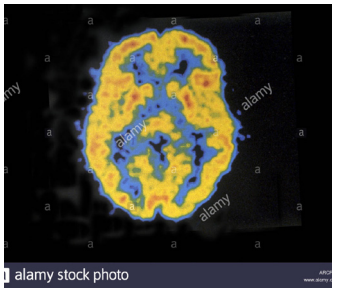
Brain Scans - Answer sheet

Scan Type	EEG	CT	MRI	fMRI	PET
Example					
Method	Scalp electrodes detect voltage fluctuations	X-rays show internal structure in slices, from any angle	Strong magnetic field and a radio wave pulse. Protons in water give coloured 3D map of cortex	A strong magnetic field and a radio wave pulse show flow of oxygenated blood	FDG metabolism shows areas of glucose use
Advantages	Silent, non-invasive, does not use ionising radiation	High resolution of bone, soft tissues and blood vessels at the same time	Detailed anatomical image without using ionising radiation	Assesses structure and functioning of e.g. the brain from second to second	Detects biochemical changes in brain
Disadvantages	Only shows activity in the cerebral cortex	High X-ray dose	Difficult for people with claustrophobia.	Difficult for people with claustrophobia.	Exposure to γ-radiation
Some uses	Diagnosis of epilepsy	Detection of brain injuries and skull fractures	Identify structures e.g. brain tumours, demyelinating nerve fibres, aneurysm	Study brain function in real time	Imaging tumours