**Biopsychology – Paper 2**

**The divisions of the nervous system: central and peripheral**

**Core Knowledge 1 – The Central Nervous System:**

**Fill in the boxes and give relevant information about the main function. Use notes, books and go online to help you.**

**The division of the Nervous System:**

**The Nervous System**

**The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ System (PNS)**

**Main Function:**

**The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ System (CNS)**

**Main Function:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Main Function:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Main Function:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Main Function:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Main Function:**

**Main Function:**

**Main Function:**

**Challenge 1: Learning about the Nervous system**

|  |  |
| --- | --- |
| The nervous system is broken down int**o two major systems: Central Nervous System** and **Peripheral Nervous System**. **Part A The Central Nervous System (CNS)****Section 1: (The Brain)**The Central Nervous System consists of the **brain** and the **spinal cord**. The **Cerebral Cortex**, which is involved in a variety of higher cognitive (conscious thought), emotional, sensory, and motor (movement) functions is more developed in humans than any other animal. It is what we see when we picture a human brain, the gray matter with a multitude of folds making up the outer layer of the brain. The brain is divided into two symmetrical hemispheres: left (language, the ‘rational’ half of the brain, associated with analytical thinking and logical abilities) and right (more involved with musical and artistic abilities). These are further divided up into four distinct lobes, which you will learn more about later. Under the cerebral cortex is the area of the brain which is more primitive and are concerned with vital functioning and instinctive behaviour.**Section 2: (Spinal Cord)**The spinal cord is a white bundle of nerves, which runs from your brain down a canal in your backbone. It's roughly 40cm long and about as wide as your thumb for most of its length. Like the brain, your spinal cord is part of your central nervous system. Its main function is to relay information about what's happening inside and outside your body to and from your brain. It is also involved in reflex actions, such as the startle response.***Task:*** *Now make sure you have learned the above two sections before you turn to the back page for the test. Once you turn, Do not turn back until you have tried all the questions. Once you have answered all the questions, turn back and check the answers from the text. Make corrections if required.* | **What’s in a name?**Central Nervous System*Some students get put off by the scientific names used in biopsychology. So it is always a good idea to do a little research to understand why things are called what they are. For example, the term ‘cerebral cortex’ comes from the Latin meaning ‘brain’ and ‘bark’ or ‘rind’ So ‘cerebral cortex’ literally means ‘brain bark’ (the covering of the brain) and refers to the outer-layer of the brain.* |

|  |  |
| --- | --- |
| **Part B The Peripheral Nervous System (PNS)**The PNS is divided into two major systems, the **Somatic Nervous System** (SNS) and the **Autonomic Nervous System** (ANS) **Section 1: The Somatic Nervous System (SNS)**The Somatic Nervous System is part of the PNS that is concerned with the interaction of the outside world. It controls the voluntary movement of skeletal muscles. It also consists of the nerves that carry messages from the eyes, ears, skeletal muscles and the skin to give the CNS experience of its environment.**Section 2: The Autonomic Nervous System (ANS)**Is the part of the PNS that controls involuntary movement from non-skeletal muscles, for example, the ‘smooth muscles’ that control the intestines, bladder, pupil size etc. and the cardiac muscle (the heart). The ANS is spilt into two further systems: the sympathetic and parasympathetic systems.**Section 2a: The Sympathetic Nervous System**Is activated in situations requiring arousal and energy. When we feel threatened or under stress, the sympathetic branch of the ANS is activated which starts the instinctive reaction of ‘fight or flight’, aiding survival (you have more detail later). It produces increased heart and respiratory (breathing) rate, increasing blood flow to the muscles and pupil dilation (bigger pupils)**Section 2b: the Parasympathetic Nervous System**This is activated soon after the threat of danger has passed. This has the opposite effect of the Sympathetic Nervous System and allows for the body to return to homeostasis (balance). Here the person’s heart and respiratory rate decrease to normal levels and blood flow decreases. The pupils return to normal size. This system is vital for the individual to conserve energy and not to become exhausted.***Task:*** *Now make sure you have learned the above two sections before you turn to the back page for the test. Once you turn, Do not turn back until you have tried all the questions. Once you have answered all the questions, turn back and check the answers from the text. Make corrections if required* | **What’s in a name?***Sometimes, terms that appear complicated just hide a simpler meaning if you break the word up. For example, ‘skeletal muscles’ refers to the muscles attached to the skeleton that cause limb movement (bicep, calf etc). Just about all body movement, from walking to nodding your head, is caused by skeletal muscle contraction. By breaking the terms up, you may be able to get an insight into what is being referred to. Another example is the autonomic nervous system. Autonomous means to act independently, which is what the ANS does from conscious thought, hence its name.**Fight or flight. This refers to the action of the ANS that helps increase energy and fuel to vital parts of the body, allowing the individual to react to a threat in the strongest way possible, aiding them to flee the danger or prepared to fight the threat.*  |

**Part A - The Central Nervous System**

Q1) The Central Nervous System consists of …

1. The brain and the spinal cord
2. Four distinct lobes
3. The sympathetic and parasympathetic nervous systems
4. The somatic and autonomic nervous systems
5. All of the above
6. None of the above

Q2) The **\_\_\_\_\_\_\_\_\_\_\_?\_\_\_\_\_\_\_\_\_\_\_** which is involved in a variety of higher cognitive (conscious thought), emotional, sensory, and motor (movement) functions, is more developed in humans than any other animal.

1. Cerebellum
2. Spinal Cord
3. Cerebral Cortex
4. White matter
5. All of the above
6. None of the above

Q3) The brain is divided into ? symmetrical hemispheres

1. Three
2. Four
3. Five
4. Six
5. All of the above
6. None of the above

Q4) the cerebral cortex is made up from…

1. White matter
2. Gray matter
3. Dark matter
4. No matter
5. All of the above
6. None of the above

Q5) The left hemisphere is associated with…

1. Language
2. Rationality
3. Analytical thinking
4. Logical abilities
5. All of the above
6. None of the above

Q6) the right hemisphere is associated with…

1. Language
2. Musical and artistic ability
3. Logical thought
4. Analytical thinking
5. All of the above
6. None of the above

Q7) The spinal cord is a white bundle of ? , which runs from your brain down a canal in your ? .

1. Fibres & hippocampus
2. Chemicals & ribs
3. Nerves & backbone
4. Tendons & skin
5. All of the above
6. None of the above

Q8) How long is the spinal cord?

1. 28 cm
2. 35 cm
3. 43 cm
4. 47 cm
5. 50 cm
6. None of the above

Q9) Its main function is to \_\_\_\_\_\_\_\_\_\_?\_\_\_\_\_\_\_\_\_\_\_about what's happening inside and outside your body to and from your brain

1. Relay information
2. Think rationally
3. Process information
4. All of the above
5. None of the above

Q10) It is also involved in…

1. Artistic abilities
2. Musical abilities
3. Forming procedural memories
4. Reflex actions
5. All of the above
6. None of the above

**Part B – The peripheral Nervous System (PNS)**

Q1) The PNS consists of…

1. The somatic nervous system
2. The autonomic nervous system
3. The systematic nervous system
4. The parasympathetic nervous system
5. All of the above
6. None of the above

Q2) The somatic nervous system is part of the PNS that is concerned with…

1. Relaying information between brain and the spinal cord
2. Fight or flight
3. Rational thought
4. Interaction with the outside world
5. All of the above
6. None of the above

Q3) The SNS controls

1. Involuntary movement of the ‘smooth muscle’ attached to organs
2. Voluntary movement of the skeletal muscles
3. Digestion
4. Heart rate
5. All of the above
6. None of the above

Q4) It also consists of nerves which carry messages from the..

1. Eyes
2. Ears
3. Skin
4. Skeletal muscles
5. All of the above
6. None of the above

Q4) The Autonomic Nervous System controls

1. Involuntary movement of the ‘smooth muscle’ attached to intestines, bladder, pupil size etc.
2. Voluntary movement of the skeletal muscles
3. Information to and from the ears
4. Information to and from the eyes
5. All of the above
6. None of the above

Q5) The ANS is split into ? Systems

1. Three
2. Four
3. Five
4. 20
5. All of the above
6. None of the above

Q6) The sympathetic nervous system is active in situations requiring…

1. Calmness and serenity
2. Rational and logical thought
3. Arousal and energy
4. All of the above
5. None of the above

Q7) The sympathetic nervous system is responsible for ? or ? .

1. Sleep or wakefulness
2. Thought or action
3. Fight or flight
4. Anxiety or calmness
5. All of the the above
6. None of the above

Q8) The sympathetic branch…

1. Increases heart rate
2. Increases breathing rate
3. Dilates pupils
4. Increases blood flow to muscles
5. All of the above
6. None of the above

Q9) The parasympathetic nervous system is responsible for…

1. Increasing the biological response to threat
2. Decreasing the biological response when the threat has passed
3. Voluntary movement of the limbs
4. Relaying information between the CNS and the PNS
5. All of the above
6. None of the above

Q10) The parasympathetic nervous system…

1. Increasing the biological response to threat
2. Decreasing the biological response when the threat has passed
3. Voluntary movement of the limbs
4. Relaying information between the CNS and the PNS
5. All of the above
6. None of the above