Communication process of neurons in the brain

Neurons are the specialized cells that control the electrical impulses of the brain. The responsibility of the neurons is to convey all of the information that is transmitted between the neurons and the other cells. The neurons are considered to be the excitable parts within the nervous system. The brain communicates with the different systems within the body as well as with the neurons which are responsible for receiving and sending signals which pass through the receptors, terminals and connections in certain areas of the central nervous system. These areas within the central nervous system have special functions concerning the messaging processes. However, the cells and neurons are not able to transmit information by themselves. Neurotransmitters are also an important part of the central nervous system. These neurotransmitters are needed in order for the signals of the cells and neurons to be amplified, regulated or transmitted. Neurotransmitters are composed of different chemicals which are released at the synapse or the presynaptic nerve terminal of neurons. The presynaptic nerve terminal or synapse, is also referred to as the movement which occurs over a small gap which is between the neurons and the other cells. They also act as facilitators in order to make sure the information is being passed effectively from the neurons and other cells which are also a part of this process. Neurotransmitters also assumes important functions within the different body systems as well as being involved in the processes of regulation, inhibitions, transmissions, stimulation and motivation. The regulatory functions of these neurotransmitters are the regulation of emotions, affects, moods and the perception of why neurotransmitters have an important impact on behaviors, especially those including the norepinephrine, serotonin and the dopamine. Serotonin has contributed to controlling the

behavior and mood such as the hallucinogenic behavior, memory, learning, sleep and appetite. Norepinephrine is also a neurotransmitter that has the stimulation effect and has a significant role in regulating of memory and learning. During stressful conditions, the neurotransmitter norepinephrine, is primarily responsible for causing an euphoric reaction. When too much norepinephrine is produced, anxiety and fear is also produced. Dopamine is also a chemical that when released in the different areas within the brain, some effects could occur that may include sex, foods, neutral stimuli and the use of certain drugs. Dopamine also assumes many important behavioral functions which include sexual arousal, learning, motor activities and sleep regulation.

Part II

Refer to Ch. 2 (pp. 58-78) In Psychology: An Introduction.

Write a 350- to 700-word response identifying the major regions of the brain and what functions of behavior the systems of each region control.

The brain is the central command center for the human body. It controls the mind and behavior of individuals. The primary function of the brain is to control all functions of the body. The brain consists of three primary parts including the midbrain, hindbrain and forebrain. The hindbrain includes the medulla, cerebellum and pons. The medulla, pons and midbrain are also referred to as the brainstem. The midbrain is made up of the tectum. The thalamus, hypothalamus and cerebrum make up the forebrain. The diencephalon is also part of the brain that is divided into two major parts, the hypothalamus and thalamus. The diencephalon is also a part of the brain

that filters the sensory information that is passed through and is also where the regulatory centers are located that deal with pain, thirst, hunger, sleeping patterns and thermoregulation. The cerebrum plays more of a role in the processing of memory and the transferring of the information between both sides of the brain. The cerebrum is like the diencephalons in that it has some regulatory responsibilities for the regulations of judgments, impulses and inhibitions. The frontal lobes are parts of the cerebellum have most of the control over human behavior. The cerebellum is also the part that has an effect on regulating emotions. The amygdala, hippocampus and hypothalamus are all parts of the limbic system. The hypothalamus is involved with regulating the functions which have the effect on behavior of things such as sleep, stress, sexual drive and appetite. These parts are found in the forebrain as well as the frontal lobes of the cerebellum. They also play important parts in the motivational and emotional responses which may include stress and sexual drives of individuals. Whenever confusing or disorder happens in the limbic process, an individual’s behavior and mood can be affected. The function of the amygdala is the expression of emotions such as fear, disgust or anger provoking aggression and is also part of the temporal lobes of the forebrain. Another part of the frontal lobe of the brain is the orbitofrontal cortex which has an effect in the performance of emotions and behaviors.

Part III

Consider the following chain of events. Describe in 350-700 words the sensory process that takes place as the scenario unfolds.

This scenario shows three different acts that are happening. There is a sensory process that takes place in order for these actions to occur. This process includes the vision, touch and auditory responses of the brain. This is the chain of events that took place during the scenario of a ball being hit and then being caught. When the pitcher threw the ball, a sound was produced and was picked up by the auditory organs. The brain interpreted the sound that was made when the ball was released. After hearing the sound of the ball being released, the player had to use his vision, which involved moving his eyes in the direction of where the ball was heading. When seeing the ball, the optic nerves transferred the information to the brain. The brain then interpreted that what he was seeing was the ball moving through the air. The closer the ball gets to the player, the sensation of the player's vision is stimulated which enables the thalamus to trigger a reaction in the brain's perceptual and emotional centers. This reaction will allow the player the opportunity to estimate the speed of the ball when it was released by the player throwing the ball. The player was able to gain this information through the use of the sensory organs and the memory from his previous experiences of playing ball that he was able to estimate the ball's speed which in turn he was able to make the decision to use his eyes to watch the ball until he was able to hit it. When the bat hit the ball, the bat made a crack sound. The sound that was produced by the bat hitting the ball, was heard through the auditory areas of the cortex of all the players. The brain's perceptual and emotional centers were then followed by the stimulation of those who were watching the ball. When the players were watching the ball go through the air, the occipital cortex of each person watching was sending the information to the motor cortex and the motor

cortex sent the command to the legs of the players on the opposite team to follow the ball in the same direction in which the ball was moving. This was a process that involved the skillful interacting of movements and perception centers as well as the motor cortex which allowed the other players the chance to move toward the direction of the ball so that one of the players would be able to catch the ball. The frontal lobes functions allowed the other team to be able to interpret the direction in which the ball was heading and allowed them to make the decision to run toward the ball when the ball started to head in a downward direction. The neural network is also activated which allowed the players to catch the ball in their gloves easily. When the ball finally makes contact with the player’s glove, the player’s sensory nerves receives and sends the information from the brain, so that the brain will be able to let the player know that the player has caught the ball. The motor nerves are then put into motion so that they allow the fingers and hands to move and hold the ball. When the ball is caught in the player’s glove, the amygdala interprets it as being a satisfied sensation which stimulates the release of dopamine as well as the other neurotransmitters which are included in this process.