First 2009
VIVA 1

This image is of the carotid artery and internal jugular vein. How can you distinguish the two using this form of imaging?

"What is the doppler effect?"

is the percieved change in frequency when the source and the observer are changing distance relative to each other
toward each other increases the frequency - demonstrated red in medical US
away from each other decreases the frequency - demonstrated blue in medical US

"What are the normal frequencies used in medical US?"

Ultrasound relates to frequencies greater than 20000 Hz, normally the range in 2 - 20 MHz

"Tell me what attenuation is?"

It is the loss of energy as US waves pass through tissue
It may be described in four categories: reflection, refraction, absorption and scattering
various tissues have different attentuation coefficients,

water	0.002	(minimal energy lost)
kidneys	1	
bone	5	(most energy lost)

How does frequency affect attentuation?

frequency determines the resolution, and penetration (low attentuation)
at low frequencies (2MHz) there is a high level of resolution, but minimal penetration
at high frequencies (15MHz) there is a high level of penetration, but reduced resolution

How can we describe resolution

resolution is the ability to discriminate between two points
it can be described in three planes, axial, lateral and elevation

Can you draw and describe the set up of an US machine