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

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)**

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