The Brain and Behaviour

It is believed that the human brain evolved over millions of years from the brains of lower animals, and this evolutionary process still continues. We can examine the levels of structures in the brain, from its earliest to the most recent form is the process of evolution. The bp ~~limbic~~ limbic system, brain stem and cerebellum are the ~~most~~ oldest structures, while Cerebral cortex is the latest development in the course of evolution. An adult brain weighs about 1·36 kg and contains around 100 billion neurons. However, the most amazing thing about the brain is not its number of neurons but ability to guide human behaviour and thought. The

brain is organised into structures and regions that perform specific functions. Brain scanning reveals that while some mental functions are distributed among different areas of the brain, many activities are ~~located~~ localized also. For example, the occipital lobe of the brain is a specialised area for vision.

Structure of the Brain

For the convenience of study, the brain can be divided into three parts: Hindbrain, Mid brain and Forebrain.

Hindbrain

This part of the brain consists of the following structures:

Medulla Oblongata: It is the lowest part of the brain that exists in continuation of the spinal cord. It contains neural centres, which regulate

basic life supporting activities like breathing, heart-rate, and blood pressure. This is why medulla is known as the vital centre of the brain. It has some centres of autonomic activities also.

Pons: It is connected with medulla on one side and with the midbrain on the other. A nucleus of pons receives auditory signals relayed by our ears. It is believed that pons is involved in sleep mechanism, particularly the sleep characterised by dreaming.

Cerebellum: This highly developed part of the hindbrain can be easily recognised by its wrinkled surface. It maintains and controls posture and equilibrium of the body. Its main function is coordination of muscular movements. Through the motor

Commands originate in the forebrain, the cerebellum receives and coordinates them to relay to the muscles.

Midbrain:

The midbrain is relatively small in size and it connects the hindbrain with the forebrain, A few neural centres related to some special reflexes and visual and auditory sensations are found here. An important part of midbrain, known as Reticular Activating system (RAS), is responsible for our arousal. It makes us att alert and active by regulating sensory inputs. It also helps us in selecting information from the environment.

Forebrain

It is considered to be the most important part of the brain

because it performs all cognitive, emotional, and motor activities.

Hypothalamus: The hypothalamus is one of the smallest structures in the brain, but plays a vital role in our behaviours. It regulates physiological processes involved in emotional and motivational behaviours, such as eating, drinking, sleeping, temperature regulation, and sexual arousal. It also regulates and controls the internal environment of the body and regulates the secretion of hormones from various endocrine glands.

Thalamus: It consists of an egg-shaped cluster of neurons situated on the ventral (upper) side of the hypothalamus. It is like a relay station that receives all incoming sensory signals from sense organs and

and sends them to appropriate parts of the cortex for processing.

The limbic System: This system is composed of a group of structures that form part of the old mammalian brain. It helps in maintaining body temperature, blood pressure, and blood sugar level. The hippocampus plays an important role in long-term memory. The amygdala plays role in long term memory. emotional behaviour.

The cerebrum: Also known as Cerebral cortex, this part regulates all higher levels of cognitive functions, such as attention, perception, learning, memory, language, behaviours, reasoning, and problem solving. The cerebrum makes two-third of the total mass of the human brain. The cerebrum is denided