Across
2. The ability to differentiate between two soft tissue areas with slightly different echogenicity is known as _______ resolution.
3. Overall range of frequencies in transmit pulse: pulse __________ .
8. Doppler-shifted echoes caused by moving tissues are removed by the _______ filter.
9. Artifact causing multiple images of tissue displaced laterally from its true location.
10. Decrease of pressure in tissues caused by the ultrasound wave.
12. When blood flows around a sharp curve (e.g. the aortic arch) the flow pattern becomes _______ .
16. The ultrasound transducer is made of one or more _______ material(s).
18. Colour Doppler uses a mathematical technique called _______ to determine the Doppler shift parameters for each small sample volume within the colour box.
19. The overall range of echo intensities is called the __________ range.

Down
1. Wall thump is an artifact of cw and pulsed Doppler that can occur when the _______ filter is set too low.
2. When the "freeze" button is activated the machine retains images from the previous few seconds for the user to review using the __________ function.
5. The term used for a potentially harmful bioeffect.
6. Physical distance occupied by one cycle of the ultrasound wave.
7. The ratio (S - D) / S [where S is the peak systolic Doppler shift and D is the minimum diastolic Doppler shift] is known as the _______ index.
11. If the number of bits for each pixel in the image memory is inadequate the _______ resolution of the image will be degraded.
13. The Mechanical Index increases as the ultrasound frequency _______ .
Across
20. A transducer can only be focussed at distances that fall within its _______ zone.
21. The echo from a moving scatterer has a Doppler shift that is determined by the speed of movement of the scatterer and the _______ of the Doppler angle.
22. The blood velocity in and immediately distal to an arterial stenosis is _______ relative to the velocity in other parts of the vessel.
23. The term "ALARA" stands for "As Low As _______ Achievable".
24. Mechanism by which a small tissue structure creates an ultrasound echo.

Down
14. Unwanted extra beams either side of the ultrasound beam.
15. Alteration of the direction of travel of ultrasound caused by a difference in propagation speed between two tissues.
17. Harmonic imaging in the presence of ultrasound contrast bubbles _______ the echogenicity of the bubbles relative to soft tissue.
amplitude  attenuation  impedance  penetration  phased  repetition  matching  timing  attenuation  reduce  preprocessing  enhancement  comet  slice  increase  aliasing  variance  intrinsic  low  broadening  parabolic  beamwidth  temporal  bone  power  inversion

Across
6. Progressive reduction of ultrasound energy as it travels through tissues.
8. Reducing the dynamic range setting will __________ the number of artifact echoes displayed in liquid filled regions such as blood vessels.
9. In smooth laminar blood flow the velocity profile (the velocity distribution across the lumen of the vessel) is __________ .
11. Measure of how much the pressure in tissues is increased and decreased due to ultrasound wave.
15. The use of a relatively large aperture to create the ultrasound beam leads to a Doppler artifact known as __________ spectral broadening.
16. The spectrum obtained from a vessel just distal to a stenosis usually shows spectral __________ .
17. Attenuation artifacts include shadowing and __________ .

Down
1. When the ultrasound frequency is increased the Doppler shift will __________ .
3. Reflection of ultrasound at the tissue-transducer interface is minimised by using a __________ layer.
4. If a circulation has high resistance then the blood flow in it is relatively __________ .
5. Number of pulses transmitted each second: pulse __________ frequency.
7. If the maximum Doppler shift exceeds one half of the PRF then frequency __________ occurs.
9. The preferred zoom function is write or __________ zoom since this maximises image resolution and frame rate.
10. Array transducers focus and steer the transmitted ultrasound by altering the relative __________ of the transmit pulses from each element.
12. The maximum number of pulses that the machine can transmit each second is limited by the __________ of the ultrasound.
Across
20. Artifact that commonly causes small liquid-filled structures to appear to contain tissue echoes: ___________ thickness.
21. The persistence function of the machine smoothes speckle but it degrades the ________ resolution.
22. Tissue heating is increased in the presence of a tissue- ________ interface.
23. The Time Gain Compensation (TGC) function of the machine allows the user to adjust for variations in the ________ of the ultrasound.

Down
13. The fraction of ultrasound energy reflected at a tissue interface is determined by the difference in the acoustic _________ of the tissues either side of the interface.
14. Colour Doppler processing determines the following parameters for each sample volume: the mean Doppler shift, the ________ and the Doppler signal power.
15. Broadband harmonic imaging is achieved by the machine using the pulse ________ technique.
16. The lateral resolution in an ultrasound image is determined by the ultrasound ________.
18. Cardiac ultrasound is generally performed using a ________ array probe.
19. The energy delivered to the patient's tissues per second is termed the ultrasound ________.
Across
1. Time taken for one transmit pulse: pulse ________.
2. When the Doppler angle is increased the Doppler shift will ________.
4. The accuracy of measurements in ultrasound images is degraded by the presence of image ________.
7. If the number of pixels in the image memory is inadequate the ________ resolution of the image will be degraded.
11. Artifact that causes tissues to appear in the image as multiple echoes equally spaced in depth.
12. When the Doppler angle is 90 degrees an artifact known as spectral ________ artifact may occur.
14. Appearance in image caused by summation of a large number of scattered echoes.
16. The narrowest achievable beamwidth at each depth is defined by the ________ limit of the transducer.

Down
1. Digitisation of the ultrasound signal does not degrade the echo information as long as the rate at which the machine samples the echo signal is at least ________ the ultrasound frequency.
2. The axial resolution in an ultrasound image is determined by the ultrasound pulse ________.
3. Altering the velocity scale of the Doppler spectral display alters the machine’s pulse ________ frequency.
5. If a Doppler signal has higher than normal variance, this is likely to be a sign that the blood flow is ________.
6. Artifact caused by reflection of ultrasound by a strongly reflective tissue interface: ________ image artifact.
8. Compared with conventional images, tissue harmonic images demonstrate improved resolution and reduced image ________.
9. Artifact causing lateral smearing of tissues in image.
10. Abdominal ultrasound is generally performed using a ________ array probe.
Across
17. Compared with conventional images, spatial compound images have improved visualisation of tissue ________.
20. If two identical vessels are in parallel the resistance is ________ the resistance of each individual vessel.
21. The time delay between the transmission of a pulse and the reception of an echo allows the machine to calculate the ________ of the tissues that caused the echo.
22. When the blood in a vessel is strongly accelerated the velocity profile (the velocity distribution across the lumen of the vessel) is flattened and this is referred to as ________ flow.
23. The main mechanical (i.e. non-thermal) biohazard associated with ultrasound.
24. A two-dimensional array transducer is called a ________ transducer.
25. The energy delivered to the patient's tissues per square centimetre per second is termed the ultrasound ________.

Down
13. Mechanism by which smooth tissue interfaces cause an ultrasound echo.
15. A device designed to mimic human tissues and used to test equipment performance is called an ultrasound ________.
18. Pulsed Doppler detects the Doppler shift relating to blood in a defined volume by using a ________ gate.
19. Time interval between one cycle of the ultrasound wave and the next.