



LEVEL 3 MARKING SCHEME

SUMMER 2025

**LEVEL 3 DIPLOMA/CERTIFICATE IN MEDICAL
SCIENCE - UNIT 1
4463U10-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

WJEC DIPLOMA/CERTIFICATE IN MEDICAL SCIENCE

UNIT 1 HUMAN HEALTH AND DISEASE

SUMMER 2025 MARK SCHEME

GENERAL INSTRUCTIONS

Recording of marks

Examiners must mark in red ink.

One tick must equate to one mark (apart from the questions where a level of response mark scheme is applied).

Question totals should be written in the box at the end of the question.

Question totals should be entered onto the grid on the front cover and these should be added to give the script total for each candidate.

Marking rules

All work should be seen to have been marked.

Marking schemes will indicate when explicit working is deemed to be a necessary part of a correct answer.

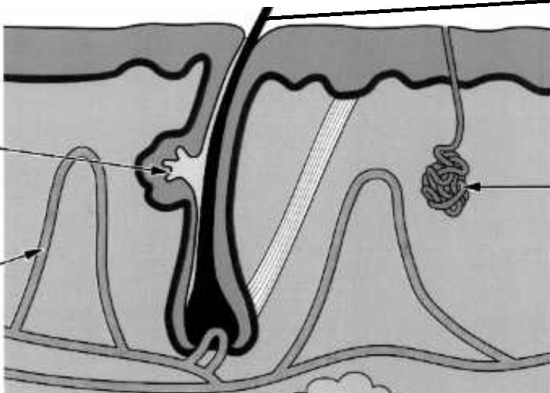
Crossed out responses not replaced should be marked.

Credit will be given for correct and relevant alternative responses which are not recorded in the mark scheme.

Marking abbreviations

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

cao	=	correct answer only
ecf	=	error carried forward
bod	=	benefit of doubt

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
1.			Any 3 for 1 mark: blackheads/ whiteheads/ pustules/ papules/ cysts/ nodules	1			1			
2.			Sebum: excess (sebum mixes with dead skin cells and) {block/plug} follicle (1) Hormones: increased levels (of testosterone cause glands to) produce more sebum. (1)	2			2			
3.			 A hair / hair shaft (1) D sebaceous gland (1) B sweat gland (1) C capillary / blood vessel (1)	4		4				

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
4.			1 mark for name of method + 1 mark for description of the action: • blood clotting (1) seal wounds (1) • inflammation (1) swelling / increased blood supply / more leucocytes recruited (1) Accept white blood cell • {phagocytosis / phagocytes} (1) {destroy / engulf} invading {bacteria / pathogens / microbes} (1) • cilia (1) {sweep / move} {microbes / mucous} (1) • mucous (1) traps microbes (1) • lysozyme (in tears/saliva) (1) kills {bacteria / pathogens / microbes} (1) • stomach acid (1) kills {bacteria / pathogens/microbes} (1) Accept: ear wax (1) prevents microbes reaching eardrum (1) Hair lining nose / eye lashes (1) prevents entry of dust / debris / foreign objects (1)	4		4				
5.			more hormonal changes / periods / pregnancy / polycystic ovary syndrome / produce oestrogen	1			1			
6.			Any 2 × (1) from: • <u>Lots of</u> spots / papules / pustules / nodules or cysts (1) • <u>Large</u> (painful) papules / pustules / nodules or cysts (1) • Some scarring present (1)	2			2			

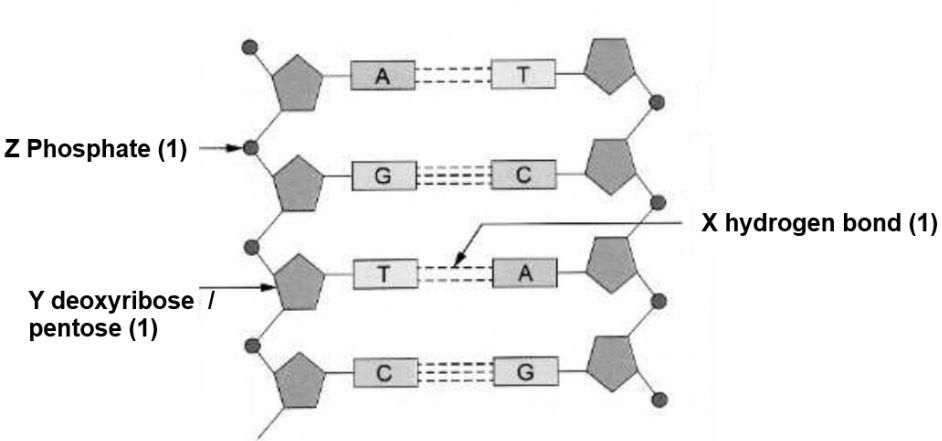
Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3																				
7.			1 mark per row.	3			3																							
			<table><tr><th>Name of treatment</th><th>How the treatment works</th><th>Length of course of treatment</th><th>Reason(s) why patients may not wish to use the treatment</th></tr><tr><td>Benzoyl peroxide</td><td>Reduces the number of bacteria on skin surface.</td><td>6 weeks</td><td>Can make skin more sensitive to uv light.</td></tr><tr><td>Topical retinoids</td><td>Removes dead skin from skin surface.</td><td>6 weeks</td><td>Can make skin more sensitive to uv light.</td></tr><tr><td>Azelaic acid</td><td>Gets rid of dead skin <u>and</u> (kills) <u>bacteria</u></td><td>Minimum of 1 month</td><td>Burning / stinging skin / itchininess / dry skin / redness of skin</td></tr><tr><td>Co-cyprindiol</td><td>Reduces the production of sebum.</td><td>2- 6-month course.</td><td>Potential to develop breast cancer / could cause {thrombosis / blood clot} / headaches / mood changes / weight changes (gain / loss)</td></tr></table>								Name of treatment	How the treatment works	Length of course of treatment	Reason(s) why patients may not wish to use the treatment	Benzoyl peroxide	Reduces the number of bacteria on skin surface.	6 weeks	Can make skin more sensitive to uv light.	Topical retinoids	Removes dead skin from skin surface.	6 weeks	Can make skin more sensitive to uv light.	Azelaic acid	Gets rid of dead skin <u>and</u> (kills) <u>bacteria</u>	Minimum of 1 month	Burning / stinging skin / itchininess / dry skin / redness of skin	Co-cyprindiol	Reduces the production of sebum.	2- 6-month course.	Potential to develop breast cancer / could cause {thrombosis / blood clot} / headaches / mood changes / weight changes (gain / loss)
			Name of treatment								How the treatment works	Length of course of treatment	Reason(s) why patients may not wish to use the treatment																	
			Benzoyl peroxide								Reduces the number of bacteria on skin surface.	6 weeks	Can make skin more sensitive to uv light.																	
			Topical retinoids								Removes dead skin from skin surface.	6 weeks	Can make skin more sensitive to uv light.																	
			Azelaic acid								Gets rid of dead skin <u>and</u> (kills) <u>bacteria</u>	Minimum of 1 month	Burning / stinging skin / itchininess / dry skin / redness of skin																	
			Co-cyprindiol								Reduces the production of sebum.	2- 6-month course.	Potential to develop breast cancer / could cause {thrombosis / blood clot} / headaches / mood changes / weight changes (gain / loss)																	
8.			Any 2 for 1 mark: drink plenty of water / use a moisturiser / {wash the face but not too often / avoid touching face} / use cosmetics that do not cause spots / stop smoking / eat less {high glycemic index foods (GI) / sugar} / do not use toothpaste to treat spots / use over-the-counter products / do not squeeze spots treating / use natural remedies / AVP	1			1																							

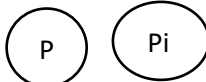
Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
9.	(a)		Any one from: - As people age, they pass through puberty / hormones stabilise / hormone levels decrease with age (OWTTE) - Women prescribed contraceptive pill as they get older (to improve acne.) - Older adults have already been on a treatment plan (to improve the acne) - Women produce less sebum as they get older	1				1		
	(b)		Any two × (1) from Accept reverse argument for USA. Botswana: - Diets contain less high GI foods (1) do not accept fast food people take more exercise (1) less air pollution / more rural living (1) do not wash skin excessively (1) less use of cosmetics (1) less stress (1)	2			2			
10	(a)		11.5% of 43.7 million $0.115 \times 43.7 = 5\,025\,500 / 5.0255 \text{ million} / 5.03 \text{ million} (1)$ Accept answers in standard form	1				1		
	(b)		22700000 / 5025500 (ecf) (1) = £4.517p / £4.52p / 452 p (1) Correct answer only – 2 marks answer of 451 seen on answer line – 1 mark	2				2		
			Total Section A	24	0	8	12	4	0	0

SECTION B

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3													
11.	(a)	(i)	Liver	1		1																	
		(ii)	Emulsify fats (into smaller droplets) / increase SA of the fat / provide optimum pH for lipase	1		1																	
		(iii)	Lipase / pancreatic lipase	1		1																	
		(iv)	Any 2 × (1) from: Triglyceride (1) Phospholipid (1) Steroid (1) allow cholesterol Allow saturated / unsaturated for (1)	2	2																		
	(b)		<table><tr><th>Process</th><th>Part of Digestive System</th></tr><tr><td>Site of the storage of bile.</td><td>Gall bladder</td></tr><tr><td>Site of the production and release of saliva</td><td>Salivary gland accept mouth (1)</td></tr><tr><td>Site of the digestion of protein by peptidases</td><td>Stomach / Small intestine / duodenum (1) do not accept intestine</td></tr><tr><td>Secretes carbohydrates, proteases and lipases.</td><td>Pancreas / small intestine / duodenum (1) do not accept intestine</td></tr><tr><td>Hydrolysis of starch occurs here</td><td>Mouth (1)</td></tr></table>	Process	Part of Digestive System	Site of the storage of bile.	Gall bladder	Site of the production and release of saliva	Salivary gland accept mouth (1)	Site of the digestion of protein by peptidases	Stomach / Small intestine / duodenum (1) do not accept intestine	Secretes carbohydrates, proteases and lipases.	Pancreas / small intestine / duodenum (1) do not accept intestine	Hydrolysis of starch occurs here	Mouth (1)	4		4					
Process	Part of Digestive System																						
Site of the storage of bile.	Gall bladder																						
Site of the production and release of saliva	Salivary gland accept mouth (1)																						
Site of the digestion of protein by peptidases	Stomach / Small intestine / duodenum (1) do not accept intestine																						
Secretes carbohydrates, proteases and lipases.	Pancreas / small intestine / duodenum (1) do not accept intestine																						
Hydrolysis of starch occurs here	Mouth (1)																						
Total Question 11				9	2	7	0	0	0	0													

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
12.	(a)		Brain	1			1			
	(b)		Protein Accept polypeptide	1			1			
	(c)		Any 2 × (1) from: Through consuming meat infected (with BSE) (1) Inherited CJD (1) accidentally spread through surgical or medical treatments / blood transfusions (1)	2			2			
	(d)		Any 2 × (1) from: Screen animals e.g., cows before using for meat (1) Ensure animal feed does not contain meat from animals that have died from BSE (1) Test blood supplies before using (1) Sterilise all medical equipment thoroughly (1) Do not eat meat (1) Genetic / prion screening (1) Do not accept 'cooking thoroughly'	2			2			
	(e)		Any 2 × (1) from: {Electrodes / sensors} placed on {scalp / head} (1) detect electrical activity of brain (1) Brain waves recorded on trace (1)	2					2	
Total Question 12				8	0	0	6	0	2	0

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
13.	(a)		1 mark for each correct label. 	3	3					
	(b)		Any 3 × (1) from: • RNA single stranded- DNA double stranded (1) allow single helix • RNA contains the bases U (A, G, C)- DNA contains bases T (A, C, G) (1) correct spelling U and T • RNA has ribose- DNA deoxyribose (1) • RNA short molecule- DNA long molecule (1) allow small and large Comparison must be given	3	3					
	(c)	(i)	Translation (1) Role: Any 2 × (1) from: • tRNA carries a (specific) amino acid OWTTE (1) • binds to the ribosome OWTTE (1) • binds to mRNA OWTTE (1) • adds amino acids to lengthen polypeptide chain OWTTE (1)	3	3					

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3						
		(ii)	<table><tr><th>Name</th><th>Function</th></tr><tr><td>rRNA</td><td>Component of ribosomes (1)</td></tr><tr><td>mRNA</td><td>Involved in {transcription / translation} / description of role in transcription or translation (1)</td></tr></table>	Name	Function	rRNA	Component of ribosomes (1)	mRNA	Involved in {transcription / translation} / description of role in transcription or translation (1)	2	2					
Name	Function															
rRNA	Component of ribosomes (1)															
mRNA	Involved in {transcription / translation} / description of role in transcription or translation (1)															
	(d)	(i)	Adenine Do not accept A / adenosine	1	1											
		(ii)	ADP (1) + Pi (1)  ATP Accept: phosphate/ Reject: P	2	2											
		(iii)	Condensation / endergonic	1	1											
		(iv)	(Common) energy source (1) Used in all living organisms / cells / for all or most chemical reactions (1)	2	2											
		(v)	Any 3 × (1) from: muscle contraction (1) nerve transmission (1) active transport / endocytosis (1) protein synthesis / named stage of protein synthesis (1) respiration (1) cell division (1) AVP. Accept photosynthesis	3	3											
Total Question 13				20	20	0	0	0	0	0						

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
14.	(a)	(i)	Axes labels (1) Suitable scale with value at origin (x and y axes) (1) Correct plots (1) 1 error 0 marks. Suitable line (1) curve or join dots Maximum 1 mark for bar chart- axes label (1)	4				4		
		(ii)	People are aware of dangers of smoking / decrease in the number of smokers / people recognise lung cancer symptoms more / more {media / government} campaigns / early detection / improved screening methods / improved medications and treatments. Accept better healthcare	1				1		
	(b)		Any 2 × (1) from: Male death rate decreased (between 1978- 2020) (1) Male death rate due to smoking was stable at the start (1) Percentage of female deaths is lower than males (1) OR Female deaths (due to lung cancer was very low and then) has increased to 2020 (1)	2				2		
	(c)	(i)	Any 3 × (1) from: Nose clip (1) Forced exhalation / breath out (1) Volume exhaled in one second (1) Measured on a trace (1)	3					3	
		(ii)	Peak flow (1) Any 3 × (1) Patient stand/ sit (upright) (1) Inhale (1) Mouth tightly fitted around mouthpiece (1) Pointer at 0 (1) {Exhale/breathe out} as {hard / fast} as possible (1) Highest of three readings taken (1)	4					4	

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3
	(d)	(i)	Any 2 × (1) Dependent (1) Independent (1) Extraneous / external (1) Controlled / control (1) Confounding (1)	2						2
		(ii)	(1) mark for an advantage and (1) for a disadvantage from: Advantage: Easy way of obtaining large quantities of data/ can be carried out quickly / more cost effective (than other methods of sampling) Disadvantage: Can introduce selection bias / sample not representative of the population / data not always reliable	2						2
		(iii)	Any 2 × (1) from: <u>Informed</u> consent (1) Confidentiality (1) Protection of participants (1) Data protection (1) Right to withdraw (1) Potential benefits (1) Potential harm (1)	2						2
		(iv)	Any 3 × (1) from: Cost (1) Time (1) Effectiveness (1) Suitability of procedure (1) Limitations of data collected- sufficiency/ suitability/ quality of data/sample size (1)	3						3
Total Question 14				23	0	0	0	7	7	9

Question			Answer	Marks	LO1	LO2	LO3	LO4	Unit 2	Unit 3						
15.	(a)	(i)	engulfs {pathogen / antigen / foreign body / microbe / bacteria}	1		1										
		(ii)	Any 3 × (1) from detect foreign antigen (1) produces plasma cells (1) produces memory cells (1) plasma cells produce antibodies (1)	3		3										
	(b)		1 mark for each comparative statement. <table><tr><th>Humoral</th><th>Cell-mediated</th></tr><tr><td>B lymphocytes</td><td>T lymphocytes</td></tr><tr><td>Secretes antibodies</td><td>No antibodies secreted</td></tr></table>	Humoral	Cell-mediated	B lymphocytes	T lymphocytes	Secretes antibodies	No antibodies secreted	2		2				
Humoral	Cell-mediated															
B lymphocytes	T lymphocytes															
Secretes antibodies	No antibodies secreted															
Total Question 15				6	0	6	0	0	0	0						

UNIT 1 – Human Health and Disease

SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

Question	TOTAL MARK	LO1	LO2	LO3	LO4	Unit 2	Unit 3
Section A	24	0	8	12	4	0	0
11	8	0	0	6	0	2	0
12	20	20	0	0	0	0	0
13	23	0	0	0	7	7	9
14	9	2	7	0	0	0	0
15	6	0	6	0	0	0	0
TOTAL	90	22	21	18	11	9	9
TARGET	90	18-23	18-23	18-23	10-15	8-12	8-12