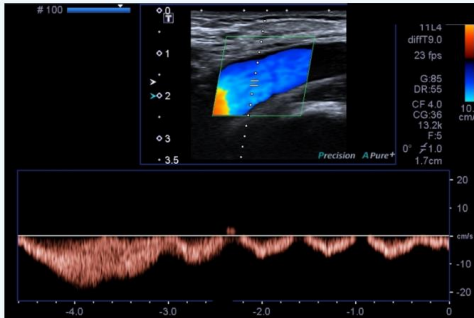


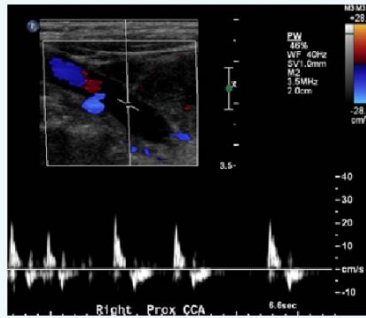
Copy questions and answers.

Total marks 9

1.	The term "Perforator" relate to vessels that are ☒ a. Superficial to deep veins ☐ b. Deep to superficial veins ☐ c. Superficial to deep arteries ☐ d. Calf to thigh veins
2.	If a patient presented to your imaging department 12 months after an initial finding of a DVT (Femora vein), sonographically the appearance of the vein at this time may have the following except? ☐ a. Collateral formation ☐ b. increased echogenicity ☐ c. Recanalization of vessel ☒ d. Vein dilation
3.	The following image demonstrates:  ☐ a. Retrograde respiro phasic flow, away from the transducer ☐ b. Retrograde respirophasic flow towards the transducer ☐ c. Antegrade respiro phasic flow towards the transducer ☒ d. Antegrade respiro-phasic flow, away from the transducer
4.	Consider this image: Select the most appropriate description provided below:  ☐ a. This image demonstrates peripheral arterial flow, demonstrating flow away from the transducer - it is monophasic retrograde flow, ☐ b. This image demonstrates peripheral arterial flow, demonstrating colour flow away from the transducer- it is retrograde multiphasic flow ☒ c. This image demonstrates peripheral arterial flow, demonstrating colour flow towards the transducer - it is antegrade multiphasic flow ☐ d. This image demonstrates peripheral arterial flow, demonstrating colour flow towards the transducer - it is antegrade biphasic flow

5.

Consider the spectral Doppler of this Right Common Carotid Artery- and select the best description.

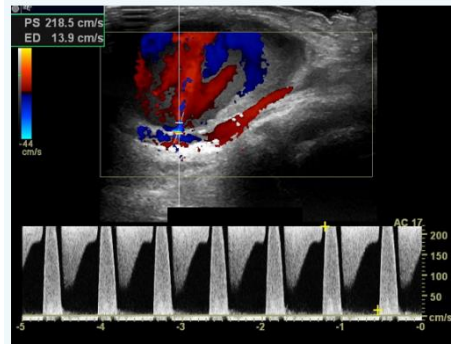


- ☒ a. Abnormal high resistance flow with absent diastolic flow
- ☐ b. Normal retrograde multiphasic high resistant flow
- ☐ c. Poor sonographer settings of a normal vessel
- ☐ d. Normal antegrade multiphasic high resistant flow

6.

This patient returns a few days after a angio and stent procedure - this image represents an area near where the patient was canalised.

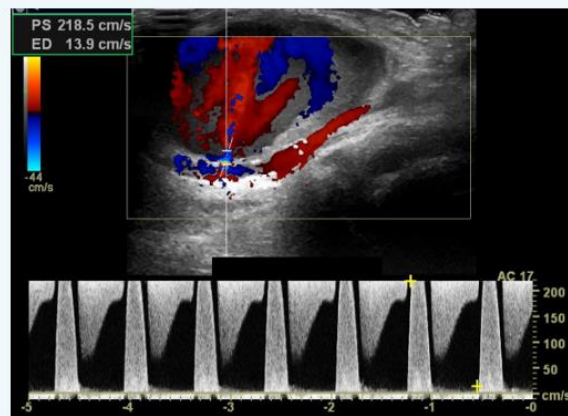
Consider this image and provide the best descriptor for the spectral Doppler from the list provided



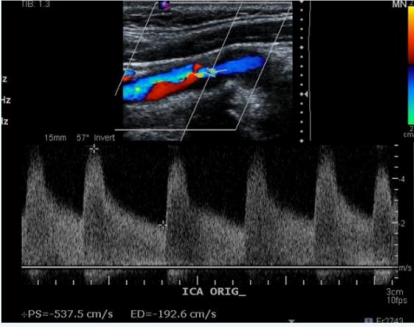
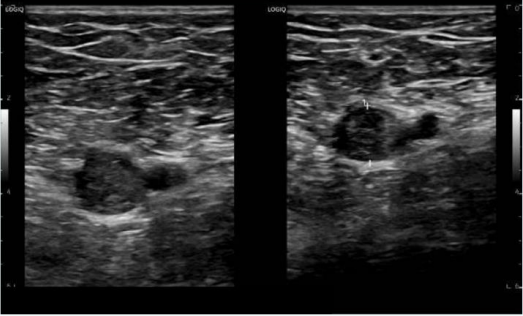
- ☐ a. Normal variant
- ☐ b. Retrograde
- ☐ c. Antegrade
- ☒ d. Bidirectional

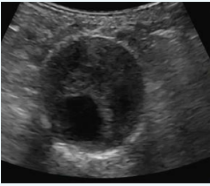
7.

This image can be best described as being:



- ☐ a. Normal appearance post intervention
- ☒ b. An arterial pseudoaneurysm
- ☐ c. Typical appearance of a post procedure fistula
- ☐ d. An arterial true aneurysm

8.	Patients may present for follow up scans post an Endovascular (EVAR) procedure, ultrasound is an excellent surveillance tool for these patients. A sign of a possible issue with the EVAR is a demonstration of flow outside of the graft within the residual aortic sac. Another important indicator would be.... ☐ a. Increase in the size of the grafts limb on the side of a possible endo leak ☐ b. Low resistance forward spectral Doppler flow seen within the EVAR ☒ c. Increase in the size of the residual aortic sac compared to previous scans ☐ d. Decrease in the size of the residual aortic sac compared to previous scans	
9.	The spectral trace in the image below is characteristic of flow through a haemodynamically significant stenosis. The characteristics of this waveform include;  ☐ a. Decreased peak systolic velocity, decreased end diastolic velocity, spectral broadening and discrete spectral window. ☐ b. Monophasic high resistant forward flow with reverse diastolic flow and spectral broadening ☒ c. Increased peak systolic velocity, increased end diastolic velocity, spectral broadening and loss of spectral window. ☐ d. Increased peak systolic flow in diastole and forward flow with decreased spectral broadening and flattened acceleration time	
10.	The following image represents an image taken in the mid thigh region. Based on this image, what is your provisional diagnosis?  ☐ a. Popliteal vein thrombus ☒ b. Femoral vein thrombus ☐ c. Pseudo aneurysm of the femoral artery ☐ d. Popliteal vein atherosclerosis	

11.	This image represents an incidental finding on a 70 year old patient during an upper abdominal ultrasound. What do you need to ensure you have done to complete a scan for this patient  Select one: ☐ a. None of the options ☐ b. Obtain measurement AP outer to outer ☒ c. All of the options ☐ d. Scan in a different plane to ensure this is not artefact ☐ e. Measure distance to renal arteries ☐ f. Use colour and pulsed Doppler ☐ g. Extend the scan to include iliac arteries.	
12.	Acute thrombus is soft and may be easily compressed to a certain extent, on the other hand, chronic thrombus: ☒ a. is not compressible to any extent ☐ b. may be easily compressible to a certain extent ☐ c. will easily compress completely ☐ d. with some difficulty (pressure) will compress completely	
13.	A patient presents for a carotid ultrasound. The request form states 'Bruit, please assess' What is a bruit? Select one: ☒ a. A systolic sound heard through a stethoscope placed over the ICA. A bruit can indicate a carotid artery stenosis but may also be heard in normal carotid arteries. ☐ b. A systolic sound heard through a stethoscope which may indicate a carotid artery occlusion. ☐ c. A systolic sound that the patient can hear which may indicate a carotid artery stenosis. ☐ d. A sound made by the normal Jugular vein	
14.	You perform an ABI on a patient presenting with claudication. The returning arterial pressure in each of the Rt and Lt Brachial arteries is 140mmHg. The returning arterial pressure in the Rt ATA is 70mmHg and the Lt ATA is 30mmHg. The ABI is; Select one: ☐ a. Rt ABI= 1.0, LT ABI= 1.2 ☐ b. Rt ABI= 0.2, LT ABI= 0.5 ☒ c. Rt ABI= 0.5, LT ABI= 0.2 ☐ d. Rt ABI= 2.0, LT ABI=4.7	
15.	Deep vein thrombosis often destroys the venous valves which can result in post thrombotic syndrome (postphlebotic syndrome), which leads to everything below EXCEPT; ☒ a. SFA occlusion ☐ b. Deep venous incompetence ☐ c. Stasis dermatitis ☐ d. Ulcers (in later years)	
16.	The following can mimic a dissection when scanning the arterial system; Select one: ☐ a. False Aneurysm ☒ b. a and b ☐ c. none of the above ☐ d. Artefact due to strong reflecting surface ☐ e. Thrombus	

17.	The Reynold's Number predicts when flow will break down from laminar into turbulent flow. It is dependent on..... ☐ a. the viscosity of the liquid ☐ b. the density of the liquid ☐ c. the diameter of the vessel ☐ d. the velocity of the liquid ☐ e. none of the options ☒ f. all of the options
18.	Which of the following would be considered representing the risk factors for a AAA? ☒ a. Tobacco use, male gender, family history ☐ b. Hypertension, poor renal function, difficulty emptying bladder ☐ c. Right flank pain , female aged 25-39 ☐ d. Upper right quadrant pain with probe pressure and some vomiting

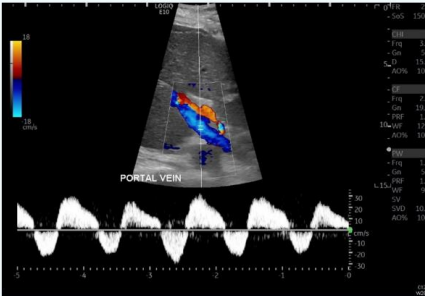
Section 2 true and false

18 Marks

19. 4 marks

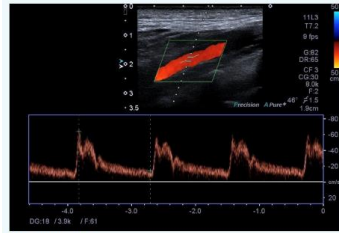
Thinking about embryology and vascular developments answer the following		
True	False	
☒	☐	Vasculogenesis arise from blood islands
☒	☐	Capillaries are small blood vessels through which nutrients and oxygen between the blood and tissues
☐	☒	The wall of an artery consists of 4 layers, tunica interna, tunica media, tunica elastica, tunica contratilica
☐	☒	Vasculogenesis is the sprouting of new vessels from existing vessels
☐	☒	Blood vessels arise from the mesoderm, and form in three ways Vasculogenesis, venogenesis and angiogenesis.
☒	☐	Blood islands form as a result of the formation of blood vessels
☒	☐	Systemic veins are blood reservoirs, because they hold large volumes of blood
☒	☐	The heart will commence beating during the 4th week of development

20. 2 marks

The following image is taken from a patients upper abdomen. Consider both the colour and spectral Doppler and respond to the questions provided		
		
True	False	
☒	☐	This image taken with a curved array probe has a smaller image width to assist with image artefact and frame rate
☐	☒	Portal vein flow should demonstrate mild respiration and moderate pulsatile changes as demonstrated in this image
☐	☒	Colour Doppler demonstrates normal flow in the portal vein
☒	☐	Spectral Doppler of hepatic artery flow should be low resistance and monophasic

21. 3 marks

Consider this image of an internal carotid artery as you respond to the following questions:



Peak systolic = 63cm/s
End diastolic = 13cm/s

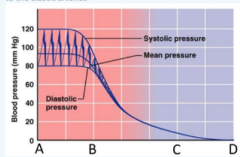
- | True | False |
|----------------------------------|----------------------------------|
| ☒ | ☐ |
| ☒ | ☐ |
| ☐ | ☒ |
| ☒ | ☐ |
| ☐ | ☒ |
| ☒ | ☐ |

This series of questions relates to the physiological factors that relate to blood flow. Read each question carefully.

- | True | False |
|----------------------------------|----------------------------------|
| ☐ | ☒ |
| ☒ | ☐ |
| ☒ | ☐ |
| ☒ | ☐ |

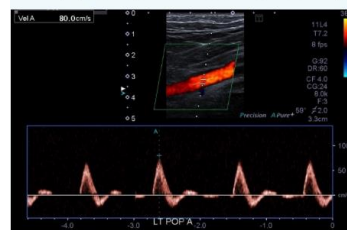
$$R = \frac{\text{viscosity} \times \text{length} \times 8}{\pi \times r^4}$$

- | | |
|-----------------------|----------------------------------|
| ☐ | ☒ |
| ☐ | ☒ |



23. 3 marks

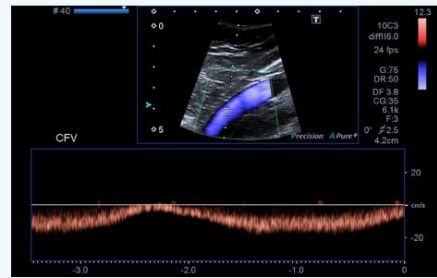
The following image is taken as part of a lower limb arterial study. Consider this image and respond to the questions provided.



- | True | False |
|----------------------------------|----------------------------------|
| ☐ | ☒ |
| ☐ | ☒ |
| ☒ | ☐ |
| ☒ | ☐ |
| ☐ | ☒ |
| ☐ | ☒ |

24. 3 marks

Consider the following image and respond to the questions below. This image is taken on a patients right side.



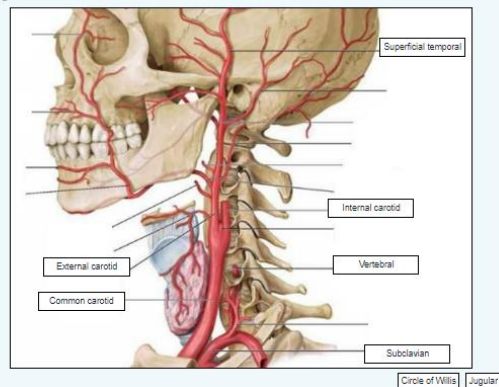
- | True | False | |
|----------------------------------|----------------------------------|---|
| ☒ | ☐ | The direction of flow demonstrated in the Colour Doppler is away from the probe |
| ☐ | ☒ | The Spectral Doppler is demonstrating partially occluded flow |
| ☐ | ☒ | You would see this type of flow with a proximal occlusion |
| ☐ | ☒ | This linear probe is being used with a sample gate of 2.5 |
| ☒ | ☐ | The CFV is part of the deep venous system |
| ☐ | ☒ | Flow in the venous system is typically high resistance in a normal flow state |

Section 3 – quick questions

Total Marks 12

25. 3 marks

Label the following image



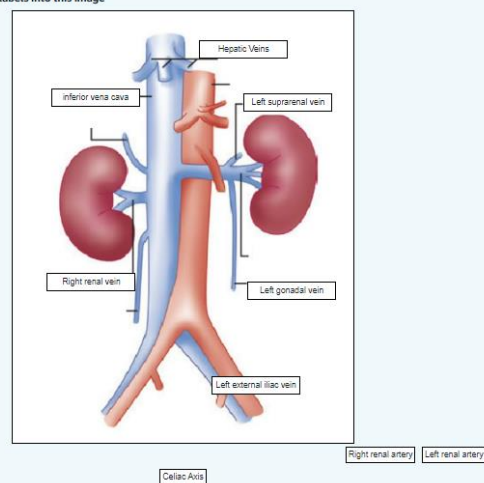
26. 2 marks

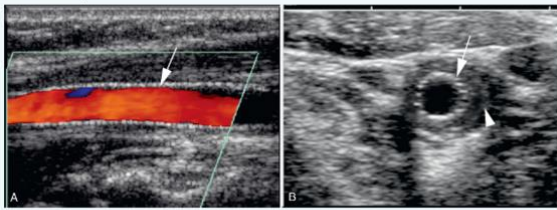
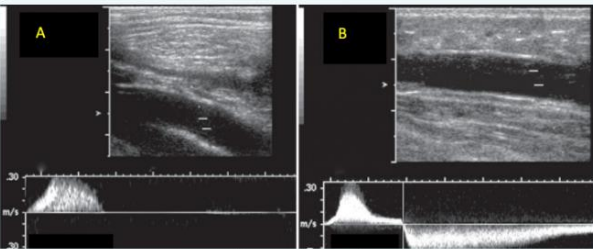
Positioning your patient in the left lateral decubitus position will allow you to view the **right** renal artery.
 This view is described as the **banana** view
 in this position the flow of the **left** renal artery will be away from the transducer.
 When scanning the segmental vessels with spectral Doppler you are utilising the **indirect** approach

direct **watermelon**

27. 3 marks

Drag and Drop the correct labels into this image



28. 2.5 marks	This image has been taken from a 65 year old patient. They have presented for a follow up carotid scan. Image A presents a longitudinal image of a carotid stent which appears to be patent with colour Doppler - Image B represents the same image in transverse . This procedure is performed instead of a endarterectomy because the patient may have a surgical risk.  normal abnormal coronal occluded
29. 1.5 marks	Consider these two images carefully. These images represent venous flow in the lower limb. Image A taken at the level of the popliteal vein represents normal waveform following distal augmentation. Image B taken in the mid thigh great saphenous, represents abnormal waveform following distal augmentation. Image B demonstrates severe superficial venous insufficiency.  A Retrograde arterial superficial

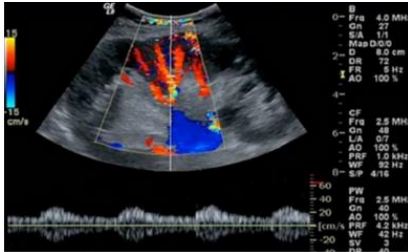
Section 4- Case Scenarios:

Total Marks 81

Case scenario 1:

- Request form
- Your patient is a heavy-set male aged 65 years. He has presented with a clinical history of back pain and uncontrolled hypertension for investigation.
- Consider this information and respond to the questions in this series.

30.	Given this clinical history - from a sonographic perspective: 1. What is the most likely examination you will be performing [1] 2. Explain why you came to this conclusion [1] 3. What is recommended patient preparation, and [1] 4. What is best patient positioning for this examination? [1] [TOTAL: 4 Marks]	• Based on family history male and age, this is a AAA study so this is a Abdomen study or accept Abdominal aorta and iliac vessel study. However due to hypertension we will also look at renal arteries for possible renal artery stenosis • Preparation – preferably fasting and morning scan. (1/2 mark for each) • Patient will be scanned supine, OR decub due to patient size (half mark for each)
31.	As you prepare to scan this patient you will be thinking about several issues. Respond to each of these questions in relation to this	Best probe low frequency curved array probe (will accept sector) – this provides penetration and depth of

	patient. 1. What is the best probe and pre-set section for this study and why? [1] 2. What limitations might you encounter with this type of patient AND List 2 parameters you may want to change to assist with this examination [2] 3. What areas are included as part of your imaging protocol [3] 4. Provide an overview of 2 common causes for uncontrolled hypertension [2] [Total: 8 Marks]	field of view- frequency range 2-5mHz. Abdominal pre-set with penetration Patients with large abdomen may have quite a lot of bowel gas, and general obesity A combination of changing dynamic range, lower frequency change depth, narrow sector width, Harmonics might assist, lower frequency, probe pressure to push bowel gas away Aorta prox and distal - the renal Dopplers and over all kidney size/ echogenicity comparison and rule out pathology Renal arteries. - both direct and indirect imaging using spectral Doppler - identify any accessor vessels - 2 causes include renal artery stenosis due to atherosclerotic changes and Fibromuscular disease - A NON ATHEROSCLEROTIC NON INFLAMMOARY DISEASE THAT causes wall thickening
32.	Some how you have obtained a great image on this patient.  1. Explain the scanning method utilised and why this method may be employed [2] 2. Consider this image and describe the sonographic findings [2] 3. What calculations would you use to assist in your analysis of this image, and provide a provisional diagnosis [3]	1. <i>This represents an indirect evaluation of the renal vasculature because the renal artery cannot be assessed – so scanning the (hilar or interlobar arteries):</i> <i>Renal artery stenosis can be diagnosed directly by assessing the flow velocities in the renal arteries and indirectly by assessing the changes in the waveform within the intrarenal arteries which are downstream from the stenosis</i> 2. <i>Colour flow is seen to the edge of the kidney, the spectral Doppler displays systolic acceleration is slow, and the systolic peak is dampened (arrow). The waveform has a rounded appearance. it is tardus parvus waveform distal to a renal artery stenosis.</i> 3. <i>no grade for automatic measurement</i>

		• <i>Resistivity Index, peak systolic-end diastolic/ peak systolic</i> • <i>Acceleration Time</i> • <i>Renal Aortic Ratio = PSV renal Artery/ Peak Systolic ratio Aorta</i>
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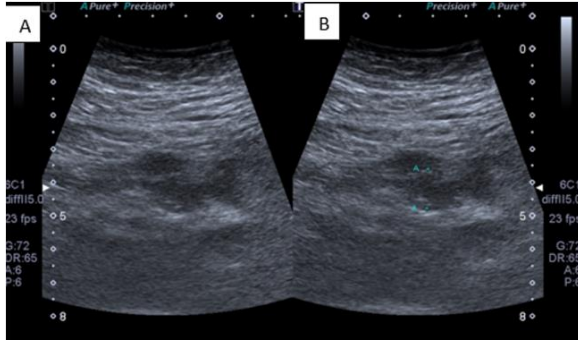
Case Scenario 2

This is the request form for our next case.

Request form:

- 72 year old male patient
- Recent knee surgery including a 10 day hospital stay
- He has presented with painful calf region for investigation
- The following questions relate to this patient.

33.	Your patient is on a hospital bed, and appears uncomfortable. Given the clinical details: 1. What examination are you going to perform and explain the pathogenic process that lead you to this conclusion [4] 2. What will your probe and pre set selection be [1] 3. What is the best patient positioning for this scan? [1] 4. Are there any additional patient positions you might adopt to assist you from an ergonomic perspective to obtain the best scan? [1] 5. What anatomy will you examine and are there any techniques you will employ to assist with this examination [3]	1. this will be a lower limb DVT study - this patient ticks a few risk factors for DVT. • Surgery, immobilisation, septic, increasing age, • DVT usually affects the lower limb • Virchow's triad the association between coagulability, damage to vein wall and venous stasis. • 1/2 mark to max of 4 for each include in your response: • Probe and pre set selection [1] - linear - should mention curved for challenging patient 1/2 mark for each • patient positioning [1] - supine in bed, and lift head a bit - role patient, move patient close to your side of the bed - so you are not stretching • anatomy to be examined [3] - Good response will include ALL vessels of lower limb bilaterally for extra 1/2 mark (if doesnt include both max 2.5) Students talk about valsalva techniques, perhaps squeezing lower leg, looking for prox thrombus, probe compression, and
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		HAND compression of probe wont work in bed
34.	You commence your scan and obtain the following images at the level of the right upper thigh approximately 7 cm below the level of the groin. Consider these images and respond to the questions below.  1. Provide a detailed explanation of the technique being used by the sonographer. [3] 2. Describe the sonographic findings seen in these images (include a provisional diagnosis). [1] [Total: 4 marks]	This is an image of transverse vessel (cfv or fv) with a curved probe, split screen demonstrating normal imaging and COMPRESSION - the fact there is no compression of the vessel indicates there is a thrombus the sonographer will demonstrate this through the limb looking for both proximal and distal segments of thrombus - as well as thrombus in any other vessel this patient has a DEEP VEIN THROMBOSIS

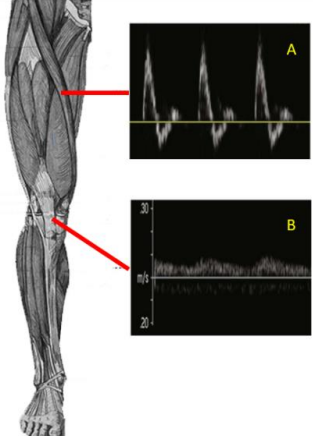
Case Scenario 3

Request form:

- A 68 year old male smoker presents with difficulty walking more than 100metres without feeling pain and cramping in his legs.

The following questions relate to this patient.

35.	You have acquired several waveforms from this patient - its time to analyse the images. 1. From this diagram, name the two vessels scanned with Spectral Doppler (A & B). [1] 2. Describe the waveforms and what they might represent in image A & B. [4] 3. Provide a provisional diagnosis. [1]	Common femoral (will accept prox femoral artery) and popliteal artery . Waveform A - Multiphasic, antegrade, high resistance - with a little diastolic flow Waveform B - monophasic, antegrade low resistance - no diastolic flow The popliteal artery waveform shows severely damped flow when compared to the distal
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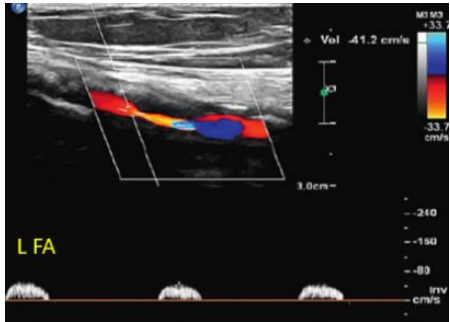
		vessel - this represents a significant stenosis. Possible mid femoral artery occlusion with distal dampened flow.
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Case Study 4:

Request form:

- Your next patient is a 68 year old male.
- His request form states he has painful legs and you have been asked to perform a study to rule out the possibility of a DVT.

Consider this request and respond to the questions provided.

36.	Consider this image obtained from the patients left mid thigh region. Respond to the questions as they relate to this image.  1. Does this flow appear normal or abnormal? [1] 2. Provide an overview of why you have provided the answer to question 1. [3] 3. Describe the spectral Doppler flow appearance seen in this image. [2] 4. Explain the physiological process that may be occurring in patients legs [2]	1. this is abnormal femoral artery 2. flow in peripheral arteries should be high resistance, multiphasic flow with sharp upstroke and brisk down stroke with flow in both forward and reverse flow 3. this waveform is monophasic, low resistance with damp waveform, no sharp upstroke and flattened peaks... Spectral waveform is inverted 4. this is a diseased vessel, with calcified walls + thickened plaque, colour is not filling the vessel and is demonstrating flow away from the transducer, can see an area of aliasing distal to area being interrogated. patient has PAD and the muscles cannot get enough flow
37.	Based on the clinical description for this patient, if the issue was in both legs answer the following questions:	

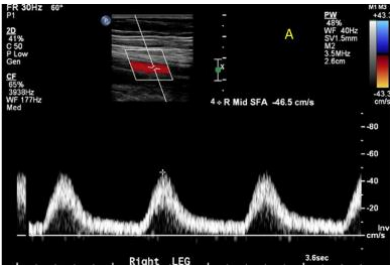
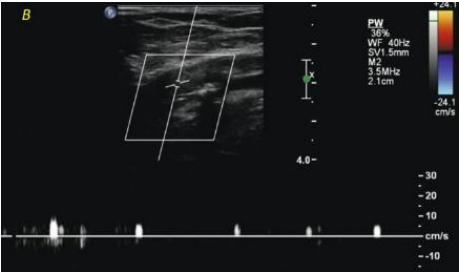
	1. Provide an overview of the examination you will MOST likely be performing (include what probe/ s selection, and system pre set). [4] 2. Explain in detail the most likely pathological process occurring for this patient, and what clues are within the consent form? [4]	
38.	You commence your departmental protocol. In the region of the popliteal fossa you capture the following images. Answer the questions associated with these images.  1. What are the possible pathologies that may be found in the popliteal region when performing a DVT study NOT associated with the veins? [1] 2. Describe the ultrasound findings seen in these images [2] 3. Provide a provisional diagnosis based on these images, and include in your response any extension on this scan you might perform. [1]	Baker cyst or popliteal aneurysm (1/2 for each) This appears to be a dilated popliteal artery - this may be a popliteal aneurysm - we can see thrombus in the long image, demonstrated in the trans image as well and there appears to be affected dampened flow. this patient should have their iliac and abdominal aorta scanned to check if this additional aneurysm and whether this is bilateral or not. 1/2 for each

Case Scenario 5

This request is a medical emergency. Your patient has been rushed to the department for an urgent scan.

- They are a 64-year-old male who has a history of high blood pressure, and has recently had surgery and is a smoker.
- His current complaint is a sudden onset of severe lower limb pain that extends to his foot on his left side - which is cold to touch.

Based on this request, respond to the questions.

39.	You have been asked to perform a bilateral arterial scan and obtain these two images. Image A is from the mid Femoral artery.  1. Describe the spectral Waveform seen in the right leg and indicate whether this is normal or abnormal waveform for this type of vessel [3] Image B is taken from your patients left side.  2. Describe the sonographic findings seen in Image B. [3] [Total: 6 marks]	Image A is the right femoral artery Image - the colour scale is set too high, the flow is away from the transducer, the spectral Doppler is above the line however inverted so away from the probe - spectral flow is monophasic, low resistance antegrade flow - this is not normal flow for this vessel A there appears to be Image B - left common femoral NO flow in the spectral Doppler OR with colour doppler, this is abnormal and appears to represent a total occlusion - this would represent thrombus in the vessel - may want to use power Doppler 1/2 mark for each
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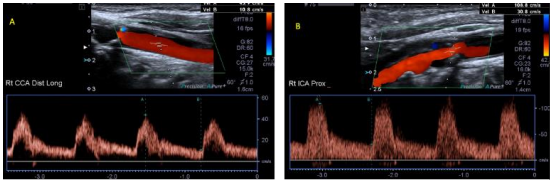
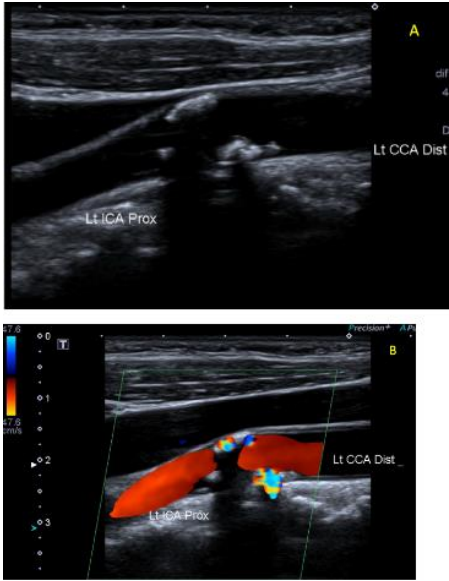
Case Study 6

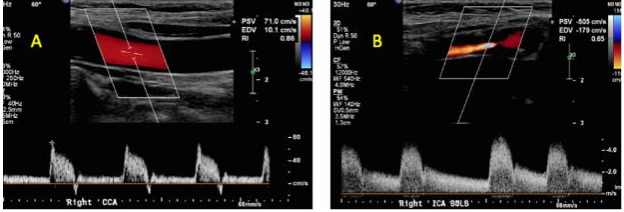
Request form:

- This patient is a 74 year old female presenting for a work up for cardiac surgery. You have been asked to perform a carotid ultrasound.

Consider this request form as you respond to the following questions.

40.	The following images are taken from your patients left side of their neck. Consider the following two images A and B and respond to the questions in the space below.	1. Image A represents an Common carotid waveform - we can see the vessel filled with colour doppler and the sample volume mid vessel - the spectral Doppler appears as a normal monophasic low
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	Image A: PSv=43cm/s, EDv = 10cm/s Image B: PSv=108cm /s, EDv =30cm/s  1. Describe the sonographic findings associated with the spectral Doppler of image A. [2] 2. What is the direction of flow seen in the colour Doppler AND explain why the spectral Doppler display is above the base line in image B? [1] 3. Describe the waveform seen in image B. [3]	resistance waveform - if the patients head is on the left this is antegrade 2. Image B is the internal carotid image, the vessel is demonstrated in red as flowing away from the transducer - spectral Doppler is inverted (1/2 each) 3. Image A - the spectral display demonstrates forward flow throughout the cardiac cycle with high diastolic flow, demonstrating normal CCA flow to a low resistance vascular bed. other example, renal, hepatic artery - there may be a little diastolic flow below the base line representative of the combination of ECA and ICA
41.	These images are taken on the patients LEFT side:  Describe the sonographic findings from BOTH images, and indicate whether Power Doppler would assist you in the examination of image B. [6]	A high frequency linear array transducer (9-12mhz) has been used to image the proximal ICA / distal CCA in LONG plane both images. Image B demonstrating colour at the level of the bifurcation Image A 2D image only demonstrating calcified plaque in the origin of the ICA on both anterior and posterior walls, we can see posterior shadowing. the rest of the vessel appears anechoic. Image B: demonstrates colour Doppler, FLOW Demonstrated going away from the transducer - the scale is high, but this may be due to the speckle artefact seen at the level of the calcified plaque, there is a shadow seen from anterior calcification with no flow demonstrated distally. Power doppler is a more sensitive form of assessing for perfusion. It is not affected by angles, and does not have aliasing. But in this instance we would still NOT be able to see flow where there is calcification 1/2 mark each point - to max of 6
42.	Your patient returns 2 years later for a follow up scan. The following images come from this NEW scan. - A= CCA PSV= 71cm/s, EDV= 10cm/s - B= ICA- PSV = 505cm/s, EDV 179 cm/s Consider this information and the images as you respond to the following question.	1. Image B depicts the proximal internal carotid artery. In B-mode, there is evidence of luminal wall irregularity. Hypoechoic plaque may be present, although the image has not been optimised to depict it.

	 1. Describe any significant findings seen in either image [2] 2. Provide an overview of any changes from a spectral perspective demonstrated in these images - provide in your answer any calculations you might use, and provide a provisional diagnosis for this patient. [3]	• Colour Doppler has been applied with appropriate box steering, angle marker and sample gate placement. Flow is away from the transducer (red = below baseline) and antegrade. Colour scale has been set relatively high (116cm/s) and there is evidence of aliasing reflecting an area of significant stenosis resulting in a high velocity jet. • • On the spectral display, there is an abnormally high PSV (505cm/s) and EDV (179cm/s) and spectral broadening with loss of the spectral window. 2. The PSV, EDV, and ICA/CCA ratio can provide a clinical overview of the level of stenosis in the internal carotid artery. • These standards have been endorsed by the Australasian Society for Ultrasound in Medicine (ASUM) in their 'Duplex Doppler Ultrasound for Extracranial Carotid Artery Disease' guidelines. • As per these guidelines, a PSV >270cm/s, EDV >140cm/s and ICA/CCA ratio of >4 are indicative of >80% stenosis. • In this patient, PSV is 505cm/s, EDV is 179cm/s and the ICA/CCA ratio = $505/71 = 7.11$ which is >4. • Colour Doppler depicts possible 'string sign.' • Thus, these calculations and appearances are consistent with a >80% stenosis. Colour Doppler 'string sign' suggestive of 95-99% stenosis. Further images are needed to confirm.
43.	FINAL QUESTION This question requires you to draw an illustration on a blank piece of paper, take a photo of it and then upload this photo to the exam portal. Please make sure that your diagram is legible and large enough to read. Task 1. You are to draw the anatomy of the EXTRACRANIAL and INTRACRANIAL anatomy from the Arch of the Aorta . Your drawing must include a <i>basic representation of the intracranial vasculature</i>. Task 2. Next, you are to indicate the direction of blood flow if your patient presented with a COMPLETE OCCLUSION at the level of the proximal Left subclavian artery.	Drawing - 3 marks for drawing including ICA CCA ECA VERTEBRAL BILATERALLY, ARCH AND SUBCLAVIAN ARTERIES 1 marks for including the circle of Willis 1 mark for correct direction of flow 1 mark subclavian steal

	Task 3. Please also write on your diagram what this condition is known as as well as label the main EXTRACRANIAL vessels. Once you have completed your drawing/illustration please take a photo of the image using your chosen device. For example, your phone or an i-pad. Please make sure that your photo is not blurry. follow these steps Step 1. Please make sure that your image is saved as a .jpg or .jpeg, not as a .HEIC as this will not be able to be viewed for marking. [6 MARKS]	
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