M1.The mark scheme gives some guidance as to what statements are expected to be seen in a 1 or 2 mark (L1), 3 or 4 mark (L2) and 5 or 6 mark (L3) answer. Guidance provided in section 3.10 of the '*Mark Scheme Instructions*' document should be used to assist in marking this question.

Mark	Criteria	QoWC
6	All three aspects covered: An comparison of patient safety in terms of ionising radiation exposure. An appreciation of convenience in terms of pre treatment, scan time, patient movement and discomfort. There may also be a discussion of comparative cost and equipment partability. A discussion of the types of information available in terms of uses and limitations.	The student presents relevant information coherently, employing structure, style and sp&g to render meaning clear. The text is legible.
5	Two of the three aspects fully covered, with some detail missing from the third.	
4	One aspect fully covered, with some detail missing from the other two Or Two aspects fully covered, with little or no relevant information about the third.	The student presents relevant information and in a way which assists the communication of meaning. The text is legible. Sp&g are sufficiently accurate not to obscure meaning.
3	All three aspects partially covered, with some detail missing from each Or	

	One aspect fully covered, with little or no relevant information about the other two	
2	Two aspects partially covered, with little or no relevant information about the third.	The student presents some relevant information in a simple form. The text is usually legible. Sp&g allow meaning to be derived although errors are sometimes obstructive.
1	One aspect partially covered, with little or no relevant information about the other two.	
0	Little or no relevant information about any of the three aspects.	The student's presentation, spelling punctuation and grammar seriously obstruct understanding.

The following comparisons are likely to be present:

		PET	*u / s*
Patient Safety	*Ionising radiation exposure*	*Mod to high*	*None (no tracer)*
Convenience	*Scan time*	*2-4 h*	*10 -15 min*
	equipment	*Large, bulky*	*portable*
	cost	*expensive*	*relatively cheap*
	Pre-treatment	*Needs tracer injection*	*No injection*
	Patient movement	*Must lie still*	*Movement tolerated*
	discomfort	*Not good if claustrophobic*	*Requires cold gel*
Informatio		*Chemical*	*Size position*

n		*and physiological changes related to metabolism*	*movement (of foetus, organs etc.)*
		Useful for detecting brain activity	*Cannot penetrate bone – cannot examine brain*
			Good for imaging soft tissues
			Cannot pass through air spaces / lungs
		Can provide info re malignancy and tumour spreading	*Cannot distinguish between benign and malignant solid masses*

[6]

M2.(a) any **three** points from:

supplied radio pulse excite H **nuclei**

when H nuclei de-excite / change spin / change alignment they emit radio photon / signal / em radiation

these signals are detected and passed to computer

gradient in static magnetic field

to allow location to be determined
or magnetic field aligns nuclei

Allow Hydrogen protons for nuclei

Max 3

(b) **any two reasons**, eg

(non-ionising) so no known harm caused to unborn baby,

Accept correct reverse arguments for X-rays

gives good images of soft tissue
relatively cheap

Do not allow better resolution

2

[5]