

1. <b>osteoporosis</b>	a bone disease characterised by decreased bone mass (bone density), which leads to decreased bone strength and an increased chance of bone fractures	16. <b>spin</b>	a measure of intrinsic angular momentum of an elementary particle; spin is a fundamental property of all elementary particles; it comes in multiples of 1/2 and can be + or -
2. <b>pair annihilation</b>	occurs when a positron interacts with an electron producing two gamma rays; these gamma rays have the same energy but travel in opposite directions	17. <b>technetium</b>	the most commonly used radioisotope in medical diagnosis; it has a half-life of six hours and is a pure gamma emitter
3. <b>Piezoelectric effect</b>	a phenomenon where an oscillating potential difference applied to a crystal is converted into a mechanical vibration (and a mechanical vibration into an oscillating potential difference)	18. <b>total internal reflection</b>	the reflection of all the light falling on a boundary when the angle of incidence exceeds the critical angle
4. <b>positron</b>	a positive electron; an antiparticle	19. <b>transducers</b>	devices for transforming one type of energy into another; a piezoelectric crystal for instance, changes varying potential differences into vibrations
5. <b>positron emission tomography (PET)</b>	a non-invasive technique used to produce images of internally active parts of the human body by the use of short-lived radioisotopes produced in accelerators	20. <b>ultrasonography</b>	a non-invasive method that uses ultrasound to 'see inside' the human body; imaging modes include A-, B-, sector and phase scans
6. <b>precession</b>	the rotation of the axis of spin of a spinning object due to the application of a torque	21. <b>ultrasound</b>	sound with frequencies greater than 20 000 Hz; can be used to make images of internal organs and tissues
7. <b>radioactivity</b>	the spontaneous breakdown of an atom by the emission of alpha and/or beta and/or gamma rays	22. <b>x-ray machines</b>	consist of a filament to produce a beam of electrons, a high temperature resistant target and a cathode and anode to accelerate the electrons; when the electrons collide with a target, they produce heat and x-rays
8. <b>radio frequency</b>	radio frequencies occur in a range of = 3 kHz to = 300 GHz	23. <b>x-rays</b>	high frequency electromagnetic waves of high penetration produced by bombarding a tungsten target with electrons in an evacuated chamber; hard x-rays have short wavelengths (= 0.01 nm); soft x-rays have longer wavelengths (= 1 nm); x-rays can be used to 'see inside' the human body
9. <b>radiographs</b>	the negative images formed when x-rays expose a photographic plate		
10. <b>radioisotopes</b>	the radioactive isotopes of an element; they can be used for body scanning		
11. <b>radiopharmaceutical</b>	a chemical used by the body that has a radioisotope attached to it; used in nuclear imaging and PET scans		
12. <b>radiotherapy</b>	the use of radioisotopes to treat diseases such as cancer		
13. <b>resonance</b>	sympathetic vibration; when a frequency equal to that of the natural frequency of a system fall on it, the system absorbs the energy		
14. <b>scanning</b>	the process of making an image of the interior of the body		
15. <b>sector scans</b>	the typical 'fan shaped' ultrasound images		