

# Peer Teaching Society Phase 4 SAQ Paper 1 2024 - [ANSWERS]



## Marking Instructions

- There is **no identified 'pass mark'**
- Each question should state the **number of marks** it is worth and what needs to be answered to obtain the mark
- There is **215 marks** in total

## Disclaimer

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Please **do not share** this document on **google drives** or **directly to future students** as this takes away from their opportunity to complete this paper in the run up to their exams when it will be of most benefit as a revision resource. **This paper will be edited, updated and repeated in future years.**

## Chief Exam Editors

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## Special Acknowledgment

Dr Olivia Stevens - FY1

**Summary of Topics Assessed:**

Q1	Neurology	Meningitis
Q2	Breast	Breast Cancer
Q3	Gastroenterology	Inflammatory Bowel Disease
Q4	Cardiology	Infective Endocarditis
Q5	Ophthalmology	Loss of Vision
Q6	Neurology	Parkinsonism
Q7	Rheumatology	SLE
Q8	Respiratory	Community-Acquired Pneumonia
Q9	Orthopaedics	Post-Operative Complications
Q10	Gastroenterology	Peptic Ulcers
Q11	Respiratory	Asthma
Q12	Psychiatry	Anorexia / CAMHS
Q13	Neurology	Stroke
Q14	Orthopaedics	Hip Fractures
Q15	General Surgery	Rectal Cancer
Q16	Cardiology	Heart Failure
Q17	Geriatrics	Collapse
Q18	Haematology	Anaemia
Q19	Obstetrics & Gynaecology	Infertility
Q20	Ear, Nose & Throat	Dizziness

## QUESTION 1

An 18 year old university student, Ryan, is seen by his GP with a 24 hour history of flu like illness, fever, headache and neck stiffness. He is noted to have a progressively purpuric rash. There are no known drug allergies.

- a. What is the most likely diagnosis? [1 mark]  
Meningococcal sepsis / Meningococcal septicaemia
- b. Name a drug given intramuscularly that the GP should consider giving? [1 mark]  
Benzylpenicillin
- c. Name the most likely conditions denoted by A, B and C from the following table: [3 marks]

CSF Findings:	A	B	C
Appearance	Cloudy, turbid	Clear	Cloudy and viscous
Predominant White Cell	Neutrophils	Lymphocytes	Lymphocytes
Protein	High	Normal / high	High
Glucose	Low	Normal	Low

A: bacterial meningitis

B: viral meningitis

C: TB meningitis

- d. Name 1 absolute contraindication to performing lumbar puncture? [1 mark]  
Infected skin over puncture site / increased intracranial pressure (from a space-occupying lesion, eg tumour or abscess) / trauma to lumbar vertebrae
- e. Name 2 common complications Ryan is at risk of developing? [2 marks]  
Any 2 of: septic shock / hearing loss / seizures/ intellectual impairment
- f. Name 2 public health implications of the suspected diagnosis? [2 marks]  
Bacterial meningitis is a notifiable disease (1 mark)  
The patient's close contacts need to be traced and offered prophylaxis (1 mark)
- g. If Ryan presented with confusion and changes in his behaviour alongside his fever and flu-like symptoms, what differential would be important to consider? [1 mark]  
Encephalitis

[11 marks]

## QUESTION TWO

A 65 year old lady is seen in the breast clinic. She has been aware of a mass in her right breast for 3 weeks and is worried about cancer.

- a. What clinical features may suggest that the lesion may be malignant? List 3. [3 marks]

*Any 3 of:*

- Non-tender lump
- Peau d'orange
- Dimpling of skin
- Ulceration
- Rash around nipple
- New nipple inversion
- Bloody nipple discharge
- Weight loss
- Cervical or axillary lymphadenopathy

- b. What does triple assessment refer to in the breast clinic? [3 marks]

*Examination + imaging + biopsy (1 mark for each)*

*('imaging' rather than mammogram - sometimes ultrasound may be used instead)*

- c. Name 2 main surgical approaches to treating breast carcinoma [2 marks]

*Lumpectomy / wide local excision (1 mark)*

*Total mastectomy (1 mark)*

- d. List 3 pieces of histological information the MDT will require for treatment planning? [3 marks]

*Any 3 of:*

- Tumour size
- Tumour grade
- Lymph node involvement
- Completeness of excision / if the margins are clear
- Vascular invasion
- Oestrogen receptor status / progesterone receptor status / steroid receptor status
- Her2 status

- e. Who is invited for screening in the standard programme, and often does it take place? [2 marks]

*Every 3 years (1 mark)*

*Between the ages of 50 and 71 (1 mark)*

- f. A 31 year old patient is found to be a BRCA 1 carrier, how often should she be invited for screening, and what imaging modality should be used? [2 marks]

*Annual testing (1 mark)*

*MRI scan (1 mark)*

[15 marks]

### QUESTION 3

A 27 year old man is admitted to the surgical ward following a one week history of bloody diarrhoea. He has no previous relevant history. Abdominal examination is unremarkable.

- a. Biopsies suggest mucosal inflammation with crypt abscesses. What is the most likely diagnosis? [1 mark]  
*Ulcerative Colitis*
  
- b. Name 2 other biopsy findings seen in this condition? [2 marks]  
*Any 2 of: Continuous Inflammation / Goblet Cell Depletion / Ulceration / Pseudopolyps*
  
- c. Which classes of drug might be used in treating a moderate acute flare of this condition? Name two. [2 marks]  
*5-ASA / Aminosalicylates (1 mark)*  
*Corticosteroids (1 mark)*
  
- d. You see the patient with a 2nd year medical student who asks you why this is not coeliac disease. Name 2 biopsy findings which would be suggestive of coeliac disease. [2 marks]  
*Any 2 of: Villous Atrophy / Crypt Hyperplasia / Intraepithelial Lymphocytes*
  
- e. Some years later he presents with right upper quadrant pain, pruritus and jaundice, which associated condition is he most likely to have developed? [1 mark]  
*Primary Sclerosing Cholangitis*
  
- f. Which imaging investigation will be most helpful in making this diagnosis? [1 mark]  
*Magnetic resonance cholangiopancreatography (MRCP)*

[9 marks]

#### QUESTION 4

A 31 year old man, who is a known intravenous drug user, presents to A&E with malaise, fever, weight loss and night sweats. He has a temperature of 38.5°C. On examination, a pansystolic murmur is noted. You suspect a diagnosis of infective endocarditis.

- a. Name 4 additional clinical signs that may be found on examination in this patient [4 marks]

*Any 4 of:*

- Pallor / Conjunctival Pallor
- Clubbing
- Roth Spots
- Osler's Nodes
- Splinter Haemorrhages
- Splenomegaly
- Janeway's Lesions
- Petechiae
- Hypotension
- Tachycardia
- Tachypnoea

- b. Name the most likely causative organism in infective endocarditis. [1 mark]

*Staphylococcus aureus*

- c. Your senior asks for blood cultures to be performed. What is the specific regime for collecting blood cultures in suspected infective endocarditis? [2 marks]

*Three samples (1 mark)*

*Required from different sites / 6 hours apart (1 mark)*

- d. What other investigation can be useful in making a definitive diagnosis of infective endocarditis? [1 mark]

*Echocardiogram*

- e. Other than intravenous drug abuse, name 2 other risk factors for infective endocarditis? [2 marks]

*Any 2 of: Dental Surgery / Prosthetic Heart Valves / Thoracotomy / Valvular Disease / Rheumatic Heart Disease / Indwelling Cardiac Devices / Catheterisation / Haemodialysis / Immunosuppression*

[10 marks]

## QUESTION 5

Mary is a 75 year old lady with known atrial fibrillation. She attends A&E with painless loss of vision in her left eye, which came on over a period of less than 30 minutes. She thinks she may have had similar previous episodes that recovered. There is no associated headache.

- a. Give 3 differentials for painless sudden loss of vision? [3 marks]

*Any 3 of:*

- Retinal artery occlusion
- Retinal Vein Occlusion
- Retinal Detachment
- (Non arteritic ischemic) Optic Neuropathy
- Vitreous haemorrhage

- b. What is the name given to the transient episodes of vision loss the patient may be describing? [1 mark]

*Amaurosis fugax*

- c. Given the fundoscopy findings, what is the most likely diagnosis? [1 mark]



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*Retinal artery occlusion*

- d. The medical student with you asks about age related macular degeneration, which caused his grandfather to lose his vision. What is the name of the yellow deposits that can be seen on fundoscopy in this condition? [1 mark]

*Drusen*

- e. Other than increasing age, give 2 risk factors for the development of age-related macular degeneration [2 marks]

*Any 2 of: Smoking / Family History / Cardiovascular Disease or Hypertension / Obesity / Poor Diet*

- f. What is the name of the first line medication given in wet age related macular degeneration, and what complication does it aim to prevent? [2 marks]

*Anti vascular endothelial growth factor / anti-VEGF (1 mark)*

*Given to prevent neovascularisation (1 mark)*

[10 marks]

## QUESTION 6

A 69 year old man presents to a neurology clinic with a 2 year history of gradually reducing mobility, and finding it increasingly difficult to manage at home. You examine the patient and ultimately diagnose the patient with idiopathic Parkinson's disease.

**a. Name 3 other causes of Parkinsonism [3 marks]**

*Any 3 of:*

- Vascular Parkinsonism
- Progressive Supranuclear Palsy
- Multiple System Atrophy
- Corticobasal Degeneration
- Dementia with Lewy bodies
- Postencephalitic Parkinsonism
- Hypoxia
- Carbon Monoxide Poisoning
- Wilson's Disease
- Drug Induced

**b. What are the cardinal features of Parkinson's disease? [3 marks]**

*Tremor + Rigidity + Bradykinesia (1 mark for each)*

**c. What is the pathological basis of Parkinson's disease? [2 marks]**

*Progressive degeneration of dopaminergic neurons in the substantia nigra (2 marks)  
(specifically the pars compacta leading to dopamine deficiency in the basal ganglia and subsequent motor symptoms)*

**d. Apart from nausea and GI upset, list 2 common side effects of treatment with L-DOPA [2 marks]**

*Any 2 of:*

- On-Off Phenomenon
- End-of-Dose Dyskinesia
- CVS Effects / Arrhythmia / Palpitations / Postural hypotension / Syncope
- Hallucinations

**e. What drug should be prescribed with L-DOPA to reduce these? [1 mark]**

*Peripheral DOPA decarboxylase inhibitor / Carbidopa*

**f. Name 2 other drugs used to treat Parkinsonism [2 marks]**

*Any 2 of: (class or example gains a mark)*

- Dopamine Receptor Agonists e.g. Ropinirole
- MAO-B Inhibitor e.g. Selegiline
- Anticholinergics e.g. Amantadine
- Catechol-O-Methyltransferase (COMT) Inhibitor e.g. Entacapone

**g. If this patient was found to have a vertical gaze palsy alongside Parkinsonism, what diagnosis would you suspect? [1 mark]**

*Progressive supranuclear palsy*

[14 marks]



## QUESTION 7

Tracey is a 30 year old lady who has recently been diagnosed with systemic lupus erythematosus (SLE).

a. Name 4 signs or symptoms that she may have presented with [4 marks]

*Any 4 of:*

- Fatigue
- Weight loss
- Arthralgia / joint pain
- Non-erosive arthritis
- Myalgia / muscle pain
- Fever
- (Photosensitive) malar rash
- Lymphadenopathy
- Splenomegaly
- Shortness of breath
- Pleuritic chest pain
- Mouth ulcers
- Hair loss
- Raynaud's phenomenon
- Oedema (due to nephritis)

b. Name 2 antibodies, that are highly specific to SLE, that Tracey may have tested positive for [2 marks]

*Anti-double stranded DNA and Anti-Sm (1 mark for each)*

*(Anti-nuclear antibody is the most sensitive test, but not as specific and results in many false-positive results)*

c. Define the terms 'sensitivity' and 'specificity' [2 marks]

*The sensitivity of a test is the proportion of people who test positive among all those who actually have the disease (1 mark)*

*The specificity of a test is the proportion of people who test negative among all those who actually do not have that disease (1 mark)*

d. Which disease-modifying anti-rheumatic drug (DMARD) tends to be offered first line in SLE? [1 mark]

*Hydroxychloroquine*

e. Name 2 common complications associated with SLE [2 marks]

*Any 2 of:*

- Coronary artery disease
- Hypertension
- Anaemia
- Pericarditis
- Pleuritis
- Pulmonary fibrosis / interstitial lung disease
- Lupus nephritis
- Psychosis / seizures / neuropsychiatric SLE

Tracey mentions in her consultation that she and her husband have been trying to start a family for 2 years, however she has unfortunately had a number of miscarriages.

f. What syndrome should she be tested for? [1 mark]

*Antiphospholipid syndrome*

[12 marks]

## QUESTION 8

A 68 year old man is admitted to AMU with left sided pleuritic chest pain with crepitations in the left base. You suspect he has a diagnosis of pneumonia. He tells you that 3 months beforehand he was diagnosed as having a carcinoma of the lung and has been receiving chemotherapy.

- a. Name the 3 histological types of non-small cell lung cancer [3 marks]  
*Large cell lung cancer, adenocarcinoma, squamous cell carcinoma (1 mark for each)*
- b. List 4 common presenting symptoms of lung carcinoma [4 marks]  
*Any 4 of:*
- Cough
  - Weight loss
  - Night sweats
  - Recurrent pneumonia
  - Haemoptysis
  - (Pleuritic) chest pain
  - Dyspnoea / shortness of breath
  - Lymphadenopathy
- c. Which antibiotics are generally considered for patients with no allergies with a CURB score of 1? [2 marks]  
*Oral (1 mark)*  
*Amoxicillin / doxycycline (1 needed for 1 mark)*
- d. Which pathogen is the most common cause of community acquired pneumonia and what would be seen on gram staining? [2 marks]  
*Streptococcus pneumoniae (1 mark)*  
*Would see blue / purple staining (1 mark, because it is gram positive)*

[11 marks]

## QUESTION 9

A 66 year old lady underwent an elective total hip replacement for osteoarthritis of the right hip. The operative procedure was uneventful. She has increasing pain and swelling in her left calf 3 days following surgery. You suspect a deep vein thrombosis.

a. Name the 2 most significant risk factors in this case [2 marks]

Total hip replacement (1 mark)

Immobility post-operatively (1 mark)

b. What are the 3 factors which influence venous thrombosis, known as Virchow's triad? [3 marks]

Hypercoagulability (1 mark)

Blood stasis (1 mark)

Endothelial damage / vessel wall injury (1 mark)

c. Name 2 prophylactic measures that are recommended to prevent DVT formation after total hip replacement [2 marks]

Any 2 of: compression stockings / prophylactic LMWH / early mobilisation

d. Name 2 symptoms that might indicate that this patient has subsequently developed a PE? [2 marks]

Any 2 of:

- (Pleuritic) chest pain / chest tightness

- SOB

- Haemoptysis

- Cough

- Dizziness/ syncope / blackout / loss of consciousness

- Palpitations

e. How long would this patient require anticoagulation, if she were to develop a PE? [1 mark]

3 months (1 mark, this is provoked)

[10 marks]

## QUESTION 10

You are asked to review Sophie who is vomiting fresh blood. Her abnormal observations are a pulse of 122 bpm and BP 84/48mmHg.

- a. Which scoring system can be used to stratify with upper GI bleed, to assess if they can be managed as outpatients? [1 mark]

Glasgow Blatchford

As the FY1, you take a brief handover from the nurse looking after Sophie and ask for bloods to be taken for cross-match, FBC, U&Es and clotting studies.

- b. Suggest 3 steps you would take in your initial management of this patient in the first 15 minutes after arrival on the ward [3 marks]

Any 3 of:

- Call the on-call surgeons / endoscopist / your senior
- Protect the airway
- High flow oxygen through trauma mask / non-rebreather mask
- Large bore IV access
- Urinary catheter
- Fluid resuscitation
- O negative blood
- ABG / VBG
- CXR
- ECG
- Make NBM

Sophie is diagnosed with a gastric ulcer caused by H.pylori infection

- c. List 3 other common causes of severe upper GI blood loss [3 marks]

Any 3 of:

- Variceal haemorrhage / portal hypertension
- Mallory Weiss Tear
- Malignancy
- Oesophagitis
- Gastritis

- d. Name the vessel which is most likely to be causing the bleeding [1 mark]

Gastroduodenal artery

- e. What would be an appropriate treatment regime for the H.pylori infection? [3 marks]

PPI + Amoxicillin + Clarithromycin (1 mark for each, amoxicillin can be substituted for metronidazole in penicillin allergy)

- f. What is the investigation of choice for assessing whether the infection has been eradicated in 8 weeks time? [1 mark]

Urea breath test

[12 marks]

## QUESTION 11

A 21 year old asthmatic man arrives in A&E with an acute exacerbation. He has become increasingly short of breath.

- a. Give 4 clinical factors you should establish in the examination of the patient in order to assess the severity of her attack. [4 marks]

*Any 4 of:*

- Mental Status / Signs of Confusion
- Signs of Exhaustion
- HR
- RR
- Presence of Breath Sounds
- Presence or lack of Cyanosis
- Use of Accessory Muscles
- Respiratory Effort
- Pulsus Paradoxus
- Ability to Speak in Full Sentences

- b. His peak flow measures 55% of his normal range. How would you classify this asthma attack? [1 mark]

*Moderate acute asthma*

- c. What does hypercapnia indicate in the context of an asthma attack? [1 mark]

*Near fatal / life threatening attack*

- d. Name 3 drugs, along with their doses, that should be given immediately? [3 marks]

*Oxygen 15L/minute (non-rebreather mask) (1 mark)*

*5mg Salbutamol nebuliser (oxygen driven, can be given back to back) (1 mark)*

*Steroid therapy: 40mg oral Prednisolone / 20mg IV Hydrocortisone (1 mark)*

*NB: we may be expected to know doses for emergency scenarios*

[9 marks]

## QUESTION 12

Amy, a 13 year old girl, is referred to CAMHs due to weight loss. She is a very active teenager, playing netball and hockey. She also regularly goes hiking with her family. She is very happy with her current weight, and states that she has not been trying to lose any - it must just be all the exercise.

On examination you find that at 5'5" Amy weighs 41.5kg and is hypotensive. You also learn that Amy had a few periods but recently they have stopped again. This has concerned her mother, who brought her to the appointment, but not Amy who thinks it's great.

You offer some talking therapy to Amy but she is adamant she doesn't need it and her mother is resistant to force her to do anything she isn't keen on.

- a. What is the most likely diagnosis? [1 mark]

Anorexia nervosa

- b. What abnormality would you expect to find in her blood tests? [1 mark]

Hypokalaemia

You get Amy to agree to an appointment with you in 3 months time for a check-in. When you see her again her weight has dropped to 37kg. She is still in excellent spirits and continuing to play sports. She continues to deny the need for any treatment.

- c. Given her age, what guidance would you consider using, and could you force treatment? [2 marks]

Gillick competence (as she is under 16) (1 mark)

Parent can consent on her behalf / refusal by Amy and parents could be overruled by the Court of Protection if there is a risk of death (1 point for 1 mark)

- d. Given her risks, you arrange an emergency admission for refeeding. Give 2 risk factors for refeeding syndrome? [2 marks]

Any 2 of:

BMI less than 16 kg/m<sup>2</sup>

Excessive exercise

Rapid weight loss

Compensatory behaviours (laxative misuse, vomiting)

Dehydration

Use of diet pills

Water loading

Fasting for 5+ days

- e. Give a brief overview of refeeding syndrome [4 marks]

Caused by the sudden introduction of glucose after prolonged starvation. (1 mark)

When blood glucose is low, cell metabolism slows down; when glucose is introduced, it causes insulin to be released, which pushes glucose into cells. (1 mark)

This causes a demand for phosphate, potassium, and magnesium (1 mark)

This leads to hypophosphatemia, hypokalaemia, and hypomagnesemia (1 mark)

[10 marks]

### QUESTION 13

While working on a medical ward, you are asked to assess Frida, a 73 year old lady, who was admitted to hospital with sudden onset weakness in the right arm and leg. On examination you confirm the weakness and also find that the muscle tone in the right arm and leg is increased, Sensation is reduced on the right side. She appears to understand speech but produces incomprehensible sounds.

- a. What changes do you expect in the tendon reflexes on the right leg? [1 mark]  
Hyperreflexia / brisk
- b. What do you expect the right plantar reflex to be? [1 mark]  
Upwards facing / Babinski's sign
- c. Which cranial nerve is the most likely one to be affected? [1 mark]  
Facial / CN VII
- d. What visual field abnormality might you expect to find on examination? [1 mark]  
Right homonymous hemianopia
- e. What type of aphasia results from lesions in Broca's area, and which type is associated with lesions in Wernicke's area? [2 marks]  
A lesion in Wernicke's area typically results in receptive aphasia (impairing comprehension of language) (1 mark)  
Lesion in Broca's area often leads to expressive aphasia (affecting the ability to produce speech) (1 mark)
- f. What type of aphasia is the patient exhibiting? [1 mark]  
Expressive / Broca's

[7 marks]

## QUESTION 14

Betty, a 78 year old woman arrives at A&E having been found on the floor at home. She complains of pain in the right leg and is unable to weight bear. You suspect a fractured neck of femur. Prior to this injury, she was independent with activities of daily living and walked her dog daily.

- a. What 2 features would you look for on inspection of the legs to confirm your diagnosis? [2 marks]

*Any 2 of: affected side shortened / externally rotated / abducted*

- b. The x-ray demonstrates a displaced intra-articular fracture of the right hip. What is the anatomical significance of a fracture at this site? [2 marks]

*Site of intracapsular fracture means that blood supply to femoral head is potentially compromised (1 mark)  
and there is a risk of avascular necrosis to the femoral head (1 mark)*

- c. What classification system is used for intra-articular fractures? [1 mark]

*Garden*

- d. What surgical procedure would be most appropriate in this case? [1 mark]

*Total hip replacement  
(because she was able to walk independently before this, hemiarthroplasty if poor mobility before / significantly co-morbid)*

You are concerned about a diagnosis of osteoporosis so arrange for a DEXA scan.

- e. How should a T score of -2.3 be interpreted? [1 mark]

*Osteopenia*

Betty is ultimately diagnosed with osteoporosis and offered bisphosphonates.

- f. What is the mechanism of action of bisphosphonates? [2 marks]

*Reduce the activity of osteoclasts / induce osteoclast apoptosis (1 mark)  
Inhibiting bone resorption (1 mark)*

- g. Name 2 important side effects of bisphosphonates that patients should be counselled on [2 marks]

*Any 2 of:*

- Reflux / oesophageal erosions*
- Atypical fractures*
- Osteonecrosis of the jaw*
- Osteonecrosis of the external auditory canal*

[11 marks]



## QUESTION 15

A 74 year old man presents with a 2 month history of rectal bleeding and a change in bowel habits. He has no past medical or surgical history. Examination reveals a hard mass 6cm from the anal verge.

- a. What is the most likely diagnosis? [1 mark]  
Rectal Cancer/ Rectal Carcinoma
- b. What is the most common histological subtype of this diagnosis? [1 mark]  
Adenocarcinoma
- c. Give 2 other likely causes of rectal bleeding in a 70 year old man [2 marks]  
Anal fissure  
Haemorrhoids  
Diverticular disease  
Infective colitis eg Campylobacter, Salmonella, Shigella
- d. What urgent investigation is required to confirm your likely diagnosis? [1 mark]  
Sigmoidoscopy and biopsy (*both needed for 1 mark*)
- e. Which blood marker can be used to monitor response to treatment in the most likely diagnosis? [1 mark]  
Carcinoembryonic antigen
- f. What is the name of the surgery that may be offered to this patient? [1 mark]  
Anterior resection (*approach for high rectal tumours >5cm from anus*)
- g. If surgery was an option for this patient, he may be left with a stoma. Aside from location, name 2 different ways to differentiate between an ileostomy and a colostomy on clinical examination [2 marks]  
Ileostomy is spouted vs colostomy flushed to skin (*1 mark*)  
Ileostomy has liquid contents vs colostomy contents more solid (*1 mark*)

[9 marks]

## QUESTION 16

A 77 year old lady has been treated for mild heart failure for a number of years. She is admitted to hospital as an emergency one night with a 36 hour history of worsening shortness of breath. On examination you find her coughing up pink frothy sputum, tachycardic and there are fine crackles at both lung bases. No murmurs are audible. You make an initial diagnosis of left ventricular failure.

- a. Name 2 other signs which you may see on examination of this patient [2 marks]

*Any 2 of:*

- Hypertension
- 3rd heart sound
- Raised JVP
- Peripheral oedema

- b. What 2 immediate interventions would you make to improve her breathlessness? [2 marks]

*Sit her up (1 mark)*

*Give 100% O<sub>2</sub> through facemask / 15L oxygen non-rebreather mark (1 mark)*

- c. What medication should be prescribed to more definitively improve her SOB? [2 marks]

*IV (1 mark)*

*Furosemide / Bumetanide / Torasemide (1 mark)*

- d. You arrange a chest X-ray. Name 3 abnormalities that would support your diagnosis? [3 marks]

*Any 3 of:*

- Alveolar edema
- Kerley B lines/ interstitial oedema
- Cardiomegaly
- Dilated prominent upper lobe vessels
- Pleural effusion (bilateral)

- e. She improves and you are now able to hear a pansystolic murmur at the apex. What cardiac abnormality is likely to be responsible for this? [1 mark]

*Mitral regurgitation*

- f. Name 2 lifestyle modifications which heart failure patients should be encouraged to make? [2 marks]

*Any 2 of:*

- Smoking cessation
- Reduce alcohol consumption
- Physical exercise
- Weight loss
- Dietary modifications / Mediterranean diet / decrease salt intake

- g. Name the 2 classes of drugs used first-line for heart failure which help to reduce mortality [2 marks]

*ACEi/ARB + Beta-blockers (1 mark for each)*

- h. Name a medication often used for diabetes which is now encouraged to be prescribed for heart failure to improve outcomes [1 mark]

*Dapagliflozin/Empagliflozin*

[15 marks]

## QUESTION 17

81 year old Harpreet is found collapsed on her bedroom floor by the sheltered housing warden the day after a trip to her bingo. A CT scan of the brain reveals an area of ischaemia in the left parietal cortex, consistent with a recent cerebral infarct. She is badly bruised and has an obvious weakness on the right side of her body. She is confused and her speech sounds slurred.

a. What is the definition of a stroke? [1 mark]

A rapidly developing focal neurological deficit of vascular origin lasting over 24 hours or resulting in death.

b. Suggest 4 risk factors for stroke [4 marks]

Any 4 of:

- Increasing age
- Hypertension
- Atherosclerosis
- AF
- DM
- Smoking
- Previous TIA/stroke
- Hypercholesterolaemia
- Cocaine use
- Male
- Asian descent
- Carotid artery stenosis

c. Given this lady's symptoms, which is the most likely artery to have been affected by this stroke? [1 mark]

Left middle cerebral artery

After a short time on the ward, Harpreet begins pointing at her arms and legs and wincing in pain. You notice her catheter bag contains a very small amount of dark brown / red urine.

d. What diagnosis should you consider, given these symptoms? [1 mark]

Rhabdomyolysis

e. What potentially dangerous electrolyte abnormality should you monitor for? [1 mark]

Hyperkalaemia

f. Aside from U&Es, what is the single most useful blood test that would confirm the likely diagnosis? [1 mark]

Creatine kinase

[9 marks]

## QUESTION 18

Mrs Plum is a 54 year old who presents to her GP with a 6-month history of fatigue. In view of marked pallor you check her full blood count.

This shows:

- Hb 5.4g/dl (Normal range 13.5-18g/dl)
- MCV 112 fl (Normal range 80-95 fl)

a. You suspect B12 deficiency. How would this type of anaemia be classified? [2 marks]

*Megaloblastic (2 marks)*

*Macrocytic anaemia (2 marks)*

b. What other conditions could produce a high MCV? Suggest 2 [2 marks]

*Any 2 of:*

- Folate deficiency
- Hypothyroidism
- Reticulocytosis
- Liver disease
- Myeloproliferative/ myelodysplastic disease
- Chronic alcohol excess

c. Give 3 causes of B12 deficiency [3 marks]

*Any 3 of:*

- Dietary: vegetarianism / veganism
- Pernicious anaemia
- Crohn's
- Coeliac disease
- Gastric / bariatric surgery
- Atrophic gastritis
- H.pylori
- Giardia
- Tapeworm
- Metformin / Anticonvulsants / PPIs / H2 antagonists / HRT / COCP / Colchicine / Antibiotics
- Pregnancy

d. Where exactly is intrinsic factor secreted? [1 mark]

*Parietal cells of stomach*

e. Where, in the gut, is B12 absorbed? [1 mark]

*Terminal ileum*

f. If Mrs Plum was also found to be deficient in folate, how should this be managed, and why? [2 marks]

*B12 replacement before folate replacement, due to risk of precipitating subacute degeneration of the spinal cord*

[11 marks]

## QUESTION 19

Mark and Mel attend their GP as they would like to have a baby, but are struggling to conceive.

**a. What is the definition of infertility? [2 marks]**

the failure to achieve a pregnancy after 12 months or more (1 mark)  
of regular unprotected sexual intercourse (1 mark)

**b. What is the difference between primary and secondary infertility? [2 marks]**

Primary infertility relates to couples who have never conceived (1 mark)  
Secondary infertility relates to couples who have conceived at least once before (with same or different sexual partner) (1 mark)

**c. List 2 modifiable risk factors for infertility in women [2 marks]**

Any 2 of:

- Previous or current STI
- Obesity
- Low body weight
- Smoking
- Stress
- Exposure to occupational or environmental hazards
- NSAID use
- Chemotherapy
- Antidepressants
- Antipsychotics
- Marijuana or cocaine use

After trying for a baby with no success for 12 months, Mark and Mel are referred for specialist input and ultimately begin IVF treatment. Shortly after, Mel presents with severe bloating, nausea and vomiting, and shortness of breath.

**d. What is the most likely diagnosis? [1 mark]**

*Ovarian Hyperstimulation Syndrome*

**e. What is the pathological basis behind the shortness of breath in this condition? [3 marks]**

Hyperstimulated ovaries release vasoactive mediators (1 mark)  
Increased capillary permeability causes fluid shift from intravascular compartment to third space compartments (1 mark)  
SOB due to pleural effusion (1 mark)

**[10 marks]**

## QUESTION 20

A 26 year old female presents to her GP with a 3 day history of “terrible dizziness” and ringing sensation in her ears. She is usually fit and well and takes the combined contraceptive pill, but no other regular medication. She works in a nursery. On examination she appears ‘bunged up’ and has coryzal symptoms. Otoscopy is normal.

- a. **How can labyrinthitis and vestibular neuronitis be differentiated clinically? [1 mark]**  
Tinnitus and hearing loss are not features of vestibular neuronitis, but are seen in labyrinthitis
- b. **What test can be performed to confirm a peripheral cause of vertigo? [1 mark]**  
Head impulse test / HINTS
- c. **Given the most likely diagnosis, what direction nystagmus would you expect to elicit in your examination? [1 mark]**  
Horizontal
- d. **What are the 3 main structures in the inner ear? [3 marks]**  
Semicircular canals, Vestibule, Cochlea (1 mark for each)

The patient mentions that her mother has Ménière’s disease.

- e. **What is the pathological basis of this condition? [2 marks]**  
Excessive buildup of endolymph in the labyrinth of the inner ear (1 mark)  
Increasing the pressure and disrupting the sensory signals (1 mark)
- f. **What type of hearing loss is associated with Ménière’s disease? [1 mark]**  
Sensorineural
- g. **What medication can be used as prophylaxis in Ménière’s disease? [1 mark]**  
Betahistine

[10 marks]

[END OF PAPER]

## Google Form - Scores and Feedback

- Please record your score - this will enable us to assess how easy or difficult the paper was. Note - All data collected is completely anonymous
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**We hope you found this paper beneficial for your learning. Good luck for your exams!**

**Acknowledgements once again to:**

- **Emily Finbow**
- **Vansh Asher**
- **Dr Olivia Stevens - FY1**