Essay Title: *Discuss localisation of function in the brain. (16 marks)*

The term localisation refers to the principle that specific functions originate in certain regions of the brain. Research has been carried out since the 19th century to determine the functions of these different areas of the brain.

An accurate introduction that explains the key term localisation of function.

Firstly, the visual cortex, located in the occipital lobe, is responsible for processing visual information. Nerve impulses are transferred from the retina to the visual cortex via optic nerves. Secondly, the auditory cortex, located in the temporal lobe, is responsible for auditory processes. The process starts at the cochlea which detects sound and then transports messages to the brain stem for basic processing, then onto the auditory cortex. Thirdly, the motor cortex, located in the frontal lobe, is responsible for coordinating movement. Finally, the somatosensory cortex in the parietal lobe processes information relating to touch, pressure, pain and temperature.

An accurate and well-detailed explanation of localisation in the brain, including all four brain regions.

The claim that functions are localised to certain areas of the brain has been criticised. Lashley proposed the equipotentiality theory, which suggests that the basic motor and sensory functions are localised, but that higher mental functions are not. He claimed that intact areas of the cortex could take over responsibility for specific cognitive functions following brain injury. This therefore casts doubt on theories about the localisation of functions, suggesting that functions are not localised to just one region, as other regions can take over specific functions following brain injury.

An effective discussion point that uses research to highlight a limitation with the idea of localisation of function.

Other important areas of the brain are the language centres, located in the left hemisphere. The Wernicke area is responsible for speech perception, and the Broca area is responsible for speech production. The Wernicke area receives sound impulses and processes its meaning. These messages travel to the Broca's area where sounds are assembled, then to the motor cortex which sends signals to the speech muscles.

An excellent expression of knowledge regarding the processes involved in speech and language.

There are a wealth of case studies on patients with damage to Broca's and Wernicke's areas that have demonstrated their functions. For example, Broca's aphasia is an impaired ability to produce language; in

Effective discussion of the language centres. Two

most cases, this is caused by brain damage in Broca's area. Wernicke's aphasia is an impairment of language perception, demonstrating the important role played by this brain region in the comprehension of language.

conditions are detailed to provide support for the localisation of language.

However, some psychologists suggest that it is more important to investigate how the brain areas communicate with each other, rather than focusing on specific brain regions. Wernicke claimed that although the different areas of the brain are independent, they must interact with each other in order to function. An example to demonstrate this is a man who lost his ability to read, following damage to the connection between the visual cortex and the Wernicke's area, which was reported by Dejerine. This suggests that interactions between different areas produce complex behaviours such as language. Therefore, damage to the connection between any two points can result in impairments that resemble damage to the localised brain region associated with that specific function. This reduces the credibility of the localisation theory.

While this is an effective evaluation point, further explanation is required to explain why credibility is reduced based on this evidence.

Finally, some psychologists argue that the idea of localisation fails to take into account individual differences. Herasty (1997) found that women have proportionally larger Broca's and Wernicke's areas than men, which can perhaps explain the greater ease of language use amongst women. This, however, suggests a level of beta bias in the theory: the differences between men and woman are ignored, and variations in the pattern of activation and the size of areas observed during various language activities are not considered.

Effective application of issues in psychology and how the research into localisation may be flawed.

[566 Words]

Examiner style comments: ***Mark Band 4***

This is a well-elaborated and accurate essay that demonstrates advanced knowledge of localisation of functions in the brain. Explanations of the areas of the brain are clear and concise. The discussion of the theory is well structured and uses research to strengthen the discussion. The answer integrates specialist terminology throughout, and all points are made relevant to the essay question.