

Case 6

Marking scheme	Indicative content	Learning outcome
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Question 1c [2]

Method (1)	Spirometry / peak flow meter (1)	Describe and measure the static lung volumes and capacities using a spirometer
Description (1)	Sitting <u>upright</u> , blow (into machine and) measure volume of air (breathed out/in) in <u>one</u> (forced) <u>breath</u> (1)	

Question 1d [2]

Valid factor (1)	Age (1) Gender/Sex (1) Weight (1) Height (1) Ethnicity (1)	Describe and measure the static lung volumes and capacities using a spirometer
Another valid factor (1)	Posture (1) Physical activity (1) Altitude (1) Disease(s) which weakens diaphragm muscle (1)	

Question 1e [2]

Valid comparison of FEV ₁ (1)	In obstructive, FEV ₁ decreases more than FVC whereas in restrictive, both FEV ₁ and FVC are reduced (in proportion) (1)	Describe how the forced expiratory volume (FEV _{1.0}), forced vital capacity (FVC) and forced expiratory ratio (FER) measurements can be used to distinguish obstructive and restrictive lung disease.
Valid comparison of FEV ₁ : FVC ratio (1)	(Therefore) in obstructive, ratio decreases whereas in restrictive, ratio does not reduce (1)	

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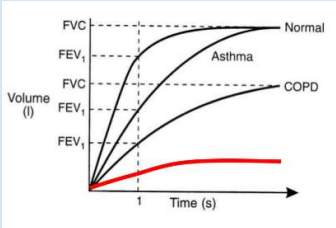
Question 1f

[3]

Correct identification of X (1)	X = vital capacity (1)	Describe and measure forced expiratory volume (FEV _{1.0}), forced vital capacity (FVC), forced expiratory ratio (FER) and peak flow
Correct identification of Y (1)	Y = expiratory reserve volume (1)	
Correct identification of Z (1)	Z = residual lung volume (1)	

Question 1g

[1]

Correct graph (1)	E.g.  (1)	Describe how the forced expiratory volume (FEV _{1.0}), forced vital capacity (FVC) and forced expiratory ratio (FER) measurements can be used to distinguish obstructive and restrictive lung disease
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Question 1h

[2]

One valid symptom (1)	Haemoptysis (1) Loss of appetite (1)	Apply the principles of clinical reasoning in formulating a differential diagnosis between the different presentations of respiratory disease
Another valid symptom (1)	Fatigue (1) <i>Ignore: cough, SOB, pain</i>	

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Question 2a

[4]

One valid explanatory point (1)	Primary prevention of disease (1) Mass / large scale campaigns (1) Multi-sectoral e.g. includes public information, primary care, secondary care, education etc (1) Responsive to public needs (1)	Describe evidence-based approaches to health promotion and disease prevention
Another valid explanatory point (1)	Accessible and inclusive to reach most affected communities (1) Underpinned by evidence-based research (1) <i>Accept: any valid explanatory points</i>	
One valid example (1)	Smoking bans (1) Alcohol restrictions / bans (1) Contraception services (1)	
Another valid example (1)	Mask wearing for Covid-19 (1) Immunisations (1) <i>Accept: any valid examples</i>	

Question 2b

[2]

Valid reason (1)	Sociological factors (1) Communication (1) Paternalism / doctor-patient relationships (1) Ethics / morality (1) Evaluation issues (1)	Describe the effectiveness of health promotion in changing lifestyle behaviours, e.g. smoking cessation, sexual health, alcohol consumption and physical activity
Valid explanation linked to reason (1)	E.g. an intervention perceived as paternalistic may alienate the public and not impact public health-seeking behaviour as intended (1)	

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Question 3a

[4]

One valid sign (1)	Signs of hypoxia e.g. central cyanosis (1) Positive CO2 retention flap (1) Tripod position (1) Increased / decreased vocal resonance (1)	List the cardinal symptoms relating to respiratory disease
Another valid sign (1)	Altered resonance on percussion (or an example e.g. stony dullness) (1) Breath sounds: wheeze / crackles (1) Finger clubbing (1) Fever (1)	
One valid symptom (1)	Dyspnoea (1) Chest pain (1)	
Another valid symptom (1)	Fatigue (1) Loss of appetite (1)	

Question 3b

[1]

One valid additional question (1)	E.g. when is the SOB at its worst? (1) E.g. what has your highest recorded temperature been (1) E.g. what colour is the mucus? (1) E.g. have you experienced any wheezing? (1) <i>Accept any valid question as long as relates to HPC, e.g. another cardinal respiratory / infectious disease / cardiac symptom; red flags; questions to characterise symptoms.</i>	List the cardinal symptoms relating to respiratory disease
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Question 3c

[3]

One valid differential diagnosis (1)	LRTI / Pneumonia / (chest) sepsis (1)	Apply the principles of clinical reasoning in formulating a differential diagnosis between the different presentations of respiratory disease
Another valid differential diagnosis (1)	Infective exacerbation of COPD (<i>accept COPD</i>) (1) Infective exacerbation of asthma (<i>accept asthma</i>) (1) Lung cancer (1)	
Another valid differential diagnosis (1)	Pulmonary oedema (secondary to cardiac disease) (1) <i>Accept in any order</i>	

Question 3c

[1]

Valid suggestion (1)	Perform respiratory examination (1) Take observations / NEWS2 scoring (1) Hospital admission (1) (IV) antibiotics (1)	Apply the principles of clinical reasoning in formulating a differential diagnosis between the different presentations of respiratory disease
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Question 4a

[1]

Correctly identified (1)	Health education (1) Primary prevention (1)	Describe health promotion interventions including policy measures, education, technologies and resources
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Question 4b

[3]

A valid point (1)	Cheaper per QALY than many other interventions e.g. surgery (1), therefore improves patients' health in a cost effective way (1) and reduces the need for future interventions (1).	Describe the effectiveness of health promotion in changing lifestyle behaviours, e.g. smoking cessation, sexual health, alcohol consumption and physical activity
A valid point / development (1)	Health promotion allows patients to take charge of their own health (1), promoting self-care and improving concordance with treatment regimes (1).	
A valid point / development (1)	Targets the root cause of many conditions (1), so forms part of primordial/primary disease prevention (1).	

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Question 4c

[2]

Identification of error (1)	FEV1 cannot be higher than FVC (1)	Describe and measure the static lung volumes and capacities using a spirometer
Justification (1)	Because FVC should be the total volume of the lung whereas FEV1 is part of the overall volume (1)	

Question 4d

[3]

Calculates FER (1)	$0.89 / 0.99 = 89.9\%$ (1)	Describe and measure forced expiratory volume (FEV1.0), forced vital capacity (FVC), forced expiratory ratio (FER) and peak flow
Compares to reference value of 0.7 (1)	$89.9\% > 70\%$ (1)	
Correct conclusion (1)	Restrictive lung disease (1)	

Question 5a

[2]

One cause / risk factor (1)	Asbestos (1) Radon (1) Air pollution (1) Urban living (1)	Describe the causes and clinical pathological features of lung carcinoma
Another cause / risk factor (1)	Genetic pre-disposition (1) Male gender (1) Older age (1) <i>Accept: any valid examples</i>	

Question 5b

[2]

Cause (1)	Oesophageal compression / tumour presses on mediastinum (1)	Describe the causes and clinical pathological features of lung carcinoma
Effect (1)	Swallowed food is regurgitated / etc (1)	

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Question 5c

[3]

Effect identified (1)	Pleural cavity filled with blood (1)	Explain how pneumothorax and haemothorax affect ventilation
Explanation (1)	Intrapleural negative pressure lost / intrapleural pressure is positive (1)	
Development of explanation (1)	So lungs cannot be expanded / lung collapse / chest wall recoil has no effect on lungs / surface tension lost (1)	