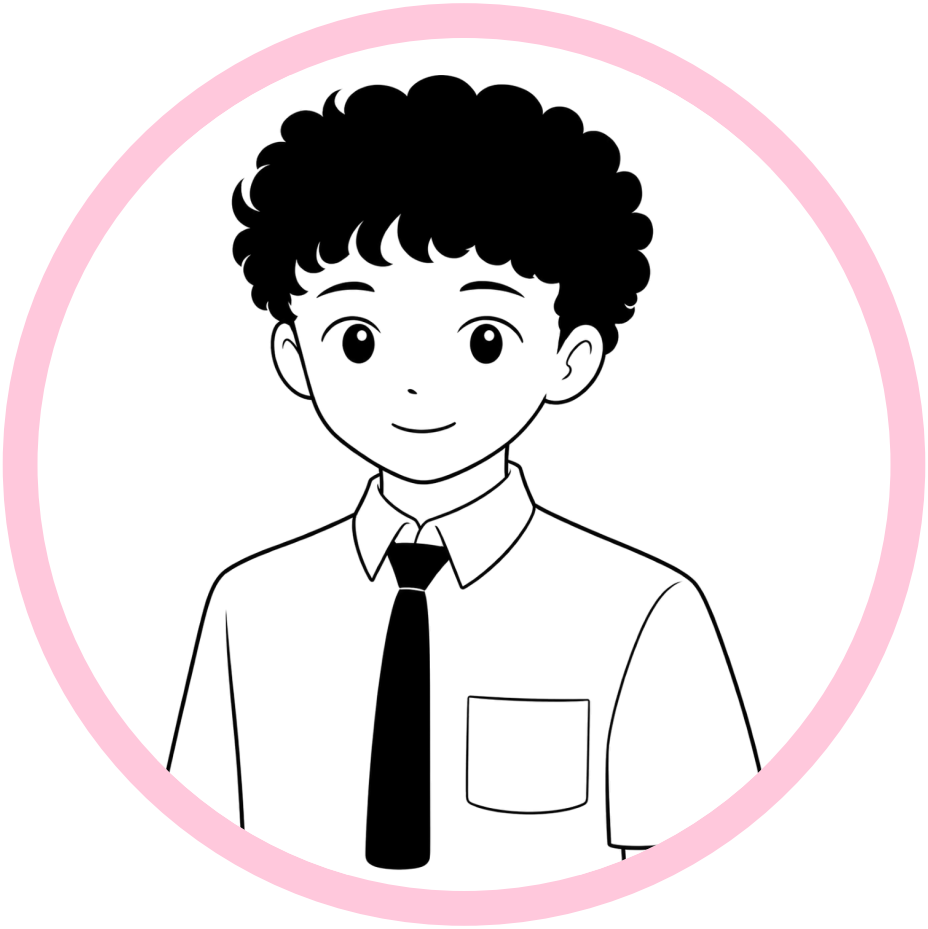
AQA A-LEVEL PSYCHOLOGY · 7182

PSYCHOLOGY



MARK SCHEME

3.3.7 PHYSIOLOGY OF STRESS

SCORE	PERCENTAGE
/34	%

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Q1.

[AO1 = 1]

1 mark

D

Q2.

[AO3 = 1]

1 mark

D

Q3.

[AO1 = 2]

1 mark for brief outline

Plus

1 further mark for accurate elaboration

Possible differences

- SAM activates the body ready for “fight or flight” - HPA helps the body cope with stress.
- The HPA releases corticosteroids such as cortisone - the SMP releases adrenaline into the bloodstream.
- HPA functions hormonally via the bloodstream and is therefore slower - the SMP operates through neural pathways so is faster.

Credit other relevant differences.

Q4.

[AO3 = 2]

1 mark for brief limitation

Plus

1 further mark for accurate elaboration

Possible content:

- Selye argued that the GAS was a common response to all stressful situations. There is evidence, however, that physiological responses to stress can differ depending on the stressor.

- Selye thought that stress-related illness was linked to exhaustion of the physiological response systems such as the HPA, SMP and immune system. It is now thought that stress-related illness is caused by overactivity of the stress pathways and chronic high levels of circulating stress hormones.

- The model does not recognise the role of emotion and cognition in how a person perceives and evaluates the stressor. Although the three stages help understand the stress response, they merge into each other and overlap more than the model implies.

Credit other relevant material.

Q5.

AO1 = 4

A = Adrenal medulla: **F**, **H**
B = Adrenal cortex: **E**, **I**

Q6.

(a) **[AO1 = 2, AO2 = 2]**

AO1

Up to two marks for a brief description of the role of the endocrine system in mediating and responding to stress. Credit: release of adrenalin and noradrenaline from the adrenal medulla, hypothalamic production of CRF and the release of ACTH from the pituitary leading to production of corticosteroids (cortisol) from the adrenal cortex.

AO2

Up to two marks for application of knowledge of the role of the endocrine system to Mannie and Jilly. It is likely that students will focus on the differing susceptibility to illness and the role of cortisol. In Mannie's case the prolonged stress reaction leads to heightened cortisol levels which, over time, lower the immunity and hence make her susceptible to colds. Jilly responds to stress in the immediate term but then her endocrine system activity returns to normal. Credit references to GAS.

(b) **[AO1 = 2, AO2 = 2]**

AO1

Up to two marks for an outline of relevant personal variables. Students are likely to choose one of the following variables:

- Type A personality versus Type B / C – Type A's show time urgency, competitiveness and are more prone to illness especially CHD
- Hardiness – hardy characters see stress as challenge, show commitment to society, work, relationships, etc, feel in control of own life
- Locus of control – having an internal locus of control tends to offer defence against the effects of stress.

One mark for a brief outline of a relevant variable. Two marks for an outline with some expansion / detail.

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AO2

Up to two marks for discussion of how the variable (personality type, hardiness or locus of control) might explain the different responses of Mannie **and** Jilly.
Example: Mannie is probably a Type A personality which means that she tries to be over-controlling at work, cannot delegate responsibility to others and becomes easily angered and hostile – her personality leads her to experience more stress than Jilly who is probably a Type B (or C) who is less driven and less controlling and therefore less affected by stressful situations.
For full marks expect reference to both characters and the work context.

Q7.

AO1 = 3

Main features of pituitary-adrenal system are that the hypothalamus communicates with the pituitary gland causing it to release ACTH. This hormone is then detected in the bloodstream by the adrenal cortex, which then releases corticosteroids such as cortisol and corticosterone. The corticosteroids have a range of effects such as causing the liver to release glucose.

An accurate diagram could also receive credit.
1 mark for a brief outline and 3 marks for a correct and coherent outline of the system.
Reference to acute or chronic stress is not relevant.

Q8.

AO1 = 3

Main features of the Sympathomedullary pathway are that the hypothalamus activates the sympathetic nervous system, which then stimulates the adrenal medulla to release the hormones adrenaline and noradrenaline into the bloodstream. This gets the body ready for fight-or-flight, eg increase blood pressure and heart rate.

An accurate diagram could also receive credit.
1 mark for a brief outline and 3 marks for a correct and coherent outline of the system.
Candidates who simply mention “the adrenal gland” without specifying whether it is the cortex or medulla do not gain credit for that part of their answer.

Reference to acute or chronic stress is not relevant.

Q9.

AO1 = 4

Pituitary-adrenal system: C, E, F.
Sympathomedullary pathway: A, B, D.

1 mark for each correct letter.

Q10.

AO1 = 3

Main features are that the hypothalamus communicates with the pituitary gland, causing it to release ACTH. This hormone is then detected in the bloodstream by the adrenal cortex,

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which then releases corticosteroids. The corticosteroids have a range of effects, such as causing the liver to release glucose.

An accurate diagram could also receive credit.
1 mark for a brief outline and 3 marks for a correct and coherent outline of the features.

Q11.

AO1 = 3

1 mark for each correct answer; noradrenaline, adrenal medulla, sympathetic nervous system.
However, if more than three are ticked, zero marks.

Examiner reports

Q1.

This question was answered correctly by around half of students.

Q2.

This question was answered correctly by the vast majority of students.

Q5.

This was a straightforward question requiring students to select the relevant information from a list given. Most students performed well and knew the two processes. The only issue here was that some students wrote so badly that it was often not possible to distinguish which letter they had selected.

Q6.

(a) There were many well-informed and exceptionally detailed responses to this part of the question, such that a fair number of students gained full marks here. Occasionally, the application was focused on just one character rather than both as required in the question. Weak responses appeared to be built on fairly flimsy knowledge of fight or flight and thus did not include any meaningful explanation of why Mannie regularly became ill.

(b) Both aspects of this part of the question were usually well done, although not all answers were linked explicitly to workplace stress. A number of students who tried to offer hardiness as a personal variable seemed unaware of the three elements of hardiness; challenge, commitment, and control. Those who had a sound grasp of the concept of hardiness tended to score well on application as at least one of the three elements could be linked to Mannie / Jilly.

Q7.

This was a fairly straightforward question, with many students showing good understanding of the two systems. In fact there were some extremely detailed and accurate answers that went well beyond an outline. Unfortunately, some students did not read the question clearly enough and confused the pituitary-adrenal system with SAM. This was a question that illustrated the importance of careful reading before starting to write the answer.

Q8.

This was a fairly straightforward question, with many students showing good understanding of the two systems. In fact there were some extremely detailed and accurate answers that went well beyond an outline. Unfortunately, some students did not read the question clearly enough and confused the pituitary-adrenal system with SAM. This was a question that illustrated the importance of careful reading before starting to write the answer.

Q9.

A very straightforward question, but some candidates seemed unable to follow the instructions, putting one letter in each box. Some candidates selected letters that were not

on the list, while others put more than one letter in the box. Candidates should be careful with their handwriting in such questions; sometimes it was extremely difficult to decipher the letter.

Q10.

The main pitfall here was for the candidates who wrote about SAM and not the HPA and therefore gained no credit. Those candidates who correctly wrote about the HPA, usually produced very detailed and accurate answers.

Q11.

A wide range of answers were given, confirming the view that multiple-choice questions are not necessarily as easy as people suspect they are. This question was a good discriminator.