lobe, as this is where Broca's area is. Broca's area is needed for speech production, which is why his grandad knows what he wants to say but can't say it.
- Liam's grandad has Wernicke's aphasia. It's likely his grandad's stroke happened in the left hemisphere in the temporal lobe, as this is where Wernicke's area is. Wernicke's area is needed for speech comprehension, which is why his grandad has fluent speech, but it doesn't make sense.

Credit other relevant material.

9. Marks for this question: AO1 = 4

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

A further **2 marks** for the correct hormones that are secreted.

Possible glands and hormones:

- Adrenal glands – adrenaline, cortisol
- Pancreas – insulin
- Pineal gland – melatonin
- Testes – testosterone
- Ovaries – oestrogen, progesterone

Credit other relevant glands and hormones.

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

This question is level-marked:

Level	Marks	Description
4	7–8	• 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	• 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	• 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	• 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 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 material.

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

This question is level-marked:

Level	Marks	Description
4	7–8	• 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	• 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	• 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	• 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.
- 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.
- 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 material.

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

This question is level-marked:

Level	Marks	Description
4	13–16	• Knowledge of the effect of endogenous pacemakers and exogenous zeitgebers on the sleep/wake cycle 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	• Knowledge of the effect of endogenous pacemakers and exogenous zeitgebers on the sleep/wake cycle is evident but there are occasional inaccuracies/omissions. • 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 the effect of endogenous pacemakers and exogenous zeitgebers on the sleep/wake cycle is present. • Focus is mainly on description. • 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 the effect of endogenous pacemakers and exogenous zeitgebers on the sleep/wake cycle 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 suprachiasmatic nucleus (SCN), in the hypothalamus, is the primary endogenous pacemaker controlling the sleep/wake cycle.
- The SCN lies above the optic chiasm. This is where the nerve fibres connected to the eyes cross on their way to the visual centre.
- The SCN receives information about light levels from the optic chiasm, even when the eyes are closed. It uses this to ensure a person's body clock is in synchrony with the outside world.
- The SCN synchronises the body clocks found in every cell of the body.

- The SCN sends information about light and darkness to the pineal gland. This produces and secretes the hormone melatonin when it's dark (which induces sleep) and inhibits it when it is light.
- Exogenous zeitgebers are external cues in the environment that entrain the endogenous pacemakers. They influence the internal systems to keep to a 24-hour schedule rather than a free-running one of approximately 25 hours.
- Light is the primary exogenous zeitgeber for the sleep/wake cycle.
- A type of cell in the retina (eye) gauges overall brightness and passes information to the SCN, which uses the information to reset the internal biological clock.
- Researchers found that humans have light receptors all over the body, so even if the eyes don't receive the light, the SCN is still influenced and reset by light levels.
- Social cues such as mealtimes, TV schedules, clocks, opening times of shops, and school timetables all influence our understanding of time.
- Babies are born without a sleep/wake cycle but are entrained by about 4-months-old, and it's thought that the parent's schedule is part of the entrainment.

Possible AO3 discussion:

- Evidence for the importance of the SCN in the sleep/wake cycle was found in a study of chipmunks. The SCNs of 80 chipmunks were destroyed, then they were returned to the wild. Their sleep/wake cycle disappeared and by the end of the study most were dead, as they were made vulnerable to attack by being asleep in the day.
- Peripheral oscillators are circadian rhythms in organs, such as the liver, that are thought to be controlled and synchronised by the SCN. However, researchers found they were able to alter the circadian rhythms of cells in the liver in mice by up to 12 hours without affecting the rhythm of the SCN. This suggests there may be other influences on the sleep/wake cycle.
- Critics argue that the experiment that demonstrated humans have light receptors all over the body (by shining light on the backs of participants' knees) was not well controlled. Participants had some exposure to dim light, which criticises the validity of the study. There has been a failure to replicate the study, which further suggests the original study lacked validity.
- A case study of a man who was blind from birth, with a circadian rhythm of 24.9 hours, found that his sleep/wake cycle was unable to be entrained by social cues.

Credit other relevant material.

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

This question is level-marked:

Level	Marks	Description
4	13–16	• Knowledge of circadian rhythms is accurate and generally well detailed. • 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	9–12	• Knowledge of circadian rhythms 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 circadian rhythms is present. • Focus is mainly on description. • Any discussion and/or application 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 circadian rhythms is very limited. • Discussion and/or 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 AO1 content:

- Circadian rhythms are biological rhythms on approximately a 24-hour cycle.
- Core body temperature is a circadian rhythm: it is 36.7°C but fluctuates slightly throughout the day. It is lowest at 4:30am (36.4°C) and highest at 6pm (37.5°C).
- Evidence suggests that the warmer we are (internally) the better our cognitive performance.
- The sleep/wake cycle is a circadian rhythm driven by a person's internal body clocks (endogenous pacemakers), which are found in every cell in the body. These are synchronised by the primary endogenous pacemaker, the suprachiasmatic nuclei (SCN), which is in the hypothalamus. This is entrained (set and reset) by changes in the environment (exogenous zeitgebers), such as light/darkness, and societal cues like traffic and mealtimes.

- The circadian system struggles to cope with major alterations to the sleep/wake cycle, such as changing time zones through jet travel, because the body clock is out of balance.
- Siffre study: Siffre lived in a cave without any exogenous zeitgebers; his body clock was 'free running'. He maintained a sleep/wake cycle of 25 hours, which suggests the sleep/wake cycle is driven by our endogenous pacemakers but entrained by exogenous zeitgebers.

Possible AO2 application:

- Nkosi's international travel means he is often travelling through different time zones.
- The circadian rhythm struggles to cope with major alterations to the sleep/wake cycle, so travelling to different time zones gives him the uncomfortable feelings of jet lag.
- He can't get used to it because the circadian rhythm is driven by his internal body clock found in every cell of the body (endogenous pacemaker).
- The endogenous pacemaker is entrained by external cues in the environment as to what time it is (exogenous zeitgebers) such as light/darkness, so it takes a few days to reset when he arrives in a new country.

Possible AO3 discussion:

- Researchers found individual differences in circadian rhythm length (13–65 hours) and onset. 'Larks' are people who tend to wake and go to bed early, while 'night owls' wake and go to bed later.
- Evidence for core body temperature increasing cognitive performance: children had superior recall and comprehension of stories when they were read to at 3pm compared to 9am. Participants scored higher on IQ tests when assessed at 7pm as opposed to 2pm and 9am.
- Participants of studies that removed exogenous zeitgebers, like Siffre, used dim artificial lighting, assuming it would not influence their circadian rhythms. But researchers altered circadian rhythms from 28–22 hours using dim lighting (confounding variable).
- Research into the sleep/wake cycle relies on case studies and small samples. The participants may not be representative of the wider population, so the results may not be generalisable. Siffre found that when he spent time in a cave later in life (when he was 60) his body clock had slowed down, emphasising the lack of generalisability.
- Research into circadian rhythms has found there are specific times that drug treatments are most effective, so guidelines have been developed to ensure drugs are taken at these times. E.g. chronotherapeutic medication for heart attacks can be taken at night but is not released until the morning, when patients are most vulnerable.

Credit other relevant material.

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	• 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	• 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 deterministic. The behaviourist approach is environmentally deterministic (stimulus-response units/reinforcement history). The biological approach is biologically deterministic (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.