

FExNet 2026

Collated SAQs: Renal and Respiratory Emergencies

QUESTION BOOKLET

22 short-answer questions covering the ACEM Fellowship renal and respiratory curriculum — acute kidney injury (KDIGO staging, indications for dialysis), hyperkalaemia, glomerulonephritis, rhabdomyolysis, haemodialysis access complications, contrast-induced nephropathy, nephrotic syndrome, hyponatraemia; respiratory failure (life-threatening asthma, COPD with non-invasive ventilation), spontaneous pneumothorax, massive pulmonary embolism, pleural effusion (Lights criteria), massive haemoptysis, pulmonary-renal syndrome (GPA / Wegeners), pneumonia in the immunocompromised host, ARDS, acute cardiogenic pulmonary oedema, foreign body airway obstruction, and pulmonary tuberculosis. Stems are written in detailed prose with abbreviations spelt out in full on first use; sub-questions labelled a) b) c) state the required number of responses.

This booklet contains embedded radiographs and ECG.

22 questions • 229 marks

ACEM-aligned format. Sub-questions labelled a) b) c). Mark allocations indicative; references cited in the Answer Booklet. Question and answer indexes are clickable.

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Question 1 | Acute Kidney Injury and Indications for Dialysis (11 marks)

A 77-year-old man presents to your emergency department 7 days after discharge following a total colectomy for obstructing bowel cancer. He describes non-specific symptoms of malaise, lethargy, and nausea. Bloods show sodium 127 mmol/L, potassium 6.1 mmol/L, urea 37.1 mmol/L, creatinine 700 μ mol/L (baseline pre-operatively was 80 μ mol/L), estimated glomerular filtration rate 6 mL/min/1.73 m², bicarbonate 12 mmol/L, chloride 95 mmol/L.

- a)** List 4 features of severe acute kidney injury in this patient AND state the KDIGO stage. (4 marks)

- b)** List 4 indications for emergent haemodialysis (AEIOU mnemonic). (4 marks)

- c)** List 3 likely contributors to AKI in this post-surgical patient. (3 marks)

Question 2 | Severe Hyperkalaemia in End-Stage Renal Disease (13 marks)

A 60-year-old Indigenous man with end-stage renal disease (type 2 diabetic nephropathy) presents to your emergency department with lethargy and general malaise. He has missed his last three haemodialysis sessions. On arrival: Glasgow Coma Score 15, heart rate 80 beats per minute, blood pressure 80/50 millimetres of mercury, respiratory rate 30 breaths per minute, peripheral oxygen saturation 90 percent on room air. A 12-lead electrocardiogram is shown.

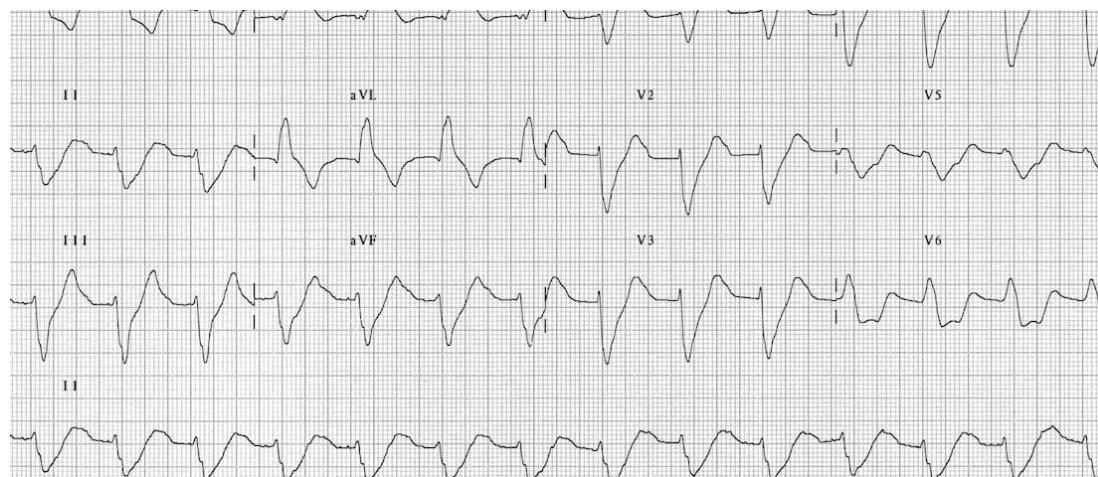


IMAGE — 12-lead ECG

a) Describe 4 abnormalities on the ECG AND state the diagnosis. (4 marks)

b) Complete the table — 4 medications with mechanism, dose, and time to onset for management of acute hyperkalaemia. (6 marks)

c) List 3 strategies for culturally safe care of this Indigenous patient (per ACEM statement). (3 marks)

Question 3 | Acute Glomerulonephritis in a Child (10 marks)

A 6-year-old boy is brought to your rural emergency department by his parents. He has been generally unwell with a febrile illness 2 weeks ago and now has dark, reddish-brown coloured urine. He has no previous medical history. He appears tired but otherwise well, with healing skin sores on his leg and mild periorbital oedema. Vital signs: heart rate 100, blood pressure 135/85 millimetres of mercury (elevated for age), temperature 37.2 degrees Celsius.

a) List 4 features supporting acute post-streptococcal glomerulonephritis. (4 marks)

b) List 3 differential diagnoses for upper tract haematuria in a child. (3 marks)

c) State 3 investigations to confirm the diagnosis. (3 marks)

Question 4 | Life-Threatening Paediatric Asthma (11 marks)

A 4-year-old girl is brought to your emergency department by ambulance with an acute exacerbation of asthma. Her parents report she is normally well-controlled on inhaled corticosteroids but has had a viral illness for the past 2 days. On arrival, she is exhausted, lethargic, with cyanosis around her lips. Her vital signs: heart rate 180 beats per minute, respiratory rate 50 breaths per minute, peripheral oxygen saturation 88 percent on 6 litres oxygen via Hudson mask, weight 18 kilograms. Chest auscultation reveals a silent chest.

a) List 6 features supporting life-threatening (rather than severe) asthma. (6 marks)

b) List 5 treatments for this child including drug, dose, route. (5 marks)

Question 5 | COPD Exacerbation with Non-Invasive Ventilation (12 marks)

A 75-year-old man with severe chronic obstructive pulmonary disease (forced expiratory volume in 1 second 35 percent of predicted) presents to your emergency department with severe shortness of breath. You have assessed him to have an infective exacerbation of COPD. He is exhausted and you are considering non-invasive ventilation (NIV). Arterial blood gas on FiO_2 0.5 after 1 hour of bi-level NIV (IPAP 14 cm H_2O , EPAP 5 cm H_2O): pH 7.26 (7.35-7.45); pCO_2 86 mmHg (35-45); pO_2 52 mmHg (60-100); bicarbonate 38 mmol/L; base excess +7.1. This result is essentially unchanged from arrival.

a) Interpret the arterial blood gas, including appropriate compensation. (4 marks)

b) List 4 contraindications to NIV in COPD. (4 marks)

c) State 4 changes to NIV parameters given the ABG result. (4 marks)

Question 6 | Pleural Effusion — Light's Criteria (11 marks)

A 75-year-old man with a known history of lung cancer presents to your emergency department by ambulance with worsening dyspnoea for 2 days. His vital signs: heart rate 120 beats per minute (sinus rhythm), blood pressure 95/55 millimetres of mercury, peripheral oxygen saturation 88 percent on 4 litres oxygen via nasal prongs, temperature 37.5 degrees Celsius, Glasgow Coma Score 13. A portable chest radiograph is shown.

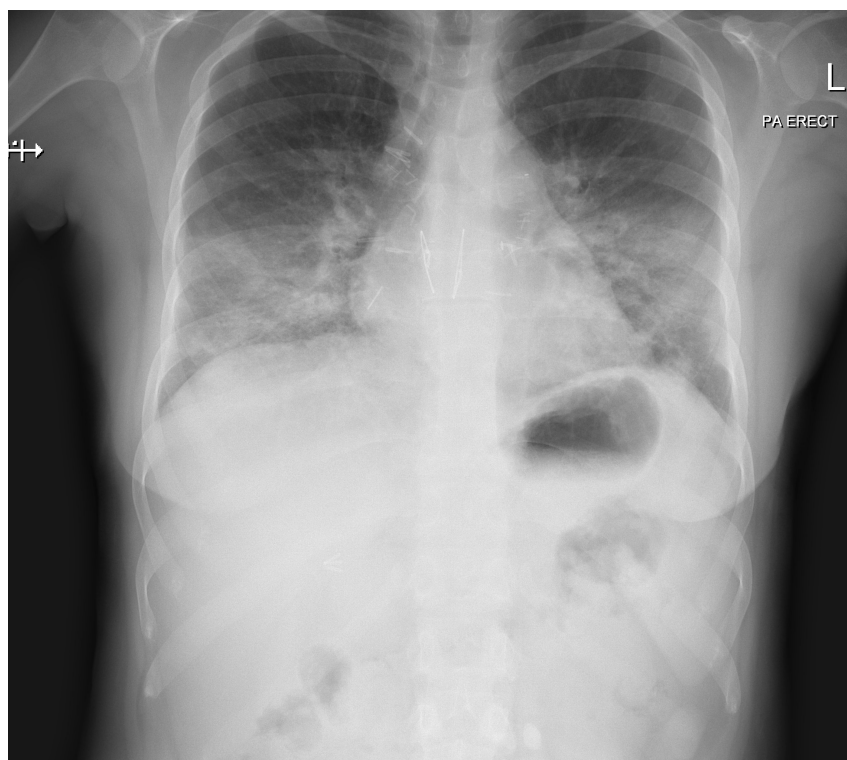


IMAGE — Portable PA chest radiograph

a) Describe 3 positive AND 2 relevant negative findings on the chest radiograph. (5 marks)

b) List 4 parameters of Light's criteria to distinguish transudate from exudate. (4 marks)

c) State 2 immediate management priorities. (2 marks)

Question 7 | Massive Haemoptysis (11 marks)

A 44-year-old woman presents to your emergency department coughing up large volumes of bright red blood (estimated 400 mL in the last hour). She has a history of bronchiectasis (non-cystic fibrosis). On arrival, she is haemodynamically unstable: heart rate 130 beats per minute, blood pressure 90/55 millimetres of mercury, respiratory rate 28, peripheral oxygen saturation 90 percent on 15 litres oxygen via non-rebreather mask. A chest radiograph shows diffuse bilateral pulmonary infiltrates.



IMAGE — PA chest radiograph showing diffuse pulmonary infiltrates

a) List 4 immediate management priorities. (4 marks)

b) List 4 definitive management options. (4 marks)

c) List 3 differential diagnoses for the CXR appearance (diffuse infiltrates). (3 marks)

Question 8 | Pulmonary-Renal Syndrome (GPA / Wegener's) (11 marks)

A 43-year-old man with a 6-month history of chronic productive cough, wheeze, sinus pain, and persistent nasal crusting presents to your emergency department with respiratory distress and haemoptysis. He also reports recently noticing dark urine. His vital signs: heart rate 110, blood pressure 145/95 millimetres of mercury, respiratory rate 26, peripheral oxygen saturation 92 percent on 5 litres oxygen, temperature 37.8 degrees Celsius. Bloods: creatinine 280 $\mu\text{mol/L}$ (baseline normal), haemoglobin 95, white cell count 14, C-reactive protein 180. Urinalysis: blood +++, protein ++ with red cell casts.

- a)** List 4 systemic manifestations of granulomatosis with polyangiitis (GPA, formerly Wegener's). (4 marks)

- b)** List 4 investigations to confirm the diagnosis. (4 marks)

- c)** State 3 immediate management priorities. (3 marks)

Question 9 | Pneumonia in Lung Transplant Recipient (11 marks)

A 28-year-old female patient presents to your regional emergency department with fever and cough. She is 6 months post-bilateral lung transplant for cystic fibrosis and is on tacrolimus, mycophenolate, and prednisolone. Vital signs: heart rate 105, blood pressure 120/75 millimetres of mercury, respiratory rate 24, peripheral oxygen saturation 91 percent on room air, temperature 38.0 degrees Celsius. Her chest radiograph is shown.

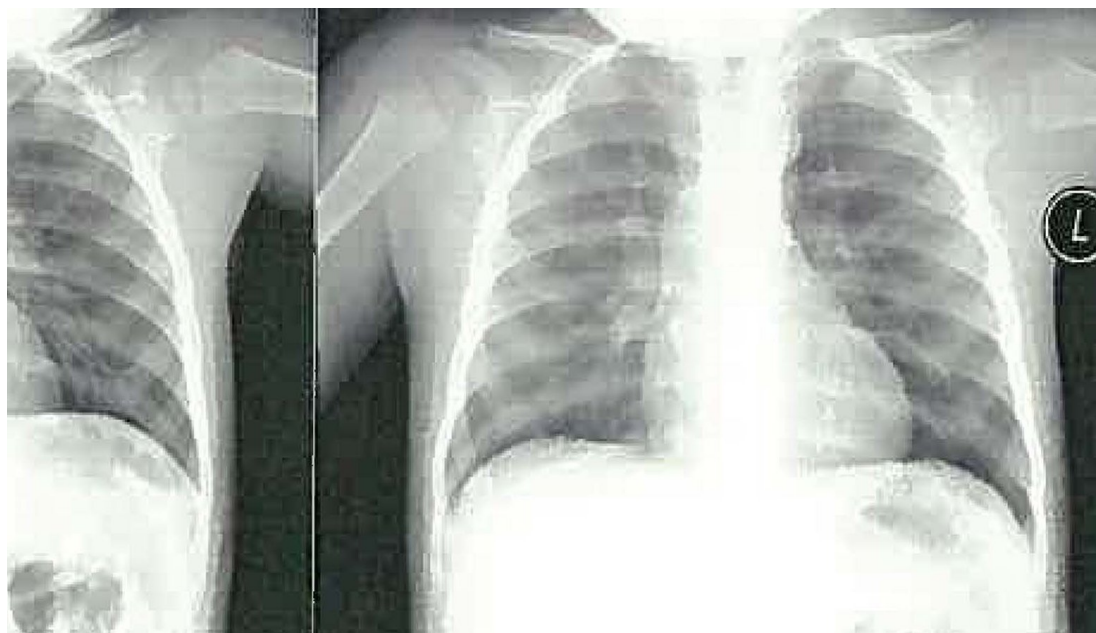


IMAGE — PA chest radiograph

a) Describe 3 abnormalities on the CXR. (3 marks)

b) List 5 differential diagnoses to consider. (5 marks)

c) State 3 immediate management priorities. (3 marks)

Question 10 | Primary Spontaneous Pneumothorax (10 marks)

A 22-year-old tall thin male presents to your emergency department with sudden onset of right-sided pleuritic chest pain and mild dyspnoea for the past 6 hours. He has no significant past medical history and does not smoke. On examination, his vital signs are: heart rate 95 beats per minute, blood pressure 130/80 millimetres of mercury, respiratory rate 20 breaths per minute, peripheral oxygen saturation 96 percent on room air. Right chest examination reveals reduced breath sounds and hyper-resonance. Chest radiograph shows a 30 percent (4 cm rim) right-sided pneumothorax with no tension features.

a) List 4 features distinguishing primary from secondary spontaneous pneumothorax. (4 marks)

b) State 4 management options with criteria. (4 marks)

c) State 2 important discharge instructions. (2 marks)

Question 11 | Massive Pulmonary Embolism (11 marks)

A 59-year-old wheel-chair-bound paraplegic (spinal cord injury 10 years ago) presents to your emergency department with chest pain and shortness of breath. He has a previous history of a clipped Circle of Willis aneurysm 6 years ago. He denies headache. CT pulmonary angiogram confirms a massive pulmonary embolism with saddle clot. His vital signs: Glasgow Coma Score 15, heart rate 114 beats per minute, blood pressure 87/39 millimetres of mercury, respiratory rate 24, peripheral oxygen saturation 97 percent on 15 litres oxygen via non-rebreather mask.

a) List 5 sequential management steps in the first 30 minutes. (5 marks)

b) List 3 absolute contraindications to systemic thrombolysis. (3 marks)

c) Describe 3 ethical and medico-legal issues in this case. (3 marks)

Question 12 | Paediatric Foreign Body Airway Obstruction (11 marks)

A 12-month-old boy (weight 10 kg) has been unwell with cough for 1 week. Today he was eating spaghetti when he seemed to gag and have difficulty breathing over 1 minute. His mother reports he is now clingy with a 'strange cough'. Vital signs: heart rate 120, blood pressure 90/50 millimetres of mercury, peripheral oxygen saturation 90 percent on room air, respiratory rate 24, temperature 37.5 degrees Celsius. On examination, he is alert in mother's arms with multiple petechiae around his eyes, intermittent cough, mild intercostal recession and tracheal tug, but no stridor.

a) Explain 3 examination findings. (3 marks)

b) List 3 expected CXR findings (inspiratory and expiratory views). (3 marks)

c) State 5 immediate management steps for infant with complete airway obstruction and inability to ventilate. (5 marks)

Question 13 | Acute Cardiogenic Pulmonary Oedema (10 marks)

A 75-year-old man with a history of ischaemic cardiomyopathy and previous myocardial infarction presents to your emergency department by ambulance with acute severe shortness of breath that woke him from sleep 2 hours ago. He has not been compliant with his medications (furosemide, enalapril, carvedilol, frusemide) and ate a large salty meal 24 hours ago. On arrival, he is upright, anxious, and unable to speak in full sentences. Vital signs: heart rate 130, blood pressure 195/115 millimetres of mercury, respiratory rate 36, peripheral oxygen saturation 84 percent on 15 litres oxygen via non-rebreather mask, temperature 36.5 degrees Celsius. Bilateral fine crepitations to mid-zones; raised JVP.

a) State 4 immediate management priorities (drug, dose, end-point). (4 marks)

b) List 3 indications for intubation in acute pulmonary oedema. (3 marks)

c) List 3 contraindications / cautions to NIV in this setting. (3 marks)

Question 14 | Rhabdomyolysis with Acute Kidney Injury (9 marks)

A 55-year-old male is brought to your emergency department after being found at home on the floor by his family. He had been there for approximately 18 hours after a fall. He has a history of polypharmacy including a statin (rosuvastatin 40 mg). On arrival he is alert but confused. Bedside investigations: heart rate 115, blood pressure 105/65 millimetres of mercury, urinalysis blood +++ (no red cells on microscopy — myoglobin), creatinine 320 $\mu\text{mol/L}$ (baseline 90), potassium 6.5, creatine kinase 88,000 U/L.

a) List 3 management priorities for rhabdomyolysis-associated AKI. (3 marks)

b) List 4 causes of rhabdomyolysis. (4 marks)

c) List 2 indications for renal replacement therapy. (2 marks)

Question 15 | Acute Severe Adult Asthma — Stepwise Therapy (11 marks)

A 20-year-old known asthmatic has presented to your tertiary emergency department with an acute exacerbation of asthma. She was initially seen by your registrar and treated with supplemental oxygen, salbutamol (5 mg × 5) and ipratropium (500 mcg × 3) nebulisation and IV hydrocortisone 200 mg. She has failed to improve after 60 minutes of treatment. Her vital signs: heart rate 130, blood pressure 125/80 millimetres of mercury, respiratory rate 40, peripheral oxygen saturation 90 percent on 15 litres oxygen via non-rebreather mask. She is tiring.

a) List 4 further pharmacological treatment options (with drug, dose). (4 marks)

b) List 4 steps to optimise before proceeding with rapid sequence intubation. (4 marks)

c) State 3 immediate management measures if BP drops to 80/40 immediately post-intubation. (3 marks)

Question 16 | Large Pleural Effusion with Mediastinal Shift (9 marks)

A 60-year-old female with a history of metastatic ovarian cancer presents to your emergency department with acutely worsening dyspnoea over the past 24 hours. Her vital signs: heart rate 125, blood pressure 100/65 millimetres of mercury, respiratory rate 32, peripheral oxygen saturation 87 percent on 8 litres oxygen via Hudson mask, temperature 37.5 degrees Celsius. The chest radiograph is shown.

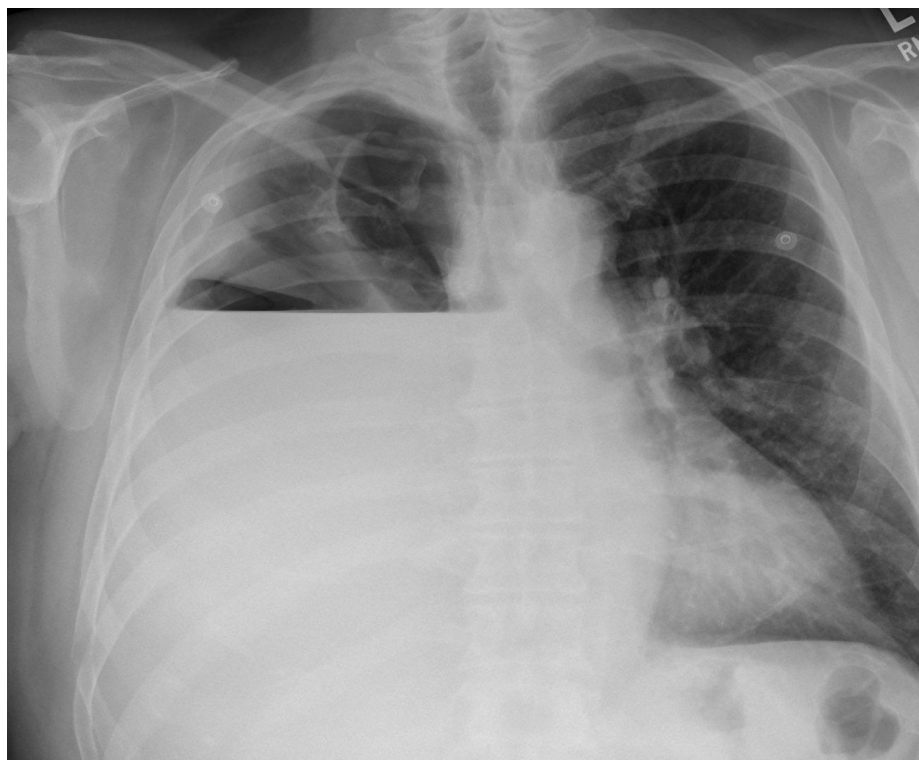


IMAGE — PA chest radiograph

a) Describe 3 key findings on this radiograph. (3 marks)

b) List 3 management priorities for this symptomatic large effusion. (3 marks)

c) List 3 complications of pleural fluid drainage. (3 marks)

Question 17 | Haemodialysis Access Complications (10 marks)

A 65-year-old man on haemodialysis (left brachiocephalic arteriovenous fistula) presents to your emergency department with sudden onset of swelling and pain in his left arm. He reports fever for the past 24 hours. His vital signs: heart rate 115, blood pressure 105/70 millimetres of mercury, respiratory rate 22, peripheral oxygen saturation 96 percent on room air, temperature 38.5 degrees Celsius. The left arm is swollen, erythematous, and tender from elbow to mid-upper-arm. The fistula thrill is diminished compared with previous dialysis session.

a) List 4 important AV fistula complications to consider. (4 marks)

b) State 4 management priorities. (4 marks)

c) List 2 most common organisms in dialysis-access infections. (2 marks)

Question 18 | Contrast-Induced Nephropathy (9 marks)

A 70-year-old male with diabetes mellitus and chronic kidney disease (baseline creatinine 180 $\mu\text{mol/L}$, eGFR 38 mL/min) is referred from the emergency department for computed tomography pulmonary angiogram (CTPA) with intravenous iodinated contrast to investigate suspected pulmonary embolism. The radiology registrar contacts you for clarification regarding contrast risk.

a) Define contrast-induced nephropathy AND state 3 risk factors. (3 marks)

b) State 4 strategies to prevent CIN. (4 marks)

c) State the RANZCR recommendation for metformin AND iodinated contrast. (2 marks)

Question 19 | Nephrotic Syndrome (9 marks)

A 35-year-old male presents to your emergency department with 2 weeks of progressive bilateral lower limb swelling and frothy urine. He also describes mild shortness of breath on exertion. His vital signs are: heart rate 90, blood pressure 145/85 millimetres of mercury, respiratory rate 18, peripheral oxygen saturation 96 percent on room air, temperature 37.0 degrees Celsius. Examination shows marked peripheral oedema (pitting to mid-shin) and periorbital puffiness. Urinalysis: protein +++, no blood. Bloods: albumin 18 g/L, cholesterol 9, urine protein:creatinine ratio 8 g/g.

a) Define nephrotic syndrome (3 components). (3 marks)

b) List 3 causes of nephrotic syndrome. (3 marks)

c) List 3 acute complications of nephrotic syndrome to consider in the ED. (3 marks)

Question 20 | Acute Respiratory Distress Syndrome (10 marks)

A 65-year-old man with previously well health is admitted with severe community-acquired pneumonia. He has been intubated for respiratory failure. After 24 hours, his ventilatory parameters reveal: tidal volume 600 mL on volume control; FiO_2 0.8 with PEEP 5; peak inspiratory pressure 38 cm H_2O ; plateau pressure 32 cm H_2O . Arterial blood gas: pH 7.32, pCO_2 48, pO_2 65 ($\text{PaO}_2/\text{FiO}_2$ ratio 81). Bilateral diffuse alveolar infiltrates on portable chest radiograph.

a) Define ARDS using the Berlin definition (4 components) AND state the severity. (4 marks)

b) State 4 ventilator strategy adjustments per ARDSnet protocol. (4 marks)

c) List 2 measures to reduce ventilator-induced lung injury. (2 marks)

Question 21 | Pulmonary Tuberculosis (10 marks)

A 50-year-old man originally from a tuberculosis-endemic country (Philippines; in Australia for 3 years) presents to your emergency department with 3 months of progressive productive cough, haemoptysis, fevers, night sweats, and 10-kilogram weight loss. He has no other significant past medical history. Vital signs: heart rate 95, blood pressure 125/80 millimetres of mercury, respiratory rate 22, peripheral oxygen saturation 95 percent on room air, temperature 37.4 degrees Celsius. Chest examination: reduced breath sounds and crepitations in right upper zone.

a) State 4 infection control / public health actions. (4 marks)

b) List 3 first-line investigations. (3 marks)

c) State the standard 4-drug regimen for active TB. (3 marks)

Question 22 | Acute Severe Hyponatraemia and Volume Status (9 marks)

A 65-year-old female presents to your emergency department with confusion and a tonic-clonic seizure that has resolved. She has a 6-month history of progressive dyspnoea and was diagnosed with small cell lung cancer 2 weeks ago. Bloods: sodium 110 mmol/L, potassium 3.8, urea 4, creatinine 75, osmolality 235 mOsm/kg. Urine osmolality 600 mOsm/kg, urine sodium 60. Vital signs: heart rate 90, blood pressure 130/80 millimetres of mercury, peripheral oxygen saturation 95 percent on room air, temperature 36.8 degrees Celsius.

a) Classify the hyponatraemia AND identify the likely cause. (4 marks)

b) State 3 immediate management priorities (with drug, dose). (3 marks)

c) List 2 risk factors for osmotic demyelination syndrome. (2 marks)
