

Cambridge Technicals Health and Social Care

Unit 4: Anatomy and physiology for health and social care

Level 3 Cambridge Technical Certificate/Diploma in Health and Social Care **05830 - 05871**

Mark Scheme for January 2017

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All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the report on the examination.

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Q	Question		Answer	Marks	Guidance
1	(a)		1. pumps blood to lungs	5 (5x1)	Annotation: The number of ticks must match the number of marks
			2. carries blood from lower body to heart		awarded. For an incorrect answer use the cross .
			3. carries blood to body		
			prevents backflow of blood from pulmonary arteries into heart		
			5. prevents backflow of blood from left ventricle into left atrium		
1	(b)	(i)	Supplies oxygen and nutrients to heart muscle	2	1 mark oxygen/nutrients/glucose.
					1 mark to heart muscle .
					Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Questic	on	Answer	Marks	Guidan	се
				Content	Levels of response
1 (b)	(ii)	How atheroma appears (cause): Build-up of fats/cholesterol/plaque in coronary artery walls Wall bulges and obstructs lumen of artery Effects: Reduces blood flow and supply of oxygen to heart muscle Pain on exertion – angina Can either block artery or bursts to form clot – blood supply to heart muscle stopped – heart attack/myocardial infarction Could result in hospitalisation, long recovery or death.	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed explanation how appears/cause and effects logically structured factually accurate correct use of terminology QWC – high Level 1 – checklist limited / basic explanation how appears/cause + effect or one done well limited relevant information limited use of terminology list like / muddled QWC – mid – low	Candidates will provide a developed explanation that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Sub-max 3 marks if only how appears/cause or effects done well. Level 1 [1–3 marks] Candidates' will provide an explanation in a limited manner. Likely to be a description/identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of credit.

Q	uesti	on	Answer	Marks	Guidance
2	(a)	(i)	Glucose ADP	1	1 mark for a correct answer. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
2	(a)	(ii)	Carbon dioxide Water ATP lactic acid energy	2 (2x1)	1 mark for each product identified X 2. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Question	Answer	Marks	Guidan	ce
			Content	Levels of response
2 (b) (i)	Thick, sticky mucus produced by lungs as a result of a defective gene – restricts airflow Results in inflammation which further narrows the airways Persistent coughing Breathlessness Repeated lung infections as bacteria multiply in trapped air and mucus that make symptoms above worse	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed explanation two or more effects – related to respiratory health/CF logically structured factually accurate correct terminology QWC – high Level 1 – checklist limited / basic explanation at least one effect – related to respiratory health/CF information may not be relevant to respiratory health/CF limited use of terminology list like / muddled QWC – mid – low	Candidates will provide a developed explanation that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an explanation in a limited manner. Likely to be a description /identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of credit.

Question		Answer		Guidance				
				Content	Levels of response			
2 (b)	(ii)	 Restricts sporting opportunities Restricts travelling opportunities Complicated daily regimes involving medication and physiotherapy Frequent infections usually resulting in hospitalisation – disruption of education/work Accept appropriate intellectual, social, emotional response Accept references to other aspects of CF, for example: dietary restrictions, supplements, increased calorie intake, enzyme pills. Opportunities for synoptic assessment e.g. unit 1 – how far it affects Davina may be partially influenced by the quality of relationships she has with practitioners – unit 2 – she is potentially vulnerable and at risk of discrimination in her daily life – unit 3 – her health and safety needs will be different from that of others who do not have her condition and these needs are likely to have a restrictive effect on her daily life 	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is analysis. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed analysis two or more impacts of CF relevant to Davina's daily life well-developed, clear and logically structured factually accurate QWC – high Level 1 – checklist limited / basic analysis likely to identify several impacts of CF with little or no analysis likely to identify several to Davina's daily life or CF limited structure may be list like / muddled QWC – mid – low	Level 2 [4–6 marks] Candidates will provide a developed analysis that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an analysis in a limited manner. Likely to be a description/identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. 0 marks – response not worthy of credit.			

Q	uesti	on	Answer	Marks	Guidance
3	(a)		 Chewing using teeth, tongue and jaws, mechanical digestion of food, tasting food, chemical digestion, salivary amylase changing starch to maltose Moving food by muscle action/peristalsis to stomach Produces bile/bile salts/stores and assimilates absorbed products of digestion Stores or releases bile 	4 (4x1)	1 mark for each separate point described. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
3	(b)	(i)	Mechanical digestion: Muscles of stomach churn food Breaks food into smaller pieces/chyme Chemical digestion: Produces enzyme pepsin Action triggered by hydrochloric acid Pepsin changes proteins to polypeptides/peptides	4 (4x1)	1 mark for each point but two must relate to mechanical and two to chemical for full marks. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Q	uesti	ion	Answer	Marks	Guidance
3	(b)	(ii)	Large surface area Surface area increased by microvilli Villi sway to mix digested food around Contains blood capillaries to absorb sugars, amino acids and water soluble vitamins Contains lymph vessel/lacteal to absorb fats/fatty acids	3 (3x1)	1 mark for each of any three points made. Annotation: The number of ticks must match the number of marks awarded.
3	(c)		Food diary – allows a record of food eaten to be recorded and matched against bouts of pain/irritability – identifies foods that should be avoided Avoiding fizzy drinks/coffee – both irritate the gut and cause symptoms of IBS so can increase symptoms and inconvenience Exercise helps reduce stress which appears to be a trigger for IBS so regular gentle exercise will lead to well-being and reduction of symptoms	3 (3x1)	For an incorrect answer use the cross. 1 mark for each correct point made. 1 mark only available for each suggestion, with reason given. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
3	(d)		Death of liver cells Replaced by scar tissue	2 (2x1)	1 mark each correct point made. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Q	Question		Answer	Marks	Guidance
3	(e)		Breaks alcohol down/ removes alcohol from blood/detoxifies alcohol	1	1 mark for suitable response.
					Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
3	(f)	(i)	Fine tunes muscle action/responses Stores 'memory' of learnt muscle actions/sequences Controls muscles to maintain balance	1	1 mark for suitable response. Annotation: The number of ticks must match the number of marks awarded.
3	(f)	(ii)	Affects control of fine muscle actions resulting in loss of co- ordination and/or balance	1	For an incorrect answer use the cross . 1 mark for a suitable response.
					Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Q	uestion	Answer	Marks	Guidan	се
				Content	Levels of response
4	(a)	What happens in a joint to cause arthritis: Synovial fluid dries up Erosion of cartilage Stiffness of joint Bone ends rub or make contact with each other Extra bone growths can develop resulting in further friction points Inflammation of the joint occurs	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed explanation logically structured factually accurate correct terminology QWC – high Level 1 – checklist limited / basic explanation identification with minimal explanation information may not be relevant limited use of terminology list like / muddled QWC – mid – low	Candidates will provide a developed explanation that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an explanation in a limited manner. Likely to be a description /identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of credit.

Question	Answer	Marks	Guidance				
			Content	Levels of response			
4 (b)	 Pain – makes activity difficult – results in weight increase which places further strain on joints Pain – results in less sleep, can affect emotions Inflamed joints and pain make moving, lifting difficult – affects hobbies or recreational activities such as gardening Mobility issues can affect shopping and/or employment Loss of dexterity can mean hobbies/activities such as model making, sewing, knitting become impossible Washing/cooking/being independent become increasingly difficult. Accept any well -reasoned emotional, social consequence 	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is analysis. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed analysis two or more impacts relevant to Donald's health & Wb well-developed, clear and logically structured factually accurate QWC – high Level 1 – checklist limited / basic analysis likely to identify several impacts with little or no analysis information may not be relevant to Donald's health & Wb limited structure may be list like / muddled QWC – mid – low	Level 2 [4–6 marks] Candidates will provide a developed analysis that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an analysis in a limited manner. Likely to be a description/identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. 0 marks – response not worthy of credit.			

Q	Question		Answer	Marks	Guidance
4	(c)	(i)	Retina – do not accept macula	1	1 mark for a correct answer.
					Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
4	(c)	(ii)	Macula destroyed resulting in loss of central vision, inability to read etc., peripheral vision only. Accept blurred vision	1	1 mark for a correct answer. Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Que	stion	Answer	Marks	Guidance			
				Content	Levels of response		
4 ((Likely impacts: Depending on speed of progression: may not be able to work not recognising faces unable to drive difficulty in reading or any other activity involving close vision difficulty in dressing, difficulty with cooking Accept: Other suitable daily activities that may be hindered by loss of central vision. Accept well-reasoned social, emotional effects on daily life. Note: Mary will not be totally blind.	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed explanation two or more likely impacts relevant to Mary's daily life well-developed, clear and logically structured factually accurate QWC – high Level 1 – checklist limited / basic explanation likely to identify several impacts with little or no explanation information may not be relevant to Mary's daily life or AMD limited structure may be list like / muddled QWC – mid – low	Candidates will provide a developed explanation that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an explanation in a limited manner. Likely to be a description /identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of credit.		

Question		on	Answer	Marks	Guidance		
					Content	Levels of response	
4 ((c)	(iv)	Possible suitable strategies or support: Use of brighter lighting Decorate rooms in colours to aid vision Highlighting necessary objects with colour Use of magnifiers Use of sound alert for warnings as opposed to flashing lights Advice and help from social services and occupational therapists for financial assistance and household/daily adaptations Use of audio books and instructions Learning Braille White sticks/probes In extreme cases use of a Guide Dog Appropriate medical interventions, for example, medication, stem cell, laser treatment. Use of support groups.	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is analysis. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 2 – checklist detailed analysis two or more strategies/support relevant to Mary's independence well-developed, clear and logically structured factually accurate QWC – high Level 1 – checklist limited / basic analysis likely to identify several strategies or support with little or no analysis information may not be relevant to supporting independence limited structure may be list like / muddled QWC – mid – low	Level 2 [4–6 marks] Candidates will provide a developed analysis that includes accurate terminology and follows a logical sequence. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 1 [1–3 marks] Candidates' will provide an analysis in a limited manner. Likely to be a description/identification only. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. 0 marks – response not worthy of credit.	

Question	Answer	Marks	Guidance	
			Content	Levels of response
	Synoptic element e.g.			
	unit 1 – support given should aim to meet needs while also allowing service users to retain a sense of control of their own care and independence; those supporting her should build a positive relationship with her – this is a factor influencing the likely success of support given, because there will be lack of misunderstandings and understanding of personal needs – personalized care			
	unit 2 – service users have rights to access facilities as part of legal rights to equality; these should lead to provision of aids such as Braille in e.g. art galleries and other public facilities			
	unit 3 – practitioners in offering and arranging support, strategies and aids are helping provide a safe environment to Mary			

Q	Question		Answer		Guidance
5	(a)	(i)	 synaptic knob/terminal process/synaptic bulb axon node of Ranvier Myelin sheath/Schwann cell cell body, accept cytoplasm nucleus dendrites 	7 (7x1)	Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.
5	(a)	(ii)	Produces chemicals/neurotransmitters. Pass/diffuse across synapse to stimulate next nerve cell. Accept passage/transmission of impulse/message from one cell to another –worth one mark.	2 (2x1)	2 marks for appropriately developed explanation 1 mark for basic statement that lacks clarity Annotation: The number of ticks must match the number of marks awarded. For an incorrect answer use the cross.

Question		ion	Answer	Marks	ks Guid	nce	
					Content	Levels of response	
5	(b)	(i)	Ischaemic stroke – blood clot blocks artery in cortex and prevents blood with oxygen and nutrients reaching cortex cells – cells die Haemorrhagic stroke – weakened blood vessel in cortex bursts – blood does not reach cells of cortex as above Also pressure of leaking blood which has nowhere to go as confined by skull presses down on tissue of cortex and damages/kills cells. Cerebral cortex consists of areas given over to precise sensory input and motor responses. If cells in these areas die effects may be loss of vision, speech, hearing, paralysis, difficulty swallowing	6	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 3 – checklist detailed explanation both damage caused and effects well-developed, clear and logically structured factually accurate correct use of terminology QWC – high Level 2 – checklist sound explanation damage caused & effect or one done well mostly factually accurate mostly relevant information some correct terminology QWC – mid Level 1 – checklist limited / basic explanation likely to identify several causes/effects with little or no explanation information may not be relevant limited structure may be list like / muddled	Candidates will provide a fully developed explanation that includes accurate terminology and follows a logical sequence and covers both types of stroke. For top marks the correct nomenclature should be used. Both damage caused and effects must be covered. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 2 (4–6 marks] Candidates will provide an explanation that includes accurate terminology. Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be some errors of grammar, punctuation and spelling. Sub—max of 3 if only damage/cause or effects explained. Level 1 [1–3 marks] Candidates will provide a limited explanation. Their use of appropriate terminology will be limited. Sentences and paragraphs	

(Question		Answer	Marks	Guidan	ice
					Content	Levels of response
					 minimal or no terminology QWC – low 	are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of
5	(b)	(ii)	Care options/help available: Emotional support/counselling – Charities/Support groups Aphasia software programmes Medical intervention –medication, regular check-ups Bathing/dressing aids Furniture adaptations Kitchen aids Mobility aids Personal alarms Adapted telephones Speech therapy Physiotherapy Occupational therapy Home help/residential care/family support/sheltered accommodation Positives Aid recovery Promote independence	10	This is a levels of response question – marks are awarded on the quality of the response given. The focus of the question is explanation. Annotation: The number of ticks will not necessarily correspond to the marks awarded. Level 3 – checklist care options and help fully detailed evaluation both positives and negatives well-developed, clear and logically structured factually accurate & relevant correct use of terminology QWC – high Level 2 – checklist just care options or help sound evaluation at least one positive & negative may lack clarity	Credit. Level 3 [9–10 marks] Candidates will provide a fully developed evaluation that includes accurate terminology and follows a logical sequence. Both positives and negatives will be given. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling. Level 2 [5–8 marks] Candidates will provide an evaluation that includes accurate terminology. Some positives and negatives will be given. Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be some errors of grammar, punctuation and spelling.

Question	Answer	Marks	Guidance		
			Content	Levels of response	
	 Support can show that service user not alone Specific examples linked to options / aids listed above Negatives Not all support/aids available free – means tested Some support not offered by some authorities Care expensive and very limited time for home visits Some users may not have families for support/care/help Isolated location No local charity support and not proficient in IT or does not have internet access Service users too embarrassed, for example over incontinence or sexual issues Recovery is time consuming and frustrating Carers need patience and have to put up with user's changed behaviour and frustration – not all families can do this. 		 mostly factually accurate some relevant information QWC – mid Level 1 – checklist basic evaluation likely to identify care options or help with little or no evaluation information may not be relevant limited structure – list like or muddled QWC – low 	Sub-max of 5 – if only positives or negatives given Level 1 [1–4 marks] Candidates' will evaluate treatments in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like. O marks – response not worthy of credit.	

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