M1.(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]

M2. (a) (head) placed in strong/high intensity/super conducting magnets magnetic field **(1)**

supplied radio pulse excite H nuclei **(1)**

when H nuclei de-excite/change spin/change alignment they emit radio signal/em radiation/photons **(1)**

these signals are detected and passed to computer **(1)**

gradient in static field to allow location to be determined/magnetic field aligns H nuclei **(1)**

max 3

(b) example answers:

MR non-ionising radiation – ionising radiation in CT more danger to living cells **(1)**

MR can give multi-plane images from same scan – CT needs new scan for each image **(1)**

MR gives better resolution between tissue types, better resolution picture **(1)**

MR gives real time image CT scan needs to rotate to produce final image **(1)**

4

[7]