



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme January 2004

GCE

Psychology A

Unit PYA4

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**QUALITY OF WRITTEN COMMUNICATION
(QoWC)**

Band 3	The work is characterised by a CLEAR expression of ideas, the use of a GOOD range of specialist terms, and FEW errors of grammar, punctuation and spelling.	4-3 marks
Band 2	The work is characterised by a REASONABLE expression of ideas, the use of SOME specialist terms, and REASONABLE grammar, punctuation and spelling.	2-1 marks
Band 1	The work is characterised by a POOR expression of ideas, the use of a LIMITED range of specialist terms, and POOR grammar, punctuation and spelling.	0 marks

ASSESSMENT OBJECTIVE 1

	Content	Detail and accuracy	Organisation & structure	Breadth and depth
12-11	Substantial	Accurate and well-detailed	Coherent	Substantial evidence of both and balance achieved
10-9	Slightly limited	Accurate & reasonably detailed	Coherent	Evidence of both but imbalanced
8-7	Limited	Generally accurate & reasonably detailed	Reasonably constructed	Increasing evidence of breadth and/or depth
6-5	Basic	Generally accurate, lacks detail	Reasonably constructed	Some evidence of breadth and/or depth
4-3	Rudimentary	Sometimes flawed	Sometimes focused	
2-0	Just discernible	Weak/muddled/inaccurate	Wholly/ mainly irrelevant	

ASSESSMENT OBJECTIVE 2

	Evaluation is	Material is used	
12-11	Thorough	Highly effective	Appropriate selection and coherent elaboration
10-9	Slightly limited	Effective	Appropriate selection and elaboration
8-7	Limited	Reasonably effective	Reasonable elaboration
6-5	Basic	Restricted	Some evidence of elaboration
4-3	Superficial and rudimentary	Not effective	No evidence of elaboration
2-0	Muddled and incomplete		Wholly or mainly irrelevant

1

Total for this question: 24 marks

Critically consider research (theories *and/or* studies) relating to the nature of social representations. (24 marks)

Critically consider is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of research (theories and/or studies) relating to the nature of social representations. In the *Terms used in A2 Examinations document*, the term ‘research’ is defined as ‘the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

Social representations theory is usually attributed to Moscovici, (1981). According to this theory, as humans we have the tendency to simplify complex information into a core of pictorial and cognitive elements that are stored in memory and accessed when required. Two central ideas in Moscovici’s view of social representations are *anchoring* (the tendency to classify and name unfamiliar objects and events by comparing them with familiar categories) and *objectification* (the process by which unfamiliar and abstract notions, ideas and images are transformed into more concrete and objective common-sense realities). Candidates may then, by way of elaboration, examine the different ways in which information might be ‘objectified’, e.g. through personification of knowledge (i.e. linking a concept to a person); figuration (using a metaphorical image to help understand an abstract notion) or through the process of ontologising (an abstract notion is interpreted in concrete terms).

Candidates may, under their **AO1** content, examine social representations research as a way of illustrating or extending its basic concepts. Moscovici’s own research (Moscovici, 1961) looked at the way in which psychoanalytic concepts such as ‘neurosis’ and ‘complex’ were used in French society. Another widely cited study is Herzlich’s (1973) investigation of the representations of health and illness in France in the 1960s.

AO2

Evaluation may be achieved either by adopting a critical stance towards social representations theory itself, or by examining research that supports or challenges its assumptions. For example, critics of social representations theory have argued that the concept of social representations is too vague and loosely defined, and therefore difficult to translate into scientific research. Likewise, some critics argue that social representations theorists *assume* consensual representations within a group and ignore diversity. Note that evaluation can also be positive, with a particular strength of social representations theory being its ability to offer a plausible explanation for cultural differences in social perception (e.g. the use of a fundamental attribution error and self-serving biases in Western societies and of group-serving biases in non-Western cultures).

Candidates may use research studies *either* as **AO1** or **AO2** in response to this question. Given the use of the term ‘research’ in the question these studies would count as **AO1** without further qualification, but in order to be counted as **AO2**, such material must be used as part of a sustained critical commentary.

AO1: Knowledge and understanding of research relating to the nature of social representations.

Band	Mark allocation	Marks
Band 3 Top	Description of research relating to the nature of social representations is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved.	12-11
Band 3 Bottom	Description of research relating to the nature of social representations is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved.	10-9
Band 2 Top	Description of research relating to the nature of social representations is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 Bottom	Description of research relating to the nature of social representations is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of research relating to the nature of social representations is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of research relating to the nature of social representations is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Analysis and evaluation of research relating to the nature of social representations.

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research relating to the nature of social representations is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research relating to the nature of social representations is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research relating to the nature of social representations is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of research relating to the nature of social representations is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of research relating to the nature of social representations is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration.	4-3
Band 1 Bottom	Evaluation of research relating to the nature of social representations is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

2

Total for this question: 24 marks

Describe and evaluate research (explanations and/or studies) relating to differences between relationships in Western and non-Western cultures. (24 marks)

Describe is an **AO1** injunction, which requires candidates to provide evidence of **AO1** research relating to differences between relationships in Western and non-Western relationships. The term *evaluate* requires the candidate to present evidence of analysis and evaluation (**AO2**) relating to this research. In the *Terms used in Examinations document*, the term 'research' is defined as 'the process of gaining knowledge and understanding via either theory in relationships construction, examination, or empirical data collection.

AO1

Candidates may write about cultural differences in any facet of interpersonal relationships (such as love and intimacy), or any *stage* of relationships, ranging from initial attraction through to dissolution. Description may take the form of general cultural differences (such as those between individualist and collectivist cultures; urban and rural cultures etc.) or specific cultural differences (i.e. specific practices that are common in those cultures). What is required for **AO1** is not just a description of cultural differences in relationships but one that is rooted in either psychological *explanation* (e.g. the individualism/collectivism distinction) or *studies* (i.e. the use of empirical research that has demonstrated cultural differences between Western and non-Western relationships). The distinction between Western and non-Western cultures is a somewhat arbitrary one, therefore examiners should be prepared to accept research that examines differences between, for example, industrialised versus agricultural, European versus African, subcultural differences *within* cultures that reflect different ethnic groups and so on.

AO2

Candidates may also use research studies to demonstrate the extent to which they support the claim that the proposed cultural differences do in fact exist. Note that this must be explicit, as a straightforward *description* of cultural differences or research studies that demonstrate such differences that fails to use this material as part of a sustained critical commentary would be credited under **AO1**. Although social psychologists have long accepted the *assumption* that differences exist between Western and non-Western relationships (e.g. Moghaddam, 1998), more recent research is challenging these assumptions. As a result, some candidates may be able to demonstrate that there are many *similarities* of relationships across cultures. Insights from evolutionary psychology have suggested that many aspects of attraction and relationships are, in fact, universal. Such insights, particularly if supported by research evidence, are appropriate to the question and deserve credit.

It is possible that some candidates may offer a more general discussion of relationships, followed by the assertion that there are (or are not) cultural differences. This may be appropriate, for example one of the criticisms of 'economic' theories of relationships such as social exchange theory and equity theory is that they apply only to certain types of relationships within Western cultures. Any general answers should be assessed for the extent to which they demonstrate **AO1** and **AO2** skills as detailed above, and marks allocated accordingly.

AO1: Description of research relating to differences between relationships in Western and non-Western relationships

Band	Mark allocation	Marks
Band 3 Top	Description of research relating to differences between relationships in Western and non-Western relationships is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent .	12-11
Band 3 Bottom	Description of research relating to differences between relationships in Western and non-Western relationships is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent .	10-9
Band 2 Top	Description of research relating to differences between relationships in Western and non-Western relationships is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed .	8-7
Band 2 Bottom	Description of research relating to differences between relationships in Western and non-Western relationships is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable .	6-5
Band 1 Top	Description of research relating to differences between relationships in Western and non-Western relationships is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of research relating to differences between relationships in Western and non-Western relationships is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Evaluation of research relating to differences between relationships in Western and non-Western relationships

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research relating to differences between relationships in Western and non-Western relationships is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration.	12-11
Band 3 bottom	Evaluation of research relating to differences between relationships in Western and non-Western relationships is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research relating to differences between relationships in Western and non-Western relationships is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 bottom	Evaluation of research relating to differences between relationships in Western and non-Western relationships is basic . The material is used in a restricted manner and shows some evidence of elaboration.	6-5
Band 1 Top	Evaluation of research relating to differences between relationships in Western and non-Western relationships is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration.	4-3
Band 1 bottom	Evaluation of research relating to differences between relationships in Western and non-Western relationships is muddled and incomplete . The material may be wholly or mainly irrelevant.	2-0

3

Total for this question: 24 marks

Describe and evaluate research (theories and/or studies) into the effects of two or more environmental stressors on aggressive behaviour. (24 marks)

Describe is an **AO1** term requiring the candidate to present evidence of their knowledge and understanding (**AO1**) of research into the effects of two or more environmental stressors on aggressive behaviour. *Evaluate* is an **AO2** term requiring the candidate to present evidence of analysis and evaluation (**AO2**) in relation to this research. Note that, in the *Terms used in A2 Examinations* document, the term 'research' is defined as 'the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

Although candidates might make a convincing case for many different environmental stressors (including aspects of the workplace and of personal relationships), most of the research carried out on the effects of such stressors on aggressive behaviour has been on temperature, noise and crowding. However, this does not rule out other appropriate stressors that might constitute a response to this question. The question is specific, however, in requiring candidates to describe the effects of environmental stressors on aggressive behaviour. Their effects on any other type of behaviour should not receive credit unless such material forms part of the **AO2** content of the question (see below).

Note that the question allows candidates to describe more than two environmental stressors in their answer. There may well be a depth/breadth trade off, with answers that cover more than two stressors being slightly less detailed than those that cover just two. This is acceptable. It is likely that some candidates may present a media essay. Unless they make a sustained (and convincing) case for the media as an environmental stressor, such answers should not receive marks. As they are not explicitly excluded in the question, studies using non-human animals may receive credit provided they are focused on environmental stressors (e.g. overcrowding).

AO2

Evaluation may be accomplished in many ways, including the ability of the research to explain social trends, methodological problems of the research, or the conclusions drawn from such research. It is possible that candidates may introduce further research evidence that supports (or challenges) the research that they have previously described. This is an appropriate way of evaluating research and should be credited here. The degree to which candidates use this material as part of a developed critical argument, rather than simply presenting an alternative set of research findings, will constitute the effectiveness of the evaluation, and hence the number of marks awarded for this skill. Credit may also be given for material that takes issue with the problems of defining aggressive behaviour in this context.

If candidates discuss research into the effects of only one environmental stressor, then partial performance penalties apply for both **AO1** and **AO2** (see mark allocations).

AO1: Description of research into the effects of two or more environmental stressors on aggressive behaviour

Band	Mark allocation	Marks
Band 3 Top	Description of research into the effects of two or more environmental stressors on aggressive behaviour is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved.	12-11
Band 3 Bottom	Description of research into the effects of two or more environmental stressors on aggressive behaviour is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research into the effects of two or more environmental stressors on aggressive behaviour is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth. <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 Bottom	Description of research into the effects of two or more environmental stressors on aggressive behaviour is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth. <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Description of research into the effects of two or more environmental stressors on aggressive behaviour is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 Bottom	Description of research into the effects of two or more environmental stressors on aggressive behaviour is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 Bottom	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is basic . The material is used in a restricted manner and shows some evidence of elaboration. <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration. <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 Bottom	Evaluation of research into the effects of two or more environmental stressors on aggressive behaviour is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

Section B – Physiological Psychology**4****Total for this question: 24 marks**

- (a) Outline *two* methods used to investigate the brain. (12 marks)
- (b) Evaluate each of the *two* methods of investigating the brain that you outlined in part (a) in terms of their strengths *and* limitations. (12 marks)

(a) *Outline* is an **AO1** injunction, which requires candidates to provide a summary description (**AO1**) of two methods used to investigate the brain.

(b) The **AO2** injunction is *Evaluate*, in terms of a consideration of the strengths and limitations of each of these methods.

AO1

Invasive methods for studying the brain include electrical/chemical stimulation, ablation and lesioning. Non-invasive methods used to study the brain include electrical recording (EEG), computed tomography (CT) scans, magnetic resonance imaging (MRI) and positron emission tomography (PET) scans. Also appropriate in this latter group are the newer techniques of the functional MRI (fMRI), single photon emission tomography (SPET) and magnetoencephalography (MEG). Candidates are free to outline any two of these methods. It is possible that some candidates write about ‘scanning’ as one method and ‘imaging’ as another, and therefore outline more than the two methods asked for in this question. Provided the candidate makes an explicit attempt to justify why such methods might be grouped together within a superordinate ‘method’, this is acceptable. It is possible that some candidates may present fMRI as a development of MRI rather than as a completely separate technique. This is also an acceptable response.

If candidates outline more than two methods, the best two should be credited. If candidates outline only one, then partial performance penalties apply (see **AO1** mark allocations). The injunction *Outline* does not require the same degree of descriptive detail as the *Describe* injunction.

AO2

As candidates are required to assess strengths *and* limitations of *both* methods, the potential for partial performance is increased. If candidates evaluate strengths *and* limitations of *one* method, *or* strengths only (or limitations only) for *both* methods, then partial performance penalties as detailed on the next page apply (maximum 8 marks - see **AO2** mark allocations).

Other possibilities for partial performance are as follows:

- One method - strengths *and* limitations, second method, strengths *or* limitations: max 10 marks
- One method - strengths only, second method - limitations only: max 8 marks
- One method - strengths *or* limitations only: max 4 marks

If candidates assess *more than two* methods, the best two should be credited.

If a candidate includes material that is *clearly relevant* and would earn marks in one part of a question, it should remain (when determining marks) *regardless* of whether it might earn more marks elsewhere. If the material is only *peripherally relevant* or *irrelevant* to one part of the question and would earn marks in the other part, then it should be ‘*exported*’ (when determining marks) to that part.

AO1: Summary description of two methods used to investigate the brain.

Band	Mark allocation	Marks
Band 3 Top	Outline of two methods used to investigate the brain is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved.	12-11
Band 3 Bottom	Outline of two methods used to investigate the brain is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Outline of two methods used to investigate the brain is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth. <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 Bottom	Outline of two methods used to investigate the brain is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth. <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Outline of two methods used to investigate the brain is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 Bottom	Outline of two methods used to investigate the brain is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of two methods used to investigate the brain in terms of their strengths and limitations

Band	Mark allocation	Marks
Band 3 Top	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 Bottom	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is basic . The material is used in a restricted manner and shows some evidence of elaboration . <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration . <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 Bottom	Evaluation of two methods used to investigate the brain in terms of their strengths and limitations is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

5

Total for this question: 24 marks

Outline and evaluate research studies of two biological rhythms (e.g. circadian, infradian, ultradian rhythms). (24 marks)

Outline is an **AO1** injunction, which requires candidates to provide a summary description (**AO1**) of research studies into two forms of biological rhythm (e.g. circadian, infradian, ultradian rhythms). The **AO2** injunction is *Evaluate*, which requires the candidate to present evidence of **AO2** in relation to research studies

AO1

Although the question gives three specific biological rhythms as examples, it is acceptable for candidates to choose other examples in their answer. For example, some candidates may choose two different aspects of the circadian rhythm (e.g. the sleep-wake cycle and body temperature). Since these are controlled by separate body clocks, it would be acceptable to take these as different forms of biological rhythm.

The question is, however, quite specific in asking for research studies of two forms of biological rhythm, rather than a general description of the nature of each rhythm. It is not necessary for candidates to name a particular study, but it should be recognisable as exploring issues pertinent to the rhythm in question. Thus, we might expect studies of isolation, sleep deprivation and phase shifting (circadian rhythm), the basic rest-activity cycle (ultradian rhythm) and the human menstrual cycle (infradian rhythm). Candidates who choose to write about studies of isolation (e.g. Michel Siffre) or sleep deprivation (e.g. Peter Tripp) should make the link between such studies and their underlying biological rhythm explicit if they are to gain marks for this material. It is possible that some candidates make reference to studies of endogenous pacemakers and/or exogenous zeitgebers, jet lag and/or the effects of shift work as research studies relevant to circadian rhythms. These are perfectly acceptable provided the candidate makes an explicit link between the studies being described and an underlying biological rhythm. It is also possible, if not probable, that many candidates choose to write about stages of sleep as part of ‘research’ into ultradian rhythms. Insofar as identification of such stages can be traced back to researchers such as Dement and Kleitman, this is acceptable without identifying specific studies. Note that the injunction ‘outline’ does not require the same level of detail as the injunction ‘describe’.

AO2

Candidates may offer evaluation that is specific to a particular study (e.g. the problems of establishing valid data from single-participant studies), but it is also likely that candidates choose to make more general critical comments about the research area in general. For example, one way of ‘evaluating’ research into biological rhythms is through an examination of the therapeutic applications of this research. Research into circadian rhythms has led to the development of chronotherapeutics, the study of how the 24-hour cycle interacts with the effectiveness of drug treatments. Likewise, an increased understanding of infradian rhythms has led to the development of phototherapy in the treatment of seasonal affective disorder (SAD).

If candidates outline (or evaluate) only one form of biological rhythm, then partial performance penalties apply (see **AO1** and **AO2** mark allocations). If candidates outline more than two forms of biological rhythm, the best two should be credited unless two are explicitly identified as being aspects of the same ‘superordinate’ biological rhythm (e.g. circannual and infradian rhythms).

The extent to which an answer is ‘shaped’ to the topic of biological rhythms will determine its ‘coherence’ as an answer to this question, and therefore the number of marks awarded. Note that the wording does not exclude research into biological rhythms in non-human animals. Such studies are perfectly acceptable.

AO1: Summary description of research studies of two biological rhythms.

Band	Mark allocation	Marks
Band 3 Top	Outline of research studies of <i>two</i> biological rhythms is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent .	12-11
Band 3 Bottom	Outline of research studies of <i>two</i> biological rhythms is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent .	10-9
Band 2 Top	Outline of research studies of <i>two</i> biological rhythms is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 Bottom	Outline of research studies of <i>two</i> biological rhythms is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Outline of research studies of <i>two</i> biological rhythms is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 Bottom	Outline of research studies of <i>two</i> biological rhythms is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of research studies of two biological rhythms.

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research studies of <i>two</i> biological rhythms is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research studies of <i>two</i> biological rhythms is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research studies of <i>two</i> biological rhythms is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 Bottom	Evaluation of research studies of <i>two</i> biological rhythms is basic . The material is used in a restricted manner and shows some evidence of elaboration . <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of research studies of <i>two</i> biological rhythms is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration . <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 Bottom	Evaluation of research studies of <i>two</i> biological rhythms is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

6

Total for this question: 24 marks

Discuss research (theories and/or studies) relating to the role of brain structures in one or more motivational states. (24 marks)

Discuss is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of research (theories and/or studies) relating to the role of brain structures in one or more motivational states. In the *Terms used in A2 Examinations* document, the term ‘research’ is defined as ‘the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

Candidates are likely to choose one of the examples of motivational states given in the specification (i.e. hunger and thirst), although other motivational states (e.g. sexual behaviour) are perfectly acceptable. Much of the research relating to hunger has concentrated on the role played by the hypothalamus and there are many studies (typically involving lesions to areas of the hypothalamus) and several theories (e.g. the dual hypothalamic control theory of eating) that could be used as **AO1** material.

Experimental studies of animals have generally attempted to stimulate thirst (by electrical impulses or by chemicals) or have selectively damaged specific parts of the brain and then observed the effect of this on drinking behaviour. These studies have demonstrated that the application of electrical stimuli to an animal's hypothalamus could cause the animal to drink. Other experiments in which minute volumes of concentrated saline were injected into the same region supported these observations. These results supported earlier research, which had shown that production of anti-diuretic hormone (ADH) was also regulated by the hypothalamus. Note that this research may also be used as part of the **AO2** evaluation in this question.

AO2

The **AO2** requirement concerns the degree to which the role of brain structures is supported. This might be satisfied by evaluation of the studies and/or explanations given, in terms of methodological, ethical and other concerns, research findings that are consistent or inconsistent with these studies or explanations, and rival explanations. Candidates could also use findings relating to external factors that influence motivational states, and the interaction between these and internal factors as **AO2** material. This is clearly an area where the interpretation of **AO2** by the candidate may be quite wide-ranging. Thus it would be appropriate for candidates to assess the consequences of brain control of motivation, or perhaps consider the applications that may be derived from this relationship.

Candidates may use research studies either as **AO1** or **AO2** in response to this question. Given the use of the term ‘research’ in the question these studies would count as **AO1** without further qualification, but in order to be counted as **AO2**, such material must be used as part of a sustained critical commentary.

AO1: *Description of research relating to the role of brain structures in one or more motivational states*

Band	Mark allocation	Marks
Band 3 Top	Description of research relating to the role of brain structures in one or more motivational states is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 Bottom	Description of research relating to the role of brain structures in one or more motivational states is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research relating to the role of brain structures in one or more motivational states is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 Bottom	Description of research relating to the role of brain structures in one or more motivational states is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of research relating to the role of brain structures in one or more motivational states is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of research relating to the role of brain structures in one or more motivational states is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: *Evaluation of research relating to the role of brain structures in one or more motivational states*

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research relating to the role of brain structures in one or more motivational states is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research relating to the role of brain structures in one or more motivational states is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research relating to the role of brain structures in one or more motivational states is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of research relating to the role of brain structures in one or more motivational states is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of research relating to the role of brain structures in one or more motivational states is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 Bottom	Evaluation of research relating to the role of brain structures in one or more motivational states is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

Section C - Cognitive Psychology

7

Total for this question: 24 marks

- (a) Outline *two* explanations of focused (selective) attention. (12 marks)
- (b) Evaluate the *two* explanations of focused (selective) attention that you outlined in part (a) in terms of relevant research studies. (12 marks)

(a) *Outline* is an **AO1** injunction, which requires candidates to provide a summary description (**AO1**) of *two* explanations of focused (selective) attention.

(b) The **AO2** injunction is *Evaluate*, which requires the candidate to present evidence of **AO2** in relation to research studies relevant to these explanations.

A01

It is most likely that candidates choose to write about focused *auditory* attention, but there are also explanations of focused *visual* attention (e.g. the zoom-lens model – Eriksen, 1990) that would also apply here. However, the explanations most likely to be chosen include Broadbent’s filter theory (Broadbent, 1958); attenuation theory (Treisman, 1964); and the late selection theories of Deutsch and Deutsch (1963) and Johnston and Heinz (1978). It is possible that some candidates may present an account of Cherry’s ‘cocktail-party effect’ as an explanation in its own right. Straightforward descriptive accounts of this phenomenon should not receive credit *unless* they are used to support an explanation of focused auditory attention (e.g. Broadbent’s filter theory). They cannot receive credit in their own right, but might be exported to part (b).

If candidates outline only *one* explanation, then partial performance penalties apply (see **AO1** mark allocations). If candidates outline *more than two* explanations, then the best two should be credited. It is possible that some students may take a meta-view of this area and offer super-ordinate explanations of ‘early’ and ‘late’ selection. This is permissible *provided* the candidate makes this link explicit.

A02

What is required for **AO2** is more than just a *description* of relevant research studies that may (or may not) support the assumptions of the chosen theories. Candidates should be able to use these research studies to construct an evaluative argument relating to the explanations in part (a) of the question. Those who simply *describe* appropriate research studies without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for the **AO2** component.

If candidates evaluate only *one* explanation, then partial performance penalties apply (see **AO2** mark allocations). There is an explicit instruction in this part of the question to evaluate ‘in terms of relevant research studies’. Thus, evaluation that is not explicitly linked to such research studies should not receive credit.

If a candidate includes material that is *clearly relevant* and would earn marks in one part of a question, it should remain (when determining marks) *regardless* of whether it might earn more marks elsewhere. If the material is only *peripherally relevant* or *irrelevant* to one part of the question and would earn marks in the other part, then it should be ‘*exported*’ (when determining marks) to that part.

AO1: Summary description of two explanations of focused (selective) attention.

Band	Mark allocation	Marks
Band 3 Top	Outline of two explanations of focused (selective) attention is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent .	12-11
Band 3 bottom	Outline of two explanations of focused (selective) attention is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent .	10-9
Band 2 Top	Outline of two explanations of focused (selective) attention is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 bottom	Outline of two explanations of focused (selective) attention is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Outline of two explanations of focused (selective) attention is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 bottom	Outline of two explanations of focused (selective) attention is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of two explanations of focused (selective) attention in terms of relevant research studies

Band	Mark allocation	Marks
Band 3 Top	Evaluation of two explanations of focused (selective) attention is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 bottom	Evaluation of two explanations of focused (selective) attention is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of two explanations of focused (selective) attention is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 bottom	Evaluation of two explanations of focused (selective) attention is basic . The material is used in a restricted manner and shows some evidence of elaboration . <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of two explanations of focused (selective) attention is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration . <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 bottom	Evaluation of two explanations of focused (selective) attention is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

8

Total for this question: 24 marks

Describe and evaluate research (theories *and/or* studies) into one or more forms of visual information processing (e.g. sensory adaptation, the processing of contrast, colour, features).

(24 marks)

Describe is an **AO1** term requiring the candidate to present evidence of their knowledge and understanding (**AO1**) of research into one or more forms of visual information processing (e.g. sensory adaptation, the processing of contrast, colour, features). *Evaluate* is an **AO2** term requiring the candidate to present evidence of analysis and evaluation (**AO2**) in relation to this research. Note that, in the *Terms used in A2 Examinations* document, the term 'research' is defined as 'the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

The specification offers a number of appropriate areas of visual information processing that might be used in response to this question. These include *sensory adaptation*, and the processing of *contrast*, *colour* and *features*). These forms of visual information processing are given as examples in the question, but it is not necessary for candidates to draw their material solely from the examples given here. The question also allows for other forms of visual information processing, such as depth, motion, texture and shape. As the use of the term 'research' allows for both theoretical insights and empirical studies, it is appropriate for candidates to both *explain* the nature of visual information processing in their chosen areas, and describe research studies that have explored the same areas.

Research that addresses aspects of visual processing rather than the mechanisms of visual processing (e.g. Hubel and Weisel, Blakemore and Cooper) constitutes an acceptable response to this question.

AO2

Evaluation of the chosen research may be accomplished in many ways, including the degree to which it is consistent with *theories* of visual information processing, methodological problems or the extent to which these research findings are supported by other investigations. Candidates who use this latter approach as their chosen method of evaluation should make some attempt at building a critical argument using this research evidence rather than simply presenting evidence that may or may not support the study or theory in question. Candidates who simply *describe* alternative theories or appropriate research evidence without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for AO2.

AO1: Description of research into one or more forms of visual information processing

Band	Mark allocation	Marks
Band 3 Top	Description of research into one or more forms of visual information processing is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 Bottom	Description of research into one or more forms of visual information processing is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research into one or more forms of visual information processing is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 Bottom	Description of research into one or more forms of visual information processing is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of research into one or more forms of visual information processing is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of research into one or more forms of visual information processing is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Evaluation of research into one or more forms of visual information processing

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research into one or more forms of visual information processing is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research into one or more forms of visual information processing is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research into one or more forms of visual information processing is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of research into one or more forms of visual information processing is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of research into one or more forms of visual information processing is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 Bottom	Evaluation of research into one or more forms of visual information processing is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

- (a) **Outline and evaluate *one* environmental (e.g. learning) explanation of language development.** (12 marks)
- (b) **Outline and evaluate *one* nativist (e.g. Chomsky) explanation of language development.** (12 marks)

(a) *Outline* is an **AO1** injunction, which requires candidates to provide a summary description (**AO1**) of one environmental explanation of language development. The **AO2** injunction is *Evaluate*, which requires the candidate to present evidence of **AO2** in relation to this explanation.

(b) *Outline* is an **AO1** injunction, which requires candidates to provide a summary description (**AO1**) of one nativist explanation of language development. The **AO2** injunction is *Evaluate*, which requires the candidate to present evidence of **AO2** in relation to this explanation.

AO1 (parts a and b)

The major explanations of language development are those derived from the behaviourist perspective (e.g. Skinner, 1957), the nativist perspective (e.g. Chomsky, 1957) and the interactionist perspective (e.g. Slobin, 1985). Candidates are most likely to choose the first two of these for the two parts of this question. It is possible (if a little unlikely) that some candidates may choose an interactionist theory as either their environmental or nativist explanation. This is acceptable provided they stress the aspects of this explanation that demonstrate either the role of environmental (or if using the theory in response to part (b) – innate) factors within that explanation. There are numerous other ‘explanations’ that include language as an important component. Provided the chosen explanations are focused on the development of language, and are recognisable as explanations (rather than simply the product of research studies), they should receive credit. Theories such as the ‘linguistic relativity hypothesis’ (Whorf, 1956) may be credited as appropriate for an environmental explanation of language provided the candidate has stressed the developmental nature of the relationship between language and thought. As the question does not stress language development in humans it is permissible for candidates to consider explanations of the development of language in non-humans.

If candidates outline more than one explanation of language development in response to either part of the question, the best one should be credited.

AO2 (parts a and b)

Evaluation may be accomplished in many ways, including the explanatory power of the chosen explanations (i.e. their ability to ‘fit the facts’), their research support, or inconsistencies within the theories themselves. It is possible that candidates may introduce further explanations as a way of demonstrating alternatives to the explanation being evaluated. The degree to which candidates use this material as part of a developed critical argument, rather than simply presenting alternative perspectives, should constitute the effectiveness of the evaluation, and hence the number of marks awarded for **AO2**. Candidates who simply describe alternative explanation or appropriate research evidence without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for **AO2**.

AO1 [parts (a) and (b)]: *Summary description of one environmental/nativist explanation of language development.*

Band	Mark allocation	Marks
Band 3 Top	Outline of one environmental/nativist explanation of language development is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent .	6
Band 3 bottom	Outline of one environmental/nativist explanation of language development is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent .	5
Band 2 Top	Outline of one environmental/nativist explanation of language development is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed .	4
Band 2 bottom	Outline of one environmental/nativist explanation of language development is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable .	3
Band 1 Top	Outline of one environmental/nativist explanation of language development is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	2
Band 1 bottom	Outline of one environmental/nativist explanation of language development is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	0-1

AO2 [parts (a) and (b)]: *Evaluation of one environmental/nativist explanation of language development.*

Band	Mark allocation	Marks
Band 3 Top	Evaluation of one environmental/nativist explanation of language development is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	6
Band 3 Bottom	Evaluation of one environmental/nativist explanation of language development is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	5
Band 2 Top	Evaluation of one environmental/nativist explanation of language development is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	4
Band 2 Bottom	Evaluation of one environmental/nativist explanation of language development is basic . The material is used in a restricted manner and shows some evidence of elaboration .	3
Band 1 Top	Evaluation of one environmental/nativist explanation of language development is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	2
Band 1 Bottom	Evaluation of one environmental/nativist explanation of language development is muddled and incomplete . The material may be wholly or mainly irrelevant .	0-1

Section D – Developmental Psychology**10****Total for this question: 24 marks**

Describe and evaluate research (theories *and/or* studies) into the role of genetics in the development of intelligence test performance. (24 marks)

Describe is an **AO1** term which requires the candidate to give evidence of their knowledge and understanding (**AO1**) of research into the role of genetics in the development of intelligence test performance. *Evaluate* is an **AO2** term which requires the candidate to give evidence of analysis and evaluation (**AO2**) with relation to that research. In the *Terms used in A2 Examinations* document, the term ‘research’ is defined as ‘the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

Despite the rather awkward (yet technically accurate) wording of the specification, and hence the wording of this question, this is a clear indication to candidates that they must describe the contribution of inherited factors in intelligence. There is a good deal of research evidence that contributes to this debate, but candidates may introduce some theoretical contributions that are also valid. The role of genetics in intelligence test performance can be seen in twin studies (e.g. Bouchard and McGue’s review of this area, 1981) and adoption studies (e.g. the Texas Adoption Project).

Some candidates may use the insights from such studies to suggest an overall figure for the role of genetic factors in measured intelligence. The percentage of variation attributable to genetics is estimated by Plomin et al (1994) to be between 40% and 50%, but estimates from other researchers vary widely so we cannot expect candidates to universally echo this figure. Also relevant in this context is the finding that genetic influence for general cognitive ability is greater as the child grows older, reaching a plateau in mid-life (Plomin, 1986). Although less likely, it is possible that some candidates may be aware of more recent attempts to establish the existence of a ‘high intelligence gene’. For example, the insulin-like growth factor 2 gene (IGF2) has been shown in some research to have a statistical association with high intelligence (Plomin, 1998).

AO2

Many candidates are likely to address the **AO2** part of this question through a consideration of the role of environmental factors in this debate. This is acceptable provided any such material is used to engage critically with the material presented as **AO1**. The degree to which candidates use this material as part of a developed critical argument, rather than simply presenting an alternative perspective, would constitute the effectiveness of the evaluation, and hence the number of marks awarded for **AO2**. Candidates who simply describe alternative explanation or appropriate research evidence without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for **AO2**.

It would also be appropriate for candidates to offer an evaluation of the environmentalist position, and use this to weaken the arguments against genetics. Bouchard (1987) points out that if the environmental explanation for intelligence were true there would have to be sizeable correlations between similarity in the treatment of twins and similarity in their personalities, whereas evidence suggests the contrary. Candidates may also take issue with particular studies or beliefs about intelligence. For example, Plomin’s recent work on the IGF2 gene has been criticised by those who point out that high test scores are the result of numerous factors, including good teaching, proper nutrition, and an aptitude for test-taking. The problem (and danger) of attempting to find a figure for heritability of intelligence is that this may lead us to believe that heritability means unchangeability (Rose et al., 1984). Candidates may also comment critically on the race-IQ debate. This is appropriate, but examiners should be careful to reward informed argument rather than personal polemic.

AO1: *Description of research into the role of genetics in the development of intelligence test performance*

Band	Mark allocation	Marks
Band 3 Top	Description of research into the role of genetics in the development of intelligence test performance is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 bottom	Description of research into the role of genetics in the development of intelligence test performance is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research into the role of genetics in the development of intelligence test performance is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 bottom	Description of research into the role of genetics in the development of intelligence test performance is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of research into the role of genetics in the development of intelligence test performance is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 bottom	Description of research into the role of genetics in the development of intelligence test performance is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: *Evaluation of research into the role of genetics in the development of intelligence test performance*

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research into the role of genetics in the development of intelligence test performance is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research into the role of genetics in the development of intelligence test performance is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research into the role of genetics in the development of intelligence test performance is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of research into the role of genetics in the development of intelligence test performance is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of research into the role of genetics in the development of intelligence test performance is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 Bottom	Evaluation of research into the role of genetics in the development of intelligence test performance is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

11

Total for this question: 24 marks

Critically consider one or more explanations of the development of gender roles and/or gender identity. (24 marks)

Critically consider is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of one or more explanations of the development of gender role.

AO1

Candidates are most likely to choose one or more of the following explanations when answering this question: social learning theory (Bandura), psychoanalytic theory (Freud), cognitive-developmental theory (Kohlberg). Other related explanations would include the psychodynamic theory of Nancy Chodorow and developments in cognitive social learning theory (Perry and Bussey, 1979). Each of these theories is concerned with the development of gender role. As candidates are asked to critically consider the explanations themselves, they are free to stress whatever aspect of their chosen explanation/explanations they feel best exemplifies that particular perspective.

Some theorists (e.g. Kohlberg) might be considered more appropriate to an examination of the development of gender identity than gender role. This is a fine academic distinction for a candidate to make and therefore such approaches are acceptable in the context of this question. Other aspects of social development (e.g. moral development) are not relevant to this question unless there is a clear and sustained attempt made to demonstrate how such behaviour is a consistent aspect of gender role. Likewise, some candidates may choose to describe aspects of social learning theory (e.g. the Bobo doll studies) that lack clear relevance to the development of gender role, or describe Freud's views on the development of personality without showing the relevance for gender role development. Such material should be credited only for any content that is explicitly linked to gender role development.

AO2

The injunction 'critically consider' no longer requires an assessment of both strengths and limitations of the AO1 content. Its use now reflects a more general opportunity for critical commentary that may include strengths and limitations of the material, but does not require them. Thus, many candidates may choose to offer research support for their chosen explanation(s) as well as (or instead of) offering direct evaluation of the explanations themselves. Candidates who simply describe research studies that might support (or challenge) the assumptions of their chosen explanation(s) without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for the **AO2** component of this question.

Note that the use of the term 'one or more' in the question does not imply that a partial performance penalty would apply to candidates who restrict themselves to just one explanation. However, there should be some allowance in expectations of what constitutes appropriate depth for candidates who choose more than one explanation.

AO1: Knowledge and understanding of one or more explanations of the development of gender roles and/or gender identity.

Band	Mark allocation	Marks
Band 3 Top	Description of one or more explanations of the development of gender role is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 bottom	Description of one or more explanations of the development of gender role is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of one or more explanations of the development of gender role is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 bottom	Description of one or more explanations of the development of gender role is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of one or more explanations of the development of gender role is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 bottom	Description of one or more explanations of the development of gender role is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Analysis and evaluation of one or more explanations of the development of gender roles and/or gender identity.

Band	Mark allocation	Marks
Band 3 Top	Evaluation of one or more explanations of the development of gender role is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 bottom	Evaluation of one or more explanations of the development of gender role is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of one or more explanations of the development of gender role is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 bottom	Evaluation of one or more explanations of the development of gender role is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of one or more explanations of the development of gender role is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 bottom	Evaluation of one or more explanations of the development of gender role is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

12

Total for this question: 24 marks

Discuss research (theories *and/or* studies) relating to gender differences in *two* aspects of adult relationships (e.g. marriage, divorce, parenthood). (24 marks)

Discuss is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of research (theories and/or studies) relating to gender differences in two aspects of adult relationships. In the *Terms used in A2 Examinations* document, the term ‘research’ is defined as ‘the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

The wording of the question opens up research in many different areas of psychology (including developmental psychology) that might be considered appropriate in the context of adult relationships. Thus, although most candidates may draw exclusively upon insights from developmental research, material from social psychological research (e.g. the work of Duck) would not be discounted. Parenthood and divorce might be considered from a ‘life stressors’ perspective (candidates may thus draw on material from their AS studies), or as transitional events in adult development (e.g. Levinson’s theory, 1976).

Note that the question makes a specific requirement of candidates – discussion of *gender* differences in two aspects of adult relationships. Therefore general answers that fail to embed their response within this gender difference framework should not receive marks. Although the examples given in the question are of distinct types of relationship, it is possible that some candidates may choose to discuss research relating to different aspects of the same type of relationship (e.g. becoming a parent and the ‘empty nest’). Such an approach is perfectly legitimate and could earn full marks.

AO2

Candidates may evaluate this research in a number of ways, for example they may examine the research support for a particular explanation, or address **AO1** research studies critically. They may also assess the degree to which there are gender and/or cultural differences in the effects of their chosen aspects of adult relationships (e.g. cultural differences in the impact of divorce). Some candidates may simply describe these differences, but better answers may engage with these differences in a more explicit way, e.g. by considering underlying socialising influences or cultural norms that give rise to these differences, implications of any differences, or a consideration of whether claims for gender and/or cultural differences in the effects of specific adult relationships are supported (or challenged) by research evidence. Some candidates may examine gender differences in the light of adaptionist principles (such as parental investment theory). These may be credited as **AO2** if they constitute ‘commentary’ on the material offered as **AO1**, otherwise they would be credited as **AO1** description.

AO1: Description of research relating to gender differences in two aspects of adult relationships

Band	Mark allocation	Marks
Band 3 Top	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 bottom	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth. <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 bottom	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth. <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 bottom	Description of research relating to gender differences in <i>two</i> aspects of adult relationships is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of research relating to gender differences in two aspects of adult relationships

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 Bottom	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is basic . The material is used in a restricted manner and shows some evidence of elaboration . <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration . <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 Bottom	Evaluation of research relating to gender differences in <i>two</i> aspects of adult relationships is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

Section E – Comparative Psychology**13****Total for this question: 24 marks**

Discuss research (explanations *and/or* studies) relating to the role of social learning in the behaviour of non-human animals. (24 marks)

Discuss is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of research (explanations and/or studies) relating to the role of social learning in the behaviour of non-human animals (e.g. foraging, hunting in groups, imitation). In the *Terms used in A2 Examinations* document, the term ‘research’ is defined as ‘the process of gaining knowledge and understanding via either theory construction, examination, or empirical data collection.

AO1

Imitation involves an animal learning about specific responses or behaviours. This has been explored in a variety of species, including Bugnyar and Huber’s (1997) study of marmosets, Russon and Galdikas’ (1995) field study of rehabilitated orangutans and Tomasello’s comparison of social learning in enculturated and natural-reared chimpanzees. A second form of social learning can be found in foraging behaviour, where young animals must learn which foods they can eat safely. Research by Galef and Wigmore, (1983) for example, tested the feeding preferences of rats exposed to the food preferences of other rats.

Also relevant as ‘social learning’ is research that has explored whether animals might ‘teach’ other animals. In a number of species adults can be observed apparently teaching their young what foods to eat, or how to catch them. There is also evidence of some aspects of tool-using in chimpanzees being ‘taught’ in this way. For example, Boesch (1991) observed hundreds of cases where chimpanzee mothers ‘stimulated’ or ‘facilitated’ their infants’ nut cracking behaviour. Candidates may also use the tearing of milk bottle tops by blue tits as an example of social learning. The fact that this behaviour is apparently found more in some areas of the country than others is taken as evidence that this behaviour is culturally transmitted, i.e. transferred from one bird to another. Cultural transmission of other forms of behaviour (e.g. ‘language’ in vervet monkeys) may also be accepted as evidence of social learning provided the candidate makes such a link explicit in their answer.

AO2

As part of the ‘evaluation’ of research in this area, candidates may take issue with the degree to which an observed behaviour might really be classified as evidence of ‘social learning’. One of the most famous examples of apparent imitation in animals is the incidence of sweet potato washing in Japanese macaque monkeys. There are reasons for believing that such behaviour does not involve imitation, but rather it may be due to stimulus enhancement, i.e. as a result of watching another animal, the observer’s attention is drawn towards whatever they are doing. The advantage of this explanation is that it relies on processes already known to exist rather than suggesting that such animals are willing imitators.

Likewise, there are other explanations for milk-bottle top tearing that do not require the process of social learning. For example, Shettleworth (1998) suggests that the act of tearing and pecking at a bottle top is not imitation as pecking and tearing at bark are an important part of the blue tits’ natural foraging behaviour. With respect to evidence of animals ‘teaching’ others (e.g. Boesch, 1991), there are problems in trying to ascertain whether a mother does intend to teach her offspring, notably that it is impossible for us to measure one animal’s intention in order to judge whether one animal ‘intends’ to teach the other.

As the question specifies ‘non-human animals’, material relating to social learning in human beings should not receive credit unless it is being used as part of a critical comparative argument, in which case it may earn marks under AO2.

AO1: Description of research relating to the role of social learning in the behaviour of non-human animals

Band	Mark allocation	Marks
Band 3 Top	Description of research relating to the role of social learning in the behaviour of non-human animals is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 Bottom	Description of research relating to the role of social learning in the behaviour of non-human animals is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of research relating to the role of social learning in the behaviour of non-human animals is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 Bottom	Description of research relating to the role of social learning in the behaviour of non-human animals is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of research relating to the role of social learning in the behaviour of non-human animals is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of research relating to the role of social learning in the behaviour of non-human animals is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Evaluation of research relating to the role of social learning in the behaviour of non-human animals

Band	Mark allocation	Marks
Band 3 Top	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 Bottom	Evaluation of research relating to the role of social learning in the behaviour of non-human animals is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

14

Total for this question: 24 marks

- (a) Outline *two* explanations of animal navigation. (12 marks)
- (b) Evaluate the *two* explanations of animal navigation that you outlined in part (a) in terms of relevant research studies. (12 marks)

Outline is an **AO1** term, which requires the candidates to provide a summary description of two explanations of animal navigation. *Evaluate* is an **AO2** term which requires the candidate to give evidence of **AO2** with relation to these two explanations of animal navigation.

AO1

There are many different ways in which candidates might approach this question. They may, for example, simply choose two explanations based on homing behaviour (e.g. the use of landmarks, olfactory cues etc.). Alternatively, they may answer in terms of two different types of navigation (such as homing behaviour and migration). Also acceptable as ‘explanations’ of navigation would be those that focus on the navigational behaviour of different species (e.g. pigeons and salmon) or different groups of species (such as birds and aquatic mammals).

If candidates outline more than two explanations of animal navigation, the best two should be credited. If candidates outline only one explanation of animal navigation, then partial performance penalties apply (see **AO1** mark allocation). It may be possible to find evidence of two different explanations within what appears to be just one overall explanation (e.g. the role of the moon and the stars), as well as being possible to group different explanations together within a super-ordinate category as detailed above. Examiners should be alert to these possibilities but should not attempt to make links where perhaps none existed in the mind of the candidate. Note that the injunction *Outline* does not require the same degree of descriptive detail as the *Describe* injunction.

AO2

Evaluation may be accomplished in many ways, including the explanatory power of the chosen explanations (i.e. their ability to ‘fit the facts’ of animal navigation), their research support (or lack of it), the strengths and limitations of such research or inconsistencies within the explanations themselves. It is possible that candidates may introduce further explanations as a way of demonstrating alternatives to the explanation being evaluated. The degree to which candidates use this material as part of a developed critical argument, rather than simply presenting alternative perspectives, should constitute the effectiveness of the evaluation, and hence the number of marks awarded for **AO2**. Candidates who simply describe alternative explanation or appropriate research evidence without using this material as part of a sustained critical commentary should receive a maximum of 4 marks (top of Band 1) for **AO2**.

Note that the use of the word ‘animal’ in the question does not exclude any material relating to navigation in humans. There is a great deal of anthropological evidence about how human beings use the stars, tides and cloud formations to help them navigate. Hopefully the question will not elicit material relating to the use of maps, gps or the AA! Answers that are constructed in this way should be credited only for material that constructs an explanation of navigation rather than a description of it. This also applies to more legitimate accounts of the many wonders of animal navigation (e.g. the long-distance navigational behaviour of the Manx shearwater and the Monarch butterfly). Merely describing navigational feats does not constitute an explanation, but these can be used to illustrate a chosen explanation of navigation.

If a candidate includes material that is clearly relevant and would earn marks in one part of a question, it should remain (when determining marks) regardless of whether it might earn more marks elsewhere. If the material is only peripherally relevant or irrelevant to one part of the question and would earn marks in the other part, then it should be ‘exported’ (when determining marks) to that part.

AO1: Summary description of two explanations of animal navigation

Band	Mark allocation	Marks
Band 3 Top	Outline of two explanations of animal navigation is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent .	12-11
Band 3 Bottom	Outline of two explanations of animal navigation is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent .	10-9
Band 2 Top	Outline of two explanations of animal navigation is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . <i>Partial performance is substantial, accurate and well-detailed (top of band) or slightly limited, accurate and reasonably detailed (bottom of band).</i>	8-7
Band 2 bottom	Outline of two explanations of animal navigation is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . <i>Partial performance is limited, generally accurate and reasonably detailed.</i>	6-5
Band 1 Top	Outline of two explanations of animal navigation is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable . <i>Partial performance is basic, generally accurate and lacking detail.</i>	4-3
Band 1 bottom	Outline of two explanations of animal navigation is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement. <i>Partial performance is rudimentary and sometimes flawed with little focus on the question.</i>	2-0

AO2: Evaluation of two explanations of animal navigation in terms of relevant research studies

Band	Mark allocation	Marks
Band 3 Top	Evaluation of two explanations of animal navigation in terms of relevant research studies is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of two explanations of animal navigation in terms of relevant research studies is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of two explanations of animal navigation in terms of relevant research studies is limited . The material is used in a reasonably effective manner and shows reasonable elaboration . <i>Partial performance is thorough, highly effective and coherent (top of band) or slightly limited and effective (bottom of band).</i>	8-7
Band 2 Bottom	Evaluation of two explanations of animal navigation in terms of relevant research studies is basic . The material is used in a restricted manner and shows some evidence of elaboration . <i>Partial performance is limited and reasonably effective with reasonable elaboration.</i>	6-5
Band 1 Top	Evaluation of two explanations of animal navigation in terms of relevant research studies is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration . <i>Partial performance is basic and restricted with some evidence of elaboration.</i>	4-3
Band 1 Bottom	Evaluation of two explanations of animal navigation in terms of relevant research studies is muddled and incomplete . The material may be wholly or mainly irrelevant . <i>Partial performance is superficial and not used effectively with no evidence of elaboration.</i>	2-0

15

Total for this question: 24 marks

Discuss the relationship between sexual selection and human reproductive behaviour.
(24 marks)

Discuss is an **AO1** and **AO2** term, which requires the candidate to show evidence of their knowledge and understanding (**AO1**), and of their analysis and evaluation (**AO2**) of the relationship between sexual selection and human reproductive behaviour.

AO1

This question offers the opportunity for a fairly wide-ranging response encompassing many different aspects of human reproductive behaviour (including parental investment). Candidates may choose to describe the more general aspects of interpersonal attraction that are based on notions of inter and intra-sexual competition, or focus on more specific aspects of behaviour (such as sexual jealousy or infidelity). Either of these approaches is acceptable. Candidates may use research studies (e.g. Buss's 1990 study of reproductive behaviour across 37 cultures) to illustrate the role of sexual selection in this aspect of human behaviour.

Any material submitted in response to this question must, however, link some aspect of human reproductive behaviour to sexual selection. If either aspect (i.e. sexual selection or reproductive behaviour) is missing, then the material cannot earn marks. Candidates cannot, therefore, earn marks for a general description of reproductive behaviour that is not embedded in sexual selection. The question does ask for human reproductive behaviour, therefore any material that focuses on sexual selection in non-humans should not receive credit. It is, however, acceptable for candidates to draw on some non-human examples (e.g. the tail of the peacock) to illustrate the mechanisms of sexual selection as a theoretical concept.

AO2

To satisfy the **AO2** component of this question, candidates may choose to introduce research studies (as for the **AO1** component), but to use these in a more critical manner. Thus the claims made by evolutionary theory concerning gender differences in reproductive investment can be supported by research such as the 'lonely hearts advertisements' study (Waynforth and Dunbar, 1995). However, it should be remembered that candidates must make a clear and explicit attempt to construct a critical argument using this material before it can be counted as **AO2** – otherwise it would contribute to the **AO1** mark for this essay.

Evaluation may also take the form of considering the advantages (and disadvantages) of evolutionarily determined reproductive characteristics. For example, female choosiness is associated with a more discriminating choice (and hence a better quality male) yet carries the risk of a female failing to mate and therefore failing to pass on her genes. Also admissible as **AO2** material is a discussion of the conclusions and inferences that can be drawn from research that links human reproductive behaviour and various aspects of sexual selection. Candidates may also offer insights from research into sexual selection and beauty. For example, women prefer men with symmetric faces and bodies (Grammer and Thornhill 1994). As symmetry relates to male performance in general, choosy females that prefer symmetric males will therefore obtain mates that are better able to provide resources, but also able to provide genes for developmental health to their offspring.

Candidates who restrict their answers to a discussion of reproductive behaviour in *non*-human animals should receive a maximum of 4 marks.

AO1: Description of the relationship between sexual selection and human reproductive behaviour

Band	Mark allocation	Marks
Band 3 Top	Description of the relationship between sexual selection and human reproductive behaviour is substantial . It is accurate and well-detailed . The organisation and structure of the answer is coherent . There is substantial evidence of breadth and depth and an appropriate balance between them is achieved .	12-11
Band 3 Bottom	Description of the relationship between sexual selection and human reproductive behaviour is slightly limited . It is accurate and reasonably detailed . The organisation and structure of the answer is coherent . There is evidence of breadth/depth and, whilst there is evidence of breadth and depth, a balance between them is not always achieved .	10-9
Band 2 Top	Description of the relationship between sexual selection and human reproductive behaviour is limited . It is generally accurate and reasonably detailed . The organisation and structure of the answer is reasonably constructed . There is increasing evidence of breadth and/or depth.	8-7
Band 2 Bottom	Description of the relationship between sexual selection and human reproductive behaviour is basic . It is generally accurate but lacks detail . The organisation and structure of the answer is reasonable . There is some evidence of breadth and/or depth.	6-5
Band 1 Top	Description of the relationship between sexual selection and human reproductive behaviour is rudimentary and sometimes flawed . There is some focus on the question. The organisation and structure of the answer is reasonable .	4-3
Band 1 Bottom	Description of the relationship between sexual selection and human reproductive behaviour is just discernible . It is weak and shows muddled understanding. The answer may be wholly or mainly irrelevant to the question's requirement.	2-0

AO2: Evaluation of the relationship between sexual selection and human reproductive behaviour.

Band	Mark allocation	Marks
Band 3 Top	Evaluation of the relationship between sexual selection and human reproductive behaviour is thorough . The material is used in a highly effective manner and shows evidence of appropriate selection and coherent elaboration .	12-11
Band 3 Bottom	Evaluation of the relationship between sexual selection and human reproductive behaviour is slightly limited . The material is used in an effective manner and shows evidence of appropriate selection and elaboration .	10-9
Band 2 Top	Evaluation of the relationship between sexual selection and human reproductive behaviour is limited . The material is used in a reasonably effective manner and shows reasonable elaboration .	8-7
Band 2 Bottom	Evaluation of the relationship between sexual selection and human reproductive behaviour is basic . The material is used in a restricted manner and shows some evidence of elaboration .	6-5
Band 1 Top	Evaluation of the relationship between sexual selection and human reproductive behaviour is superficial and rudimentary . The material is not used effectively and shows no evidence of elaboration .	4-3
Band 1 Bottom	Evaluation of the relationship between sexual selection and human reproductive behaviour is muddled and incomplete . The material may be wholly or mainly irrelevant .	2-0

ASSESSMENT GRID

Question number	AO1	AO2
1	12	12
2	12	12
3	12	12
4(a) (b)	12	12
5	12	12
6	12	12
7(a) (b)	12	12
8	12	12
9(a) (b)	6 6	6 6
10	12	12
11	12	12
12	12	12
13	12	12
14(a) (b)	12	12
15	2	12

Marks	AO1	AO2
Total marks for 3 questions	36	36
A-level total weighting (15%)	7.8%	7.2%