

Brain and Neuropsychology Practice Exam Questions

The Structure and Function of the Nervous System

1. Outline what is meant by the term 'autonomic nervous system'. [1 mark]
2. Explain the differences between the central nervous system and peripheral nervous systems. [4 marks]
3. Identify and briefly explain two divisions of the autonomic nervous system. [3 marks]
4. Explain the function of the somatic nervous system. [3 marks]
5. Explain the function of the central nervous system. [3 marks]
6. Nikki was telling her husband Liam about what had just happened in her car. 'I was driving along when a man started flashing his lights behind me. I pulled over and the man got out of his car. I thought maybe I had a broken light. He started shouting at me and tried to get in the car. I was shaking and my heart was beating so fast it felt like I could hear it.'
Outline the functions of the central nervous system and autonomic system. Refer to Nikki in your answer. [4 marks]
7. Parts of the nervous system are described in the table below. In the column on the right fill in the name of the part.

Sends information from the outside world, and from muscles and glands.	
Made up of the brain and the spinal cord.	
Transmits information to and from internal organs in the body and operates involuntarily.	
Transmits information from the sense organs and receives information that directs muscles to act.	

[4 marks]

The Autonomic Nervous System (including Fight or Flight)

1. Explain the structure and function of the autonomic nervous system. [4 marks]
2. Explain what is meant by the 'fight or flight response'. Use an example in your answer. [3 marks]
3. Identify **three** bodily changes that occur during the fight or flight response. [3 marks]

4. The fight or flight response enables the body to deal with a threatening situation. Explain what happens to the autonomic nervous system after the fight or flight response finishes. [2 marks]
5. Errol has decided to do a parachute jump for charity. He stands near the door of the airplane ready to jump and can feel his heart beating very fast and his legs feel like jelly but he is determined to jump to raise money for charity. [4 marks]
6. You are walking home at night. It is very dark with no moon or stars visible in the sky. Suddenly you hear someone running behind you. Explain the likely action of the autonomic nervous system. Refer to specific bodily changes that are likely to occur. [4 marks]
7. A psychologist wants to measure the effects of the fight or flight response on people who are aged 20–30 years compared to 50–60-year-olds. Her participants will wear a heart rate monitor. She will ask them to do a five-minute presentation in front of 50 people and measure their heart rate before the presentation and in the middle of the presentation and then calculate the difference between the two scores to give her a heart rate stress score. Write a set of standardised instructions that the psychologist could use when approaching individual participants to ask them to take part in her study. [4 marks]
8. Read the article below and answer the question that follows:

Stage fright affects famous singer

A concert was delayed last night because Stuart Rossiter, the famous pop singer, started showing signs of stress just minutes before he was due to sing on stage at Birmingham's National Theatre. Stuart told reporters, 'I always get very scared before I perform, but this time it was worse. I started to sweat, my mouth went dry and I felt really sick. Once I actually came out onto the stage I calmed down and stopped sweating so much. And the show was able to continue.'

With reference to Stuart's experiences explain the fight or flight response. [6 marks]

The James-Lange Theory of Emotion

1. Identify two features of the James-Lange theory of emotion. [2 marks]
2. Outline the James-Lange theory of emotion. [3 marks]
3. Explain the role of the autonomic nervous system in the James-Lange theory of emotion. [3 marks]
4. The James-Lange theory of emotion has been criticised. Use your knowledge of psychology to evaluate this theory. [5 marks]
5. Briefly outline and evaluate the James-Lange theory of emotion. [6 marks]
6. Describe and evaluate the James-Lange theory of emotion. [9 marks]

7. Debbie has just come back from a run. She tells her husband Geoff about how she had to run away from a bull in a field because it was charging towards her. She tells Geoff that she ran away from the bull because she was afraid. Geoff disagrees and thinks that Debbie was afraid because she ran away.
Explain how the James-Lange theory of emotion would explain Debbie's behaviour. [4 marks]
8. Imagine you are walking home alone at night through a dark alley. You hear rustling behind you.
Identify **one** emotion that you may feel and use the James-Lange theory to explain why you would experience this emotion. [4 marks]

Neuron Structure and Function

1. Explain what is meant by the term 'neuron'. [2 marks]
2. With reference to an example of a behaviour, explain how neurons transmit messages. [4 marks]
3. Explain the process of synaptic transmission. [4 marks]
4. Sketch a diagram which shows how synaptic transmission occurs. [3 marks]
5. Identify **three** types of neuron and explain the function of each. [6 marks]
6. What is the difference between excitation and inhibition? [3 marks]
7. Explain how excitation and inhibition work together. [3 marks]
8. Explain the difference between a relay and sensory neuron. [4 marks]
9. In relation to synaptic transmission, explain the release and reuptake of neurotransmitters. [4 marks]

Hebb's Theory of Learning and Neuronal Growth

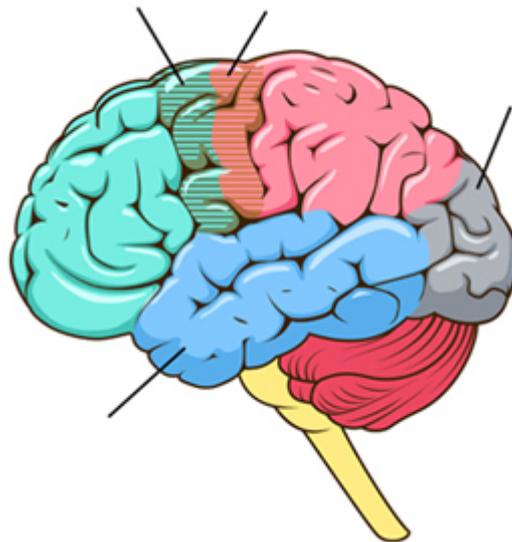
1. Explain what is meant by the term 'neuronal growth'. [2 marks]
2. Outline Hebb's theory of learning. [3 marks]
3. Identify **three** features of Hebb's theory of learning. [3 marks]
4. Using an example of when a person learns a new skill, explain how the structure of the brain changes to manage the new learning. [4 marks]
5. Explain how Hebb's theory of neuronal growth has increased our understanding of the way people learn. [6 marks]
6. Hebb's theory of learning has been criticised. Use your knowledge of psychology to evaluate this theory. [5 marks]
7. Explain whether Hebb's theory is a reductionist or holistic theory of learning. [3 marks]
8. Describe and evaluate Hebb's theory of learning. [9 marks]

Structure and Localisation of Function in the Brain

1. Using an example, explain what is meant by the term 'localisation of function'. [3 marks]
2. What is the function of the cerebellum? [2 marks]
3. Outline the difference in function between the motor and somatosensory areas of the brain. [3 marks]
4. Outline the difference between the parietal and occipital lobes. [3 marks]
5. Use your knowledge of localisation of function to explain what would happen if a person damaged the language areas of their brain. [4 marks]
6. Explain how knowledge about localisation of function has contributed to our understanding of behaviour. [6 marks]

7. Ali, Jenny and Nikki are all in a hospital unit recovering from brain injuries. Ali has gaps in her vision where she can't see anything if she looks to the right. Jenny is having problems with her hearing and Nikki didn't seem to feel any pain when she shut her finger in the door. Use your knowledge of localisation of function to identify which part of the brain is likely to have been affected in each of the three cases and briefly explain how you made your decision. [6 marks]

8. Four areas of the brain are listed below. Place the correct letters on the diagram to show where each area is located.
 - a) Motor area.
 - b) Somatosensory area.
 - c) Visual area.
 - d) Auditory area.



Penfield's Study of the Interpretive Cortex

1. Describe **one** study that investigated localisation of function. [4 marks]
2. Outline the results of Penfield's study of the interpretive cortex. [3 marks]
3. One evaluation of Penfield's study is that it could be said to be reliable. Outline what is meant by 'reliability' and explain why Penfield's study is likely to be reliable. [3 marks]
4. Outline how Penfield's study into the interpretive cortex has increased our understanding of localisation of function. [6 marks]
5. Describe what Penfield's study of the interpretive cortex can tell us about localisation of function. [2 marks]
6. Penfield's study of the interpretive cortex has been criticised. Use your knowledge of psychology to evaluate this study. [5 marks]
7. Describe and evaluate Penfield's study of the interpretive cortex. [9 marks]
8. Imagine that you are Penfield and you are about to do your study on the interpretive cortex. Write a set of standardised instructions that you could read to the participants explaining the method that you will be using. Refer to the aim and an ethical issue in your instructions. [4 marks]

An introduction to Neuropsychology

1. Explain what is meant by the term 'cognitive neuroscience'. [2 marks]
2. Explain how the structure of the brain relates to behaviour. [4 marks]
3. Explain what is meant by 'neurological damage'. use an example in your answer. [3 marks]
4. Describe how neurological damage can affect motor abilities. [3 marks]
5. Outline the effect a stroke can have on behaviour. [2 marks]
6. Describe how a stroke can lead to neurological damage. [3 marks]
7. Explain how the structure and function of the brain relates to cognition. [4 marks]
8. A psychologist is interested in whether the amygdala is linked to aggressive behaviour. He wires up ten monkeys to an electronic device which stimulates the amygdala and puts them in a cage together. He puts another ten monkeys in a separate cage but does not do anything to their brains. He wants to conduct an observation of the monkeys by counting the number of aggressive acts shown between the two groups of monkeys in one hour.
 - a) Identify **four** categories of behaviour that could be used to observe the aggressive behaviour of the monkeys. [4 marks]
 - b) Explain how the researcher could establish interobserver reliability in this investigation. [3 marks]

Scanning Techniques to Identify Brain Functioning

1. Briefly outline the way an fMRI scan identifies brain functioning. [3 marks]
2. What is the difference between CT and PET scan? [3 marks]
3. Describe and evaluate CT scans as a method used to identify brain functioning. [6 marks]
4. Explain what a CT scan does and why it has been used to identify brain functioning [3 marks]
5. Identify and explain **one** evaluation of using an fMRI scan to study brain functioning. [3 marks]
6. The method of scanning the brain to identify its functioning has been criticised. Use your knowledge of psychology to evaluate this method. [5 marks]
7. Outline and evaluate two scanning techniques used to identify brain functioning. [9 marks]
8. There are three descriptions below of scanning techniques. Identify which scanning technique each of the descriptions refers to:
 - a) A scan that uses X-rays and a computer to create detailed images of the inside of the body.
 - b) A scan that allows live brain activity to be observed with an injection of a radioactive substance, like glucose.
 - c) A scan that uses radio signals to measure blood oxygen levels in the brain and 3D images are shown on a computer screen.[3 marks]

Tulving's 'Gold' Memory Study

1. Describe **one** study that investigated neuropsychology. [4 marks]
2. Describe what Tulving's 'gold' memory study shows about neuropsychology. [3 marks]
3. Briefly outline the method used in Tulving's 'gold' memory study. [2 marks]
4. Briefly evaluate Tulving's 'gold' memory study. [3 marks]
5. A strength of Tulving's 'gold' memory study is that it is said to be scientific. Explain why it is said to be scientific. [3 marks]
6. Tulving's research involved six volunteers, including himself and his wife. Explain why using this sample could question the study's validity. [3 marks]
7. Describe and evaluate Tulving's 'gold' memory study. In your answer include the method used and the results obtained and the conclusion drawn. [9 marks]
8. Tulving used a repeated measures design in his 'gold' memory study. Explain why this study would be described as using a repeated measures design and give one strength and one weakness of using this type of design in his study. [6 marks]