

**GCE**

**Health and Social Care**

Unit **F921**: Anatomy and Physiology in Practice

Advanced GCE

**Mark Scheme for June 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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## Annotations

Used in the detailed Mark Scheme (to include abbreviations and subject-specific conventions)

Annotation	Meaning
	Positive
	Negative
	Benefit of doubt
	Cross
	Level 1
	Level 2
	Level 3
	Level 4
	Repeat
	Noted but no credit given
	Too vague
	Tick
	Development of point
	Omission mark

Question		Answer	Marks	Guidance	
				Content	Levels of response
1	a	<p><b>Identify the structures 1-5 shown in the diagram of the respiratory system</b></p> <p>1 larynx/voice box 2 trachea (accept loop of cartilage) 3 bronchiole 4 bronchus / bronchi 5 diaphragm</p>	5 5x1	<p>Do not accept vocal cords</p> <p>Accept phonetic spelling</p>	
	b	i	2 2x1	One mark for each description	
	b	ii	1		
	c	<p><b>Use your knowledge of alveoli to explain why people with severe emphysema cannot carry out simple forms of exercise.</b></p> <ul style="list-style-type: none"> <li>Alveoli are site of gaseous exchange</li> <li>Normally large surface area</li> <li>Close connection to a blood supply</li> <li>Emphysema destroys alveoli</li> <li>Reduces surface area for uptake of oxygen</li> <li>Less oxygen available for respiration</li> </ul>	6	<p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>Developed explanation.</li> <li>Includes accurate terminology.</li> <li>Effects will be accurate and developed.</li> <li>High/mid-QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>Simple explanation.</li> <li>Limited appropriate terminology.</li> <li>Effects may be limited.</li> <li>Low QWC.</li> </ul>	<p><b>Level 2 [4-6 marks]</b> 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.</p> <p><b>Level 1 [1-3 marks]</b> Candidates' will provide a limited</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>• Less energy available</li> <li>• Exertion/exercise requires oxygen</li> <li>• Not enough available.</li> </ul>			<p>explanation. 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.</p> <p>0 – response not worthy of credit.</p>
	<b>d</b>	<p><b>Explain ways by which the symptoms of a respiratory dysfunction might be reduced.</b></p> <p><b>Asthma</b> Symptoms: Wheezing, shortness of breath, tight chest, coughing</p> <p>Reliever inhaler (blue)</p> <ul style="list-style-type: none"> <li>• relaxes muscles of bronchii/bronchioles</li> <li>• dilates airways</li> <li>• more air passes through</li> </ul> <p>Preventer inhaler (brown/red/orange)</p> <ul style="list-style-type: none"> <li>• Reduces inflammation</li> <li>• Reduces sensitivity of airways</li> </ul> <p>Steroids</p> <ul style="list-style-type: none"> <li>• Reduces inflammation</li> </ul> <p>Nebulisers</p> <ul style="list-style-type: none"> <li>• used to administer medicines</li> </ul>	6	<p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• Fully developed explanation.</li> <li>• Accurate terminology.</li> <li>• High QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Basic explanation.</li> <li>• Limited use of terminology.</li> <li>• Low-QWC.</li> </ul> <p>An answer which does not name a dysfunction but provides generic treatments may attract marks in Level 1 only.</p>	<p><b>Level 2 [4-6 marks]</b> Candidates will provide a developed explanation of at least <b>two</b> ways symptoms of a <b>named</b> respiratory dysfunction can be reduced that includes accurate terminology, identifies the symptoms 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.</p> <p><b>Level 1 [1-3 marks]</b> Candidates will provide a limited explanation of <b>two</b> ways the symptoms of a <b>named</b> respiratory dysfunction might be reduced. Most likely to be only description or</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>Avoid triggers e.g. smoke, pollen, atmospheric pollution, animal hair, dust, mould etc.</p> <p>Avoid strenuous exercise</p> <p>Avoid going into cold air</p> <p><b>Cystic fibrosis</b></p> <p>Symptoms (respiratory):</p> <p>Wheezing, shortness of breath, persistent coughing, frequent lung infections</p> <p>Antibiotics</p> <ul style="list-style-type: none"> <li>• Fight bacterial infections</li> <li>• Bacteria produce further mucus</li> </ul> <p>Inhaler</p> <ul style="list-style-type: none"> <li>• Enzymes to digest and thin mucus</li> <li>• Saline to thin mucus</li> <li>• Both improve air flow</li> </ul> <p>Steroids</p> <ul style="list-style-type: none"> <li>• Reduce inflammation</li> <li>• Improves air flow</li> </ul> <p>Physiotherapy</p> <ul style="list-style-type: none"> <li>• Devices to massage</li> <li>• Pummelling</li> <li>• Breathing techniques</li> <li>• Postural drainage</li> <li>• All help to drain lungs of mucus improving air flow</li> </ul>			<p>identification points. Symptoms must be identified for top end of level. 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.</p> <p>Sub-max of 3 marks for only way covered.</p> <p><b>0 – response not worthy of credit.</b></p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>Accept lung transplant or gene therapy if appropriate reasons given.</p> <p><b>COPD</b></p> <p>Symptoms: Wheezing, shortness of breath, persistent coughing, frequent lung infections</p> <p>Accept 'stop smoking' - main cause</p> <p>Inhalers</p> <ul style="list-style-type: none"> <li>• Short/long acting –dilates airways.</li> <li>• Improves air flow.</li> </ul> <p>Steroids</p> <ul style="list-style-type: none"> <li>• Reduce inflammation</li> <li>• Improves air flow</li> </ul> <p>Medication (names not expected)</p> <ul style="list-style-type: none"> <li>• To dilate airways</li> <li>• Thin mucus</li> <li>• Antibiotics -Fight bacterial infections. Bacteria produce further mucus</li> </ul> <p>Nebulisers</p> <ul style="list-style-type: none"> <li>• used to administer medicines through mask</li> </ul> <p>Oxygen therapy</p> <ul style="list-style-type: none"> <li>• supply oxygen via mask and cylinder as insufficient entering body naturally</li> </ul>			

Question		Answer	Marks	Guidance	
				Content	Levels of response
2	a	<p><b>Describe one digestive function for each of the identified parts of the digestive system.</b></p> <p><b>Oral cavity</b></p> <ul style="list-style-type: none"> <li>Teeth and jaws mechanically break up food to swallow <ul style="list-style-type: none"> <li>Saliva moistens food</li> </ul> </li> <li>Salivary amylase begins chemical digestion of starch</li> <li>Enables taste</li> </ul> <p><b>Pancreas</b></p> <ul style="list-style-type: none"> <li>Produces pancreatic fluid</li> <li>Produces alkaline salts</li> <li>Produces digestive enzymes</li> <li>Neutralises acidity</li> </ul> <p><b>Large intestine</b></p> <ul style="list-style-type: none"> <li>Absorbs water</li> <li>Bacteria housed in this region produce vitamins</li> <li>Absorbs vitamins (from gut flora)</li> <li>Passage/movement of waste/food remains to rectum</li> </ul> <p><b>Liver</b></p> <ul style="list-style-type: none"> <li>Produces bile (do not accept stores/releases bile)</li> <li>Produces bile salts</li> </ul> <p><b>Stomach</b></p> <ul style="list-style-type: none"> <li>Mechanically breaks up food by churning</li> <li>Starts digestion of protein/chemical digestion</li> </ul>	6 6x1	<p>One mark for a function - one per structure.</p> <p>No credit for naming structure.</p> <p>Do not accept references to hormones</p> <p>Do not accept references to excretion or detoxification</p> <p>Accept changes undigested food into faeces</p> <p>Do not accept 'stores food'</p>	

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>• Produces pepsin/digestive enzymes</li> <li>• Produces hydrochloric acid</li> </ul> <b>Gall bladder</b> <ul style="list-style-type: none"> <li>• Stores bile</li> <li>• Releases bile into duodenum after a fatty meal</li> </ul>			
2	b	<p><b>Describe how the three structures identified in the diagram above are involved in absorption.</b></p> <p>Microvilli - increase surface area for absorption - more nutrients can be absorbed in a given time</p> <p>Blood capillaries - absorb sugars, amino acids and water soluble vitamins</p> <p>Lacteal - absorbs fats and fat soluble vitamins</p>	3 3x1	One mark for each description - one per structure required	
2	c	<p><b>Name of dysfunction of the digestive system</b></p> <p>IBS Gastric ulcers Coeliac disease Gallstones Accept diabetes</p> <p><b>Explain how this dysfunction may be investigated and then treated</b></p> <p><b>IBS</b></p> <ul style="list-style-type: none"> <li>• Investigation</li> <li>• Discussion of clinical symptoms e.g. bloating, abdominal pain, changes in bowel habits</li> </ul>	11	<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>• Fully developed explanation.</li> <li>• Accurate terminology.</li> <li>• High QWC.</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• Sound explanation.</li> <li>• Accurate terminology.</li> <li>• Mid-QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Basic explanation.</li> <li>• Limited use of terminology.</li> <li>• Low-QWC.</li> </ul>	<p><b>Level 3 [9 - 11 marks]</b></p> <p>Candidates will provide a fully developed explanation that includes accurate terminology and follows a logical sequence. Both investigation and treatment must be covered and must relate to the stated dysfunction. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling.</p> <p><b>Level 2 [5 - 8 marks]</b></p> <p>Candidates will provide an</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>Blood tests to eliminate other causes</li> <li>Stool sample –presence of calprotectin produced by inflamed gut</li> <li>Colonoscopy/endoscopy to eliminate more serious causes of symptoms</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>Food diary –avoid trigger factors</li> <li>Low FODMAP diet</li> <li>Regular meals</li> <li>Drink more water</li> <li>Reduce caffeine, alcohol, fizzy drinks as aggravate gut</li> <li>Increase exercise</li> <li>Reduce stress</li> <li>Probiotics</li> <li>Medication –antispasmodics, laxatives, antimobility drugs</li> <li>CBT</li> </ul> <p><b>Gastric ulcers</b></p> <ul style="list-style-type: none"> <li>Investigation</li> <li>Test for presence of H. pylori bacteria –main cause</li> <li>Gastroscopy –look for ulcers</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>Antibiotics to kill H.pylori</li> <li>Proton pump inhibitors to reduce acid production</li> <li>Avoid NSAID painkillers</li> <li>Accept ‘lower stress’ though not now</li> </ul>		<p><b>Mark limited to level 1 if answer does not relate to a dysfunction.</b></p>	<p>explanation that includes accurate terminology.</p> <p>Both investigation and treatment should be covered and will relate to the stated dysfunction. 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.</p> <p><b>Sub-max of 5</b> if only diagnosis or treatment covered.</p> <p><b>Level 1 [1 - 4 marks]</b></p> <p>Candidates will provide a limited explanation. Answers may be 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. They may talk about dysfunctions generically rather than discuss the given dysfunction. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p> <p><b>0 – response not worthy of credit.</b></p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>considered a significant cause</p> <p><b>Gallstones</b></p> <ul style="list-style-type: none"> <li>• Investigation</li> <li>• Clinical examination and discussion of symptoms</li> <li>• Blood tests to rule out infection</li> <li>• Ultra sound –sound wave echoes show image of stones –may be hard to see if in bile duct so-</li> <li>• MRI images of stones especially in bile duct</li> <li>• Endoscopic examination</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Key hole surgery to remove gall bladder</li> <li>• ERCP to remove stones from bile duct</li> <li>• Lithotripsy –mechanical break up of stones by lasers –less used now.</li> <li>• Reducing fat in diet –accept but now thought ineffectual.</li> </ul> <p><b>Coeliac disease</b></p> <ul style="list-style-type: none"> <li>• Investigation/genetic history</li> <li>• Blood tests for antibodies to gluten</li> <li>• Endoscopy/biopsy to see evidence of flattened villi</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• Avoid gluten</li> </ul>			

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>Supplements of minerals and vitamins</li> <li>Vaccinations to reduce risk of infections if spleen affected</li> </ul> <p><b>Diabetes</b></p> <ul style="list-style-type: none"> <li>Investigation</li> <li>Clinical discussion</li> <li>Blood/urine tests for glucose</li> <li>HbA1c blood test to establish level of diabetes or risk</li> <li>Glucose tolerance test</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>Life style changes –diet, exercise, weight loss –reduce sugar levels and strain on pancreas</li> <li>Medication to reduce glucose release/increase insulin secretion/increase sensitivity to insulin</li> <li>Insulin injections to increase insulin levels</li> <li>Regular eye checks to prevent retinopathy- treated by lasers.</li> </ul>			
<b>3</b>	<b>a</b>	<p>Give <b>one</b> function for each of the structures labelled 1-6 in the diagram of the male reproductive system.</p> <p>1.(Bladder) – store urine            2.( Prostate gland) – produce seminal fluid/produces nutrients/activates sperm/produces hormones e.g.</p>	6 6x1	Mark is awarded for function and not for naming the part.	

Question		Answer	Marks	Guidance	
				Content	Levels of response
		prostaglandin 3.(Vas deferens) - transports sperm 4.(Urethra) – transport urine/semen 5. (Testis) - manufacture sperm (do not accept 'stores sperm')/produces hormones e.g. testosterone 6. (Scrotal sac) – holds testes (outside of body/allows cooler temperature for sperm development.) Protects testes			
3	b	<p><b>Explain two possible causes of male infertility.</b></p> <ul style="list-style-type: none"> <li>Abnormal sperm – sperm can sometimes be an abnormal shape, making it harder for them to move preventing fertilisation</li> <li>An infection of the testes (STIs or mumps)/testicular cancer / testicular surgery /a congenital defect /trauma to the testicles can all cause obstructive azoospermia –blockage of tubules in testes/vasa deferentia so no sperm can reach urethra.</li> <li>Retrograde ejaculation – where semen is ejaculated into the bladder</li> <li>Abnormally low level of testosterone so sperm not made</li> </ul>	4	At least <b>two</b> causes described with reason/explanation. One mark for each cause (2x1) One mark for suitable explanation/reason (2x1)  Some explanations are interchangeable	

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>• Medicines and drugs can decrease the number of sperm and sperm mobility. e.g. anabolic steroids</li> <li>• Chemotherapy can sometimes severely reduce sperm production.</li> <li>• Illegal drugs such as marijuana and cocaine/ drinking too much alcohol/ being overweight or obese/smoking/ exposure to certain pesticides, metals and solvents can also affect semen quality or damage sperm</li> <li>• Stress can contribute to a loss of libido Severe stress may also limit sperm production</li> <li>• Erectile dysfunction due to psychological or alcohol problems or side effects of medicines or medical issues such as diabetes.</li> <li>• Decreased number of sperm</li> <li>• Decreased sperm mobility</li> <li>• Varicoceles</li> <li>• Vasectomy</li> <li>• Overheating testes</li> </ul>			
<b>3</b>	<b>c</b>	Evaluate possible treatments or solutions for <b>male</b> infertility <b>Treatments</b>	10	<b>Level 3</b> <ul style="list-style-type: none"> <li>• Fully developed evaluation.</li> <li>• Includes accurate terminology.</li> </ul>	<b>Level 3 [9 - 10 marks]</b> Candidates will provide a fully developed evaluation that includes

Question		Answer	Marks	Guidance	
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		<ul style="list-style-type: none"> <li>• Surgical interventions</li> <li>• Vasectomies can be reversed but are reversals not always successful</li> <li>• Varicoceles can be removed but usually don't reverse infertility</li> <li>• Damage to tubes within testes cannot be repaired</li> <li>• Hormone treatment (Only applicable in a small number of cases). Takes some time.</li> <li>• Lifestyle changes – requires willpower and time</li> <li>• Psychological issues can be addressed through CBT/counselling but can be embarrassing for male</li> <li>• Assisted reproductive techniques</li> <li>• Intracytoplasmic sperm injection (ICSI) - a single sperm is placed directly into each egg by piercing the outer covering of the egg. ICSI is particularly helpful for men with poor sperm production. Involves IVF which is expensive, stressful and not always successful. As with all IVF can increase chance of multiple births.</li> <li>• Viagra or similar</li> </ul> <p><b>Sperm donation</b></p> <ul style="list-style-type: none"> <li>• Can be applied as part of IVF or semen is injected into woman.</li> <li>• Donor not usually known. Male can feel an outsider to any resultant baby. Ethical and legal issues relate</li> </ul>		<ul style="list-style-type: none"> <li>• High QWC.</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• Developed evaluation. May not be balanced.</li> <li>• Includes accurate terminology.</li> <li>• Mid-QWC.</li> </ul> <p><b>Sub-max of 5</b> if only one treatment done well or if only either positives or negatives done well.</p> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Simple evaluation.</li> <li>• Limited appropriate terminology.</li> <li>• Low QWC.</li> </ul>	<p>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.</p> <p><b>Level 2 [5 - 8 marks]</b> 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.</p> <p><b>Level 1 [1- 4 marks]</b> Candidates will attempt to evaluate treatments in a limited manner. Answers may be purely descriptive at this level. 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</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>to sperm donation –medical checks, suitability, resultant children have right to know identity of donor –can put off some donors</p> <ul style="list-style-type: none"> <li>• Generally males find it hard to discuss reproductive issues with medical staff.</li> <li>• Many males do not wish to be found infertile and so will ignore treatment as seen as slur on their masculinity</li> </ul> <p><b>Adoption</b></p> <ul style="list-style-type: none"> <li>• Takes a long time and there are often bureaucratic/political barriers.</li> </ul>			<p>like.</p> <p><b>0 – response not worthy of credit.</b></p>
4	a	<p><b>Identify the structures labelled in the diagram of the heart.</b></p> <ol style="list-style-type: none"> <li>1. aorta</li> <li>2. pulmonary artery</li> <li>3. Pulmonary vein</li> <li>4. (Aortic valve/ aortic) semi-lunar valve</li> <li>5. (Inferior) vena cava</li> </ol>	5 1x5	One mark for each component correctly identified.	
	b	<p><b>Describe three differences between 1. aorta (artery) and 5. inferior vena cava (vein).</b></p> <ol style="list-style-type: none"> <li>1. Muscular/elasticated walls/blood under pressure/oxygenated blood/blood flowing from heart/thick walled</li> <li>2. less muscle and elastic tissue in walls/blood under low pressure/ contains valves throughout length/carries deoxygenated blood/carries blood to</li> </ol>	3	<p>One mark for each difference correctly described. (3x1)</p> <p>If identification is incorrect but a general answer provides correct differences between arteries and veins –allow.</p>	

Question		Answer	Marks	Guidance	
				Content	Levels of response
		heart			
4	c	<p><b>Analyse the use of medication and surgical techniques in the treatment of cardiac dysfunction.</b></p> <p><b>Possible dysfunctions</b> Hypertension CHD/ Angina/Heart attacks Arrhythmia Heart murmurs Stroke</p> <p><b>Medication</b> Statins Cholesterol lowering drugs ACE inhibitors These are used to prevent or lower high blood pressure (hypertension) and hence reduces risk of stroke and heart attack. Taken for life after prescription. Needs to be accompanied by lifestyle changes. Diuretics –used to reduce weight and strain on heart by removing excess water. Nitrates –used for immediate dilation of coronary arteries during angina attack. Does not address condition. Beta blockers –used for angina and arrhythmia (slows heart rate down –no drug to speed up rhythm. Calcium channel blockers –also reduces</p>	12	<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>Fully developed analysis.</li> <li>Accurate terminology.</li> <li>High QWC.</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>Sound analysis.</li> <li>Accurate terminology.</li> <li>Mid-QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>Basic analysis.</li> <li>Limited use of terminology.</li> <li>Low-QWC.</li> </ul> <p>Candidates are not asked to name a dysfunction, so their answer may be generic and cover treatments that relate to more than one cardiac dysfunction.</p>	<p><b>Level 3 [10 - 12 marks]</b> Candidates will provide a fully developed analysis that includes accurate terminology and follows a logical sequence. Both the use of medication and surgical techniques must be covered. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There may be occasional errors of grammar, punctuation and spelling.</p> <p><b>Level 2 [6 - 9 marks]</b> Candidates will provide an analysis that includes accurate terminology. Both the use of medication and surgical techniques should be covered with two from each analysed. 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.</p> <p><b>Sub-max of 6</b> if only medication or surgical techniques covered.</p>

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		<p>heart activity</p> <p>Antiplatelets e.g. aspirin</p> <p>Anti-coagulant e.g. Warfarin –used to ‘thin’ blood and prevent likelihood of clots –lessens risk of heart attack or stroke.</p> <p>Clot busting drugs –administered after severe heart attack or stroke. Digests clot. Maybe too late to avoid damage.</p> <p>All drugs have side effects. Some minimal, some severe. Balance risks.</p> <p><b>Surgical techniques</b></p> <p>Coronary by-pass surgery – artery from chest grafted to either side of blocked coronary artery or directly to aorta. Invasive. Surgical risks. Keyhole techniques less invasive and quicker recovery. Needs recuperation and life style changes.</p> <p>Angioplasty. Balloon inserted via catheter into affected area of coronary artery. Inflated pushes atheroma aside, does not always last – use stent – metal gauze tube that expands to hold artery dilated. Risk of stroke with either technique. Not invasive. No period of recuperation.</p> <p>Pacemakers – used to speed up slow heart rate or stabilise irregular rhythm. Local anaesthetic, low risk. Needs checking and battery replacement. Can</p>			<p><b>Level 1 [1 - 5 marks]</b></p> <p>Candidates will provide a limited analysis/description. 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.</p> <p><b>0 – response not worthy of credit.</b></p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>cause problems with security scanners. Valve replacement. Invasive. Risk of infection. Will need antibiotics when potentially at risk of infection e.g. dental work.</p> <p>Removing plaque from arteries – minuses risk of strokes.</p> <p>Brain taps – removing accumulated blood on brain from stroke using shunt. Gradually drawn off. Delicate –can cause brain damage.</p> <p>Clot removal. Surgical removal of clots from stroke area –minimises further damage but won't repair existing problems.</p> <p>Transplant –replacement heart. Needs close matching-long wait usually, difficult operation, lengthy recuperation, issues with rejection, will need immune-suppressants for life.</p>			
5	a	<p><b>Explain the function of the macronutrients carbohydrates, fats and proteins in the human body.</b></p> <p><b>Carbohydrates</b>            Simple sugars e.g. glucose used as source of energy in respiration            Can be stored as glycogen for energy reserve            Can be combined with proteins in cell membranes and used for cell transport and cell recognition            Complex carbohydrates contribute to</p>		<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>Fully developed explanation.</li> <li>Accurate terminology.</li> <li>High QWC.</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>Sound explanation.</li> <li>Accurate terminology.</li> <li>Mid-QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>Basic explanation.</li> <li>Limited use of terminology.</li> </ul>	<p><b>Level 3 [7- 8 marks]</b>            Candidates will provide a fully developed explanation that includes all three groups, 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.</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>both soluble and insoluble fibre/NSPs –insoluble helps move food through gut, soluble can help lower ‘bad’ cholesterol levels.</p> <p><b>Fats</b>            Needed for cell membranes and hence myelin sheath –increases efficiency of nerve transmission            Fats stored in skin –heat insulation and mechanical protection            Used as energy source            Basis for some hormones e.g. sex hormones            Can protect from heart disease</p> <p><b>Proteins</b>            Used to make up cells and tissues, repair damage            Make up enzymes, antibodies, blood clotting agents, some hormones e.g. insulin            Additional energy source especially during starvation.</p>		<ul style="list-style-type: none"> <li>Low-QWC.</li> </ul> <p>Bullet points will indicate identification unless they are fully formed descriptions/explanations. This will place the candidate in level 1.</p> <p>‘ Growth and repair’ warrants one mark only as this is a standard descriptive term. If embellished can be treated as two separate mark points.</p>	<p><b>Level 2 [4 - 6 marks]</b>            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.</p> <p><b>Level 1 [1 - 3 marks]</b>            Candidates will provide a limited explanation. Answer may be identification points 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.</p> <p><b>0 – response not worthy of credit.</b></p>
5	b	<p><b>Assess possible consequences of an excess of these macronutrients to individuals’ health and well-being.</b></p> <p><b>Carbohydrates:</b>  <b>Health</b></p>	12	<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>In-depth assessment.</li> <li>Includes both health and well-being.</li> <li>Accurate terminology.</li> <li>High QWC.</li> </ul>	<p><b>Level 3 [10-12 marks]</b>            Candidates will assess in depth the possible consequences of an excess of each macronutrient on both health (effects on body systems) and well-being (PIES).</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>Raises blood sugar levels –can affect pancreas –can result in diabetes which in turn can lead to strokes, kidney failure, blindness and amputations. Excess stored as fat –leads to obesity which can result in hypertension –heart disease and strokes. Also damage to joints. Excess results in tooth decay. <b>Well-being</b> –sugar rush –pleasant. Can become addicted. Can lead to hyperactivity in children.</p> <p><b>Fats:</b> <b>Health</b> Excess leads to obesity with issues identified above. Can be deposited around organs –leads to heart struggling to function. Can result in infertility and increase in many cancers e.g. breast cancer <b>Well-being</b> Can feel/taste comforting and pleasant. Can become addictive if depressed or low. Obesity can lead to low self-esteem and stigma/discrimination.</p> <p><b>Protein:</b> <b>Health</b> Excess puts strain on kidney –can result in kidney disease. <b>Well-being</b> Can lead to feeling of guilt as protein intake much higher in developing</p>		<p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• Sound assessment.</li> <li>• Includes both health and well-being.</li> <li>• Accurate terminology.</li> <li>• High/mid-QWC.</li> </ul> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Basic assessment.</li> <li>• List like or vague references to PIES.</li> <li>• Limited terminology.</li> <li>• Low QWC.</li> </ul> <p>Bullet points will indicate identification unless they are fully formed descriptions/explanations. This will place the candidate in level 1.</p>	<p>They will demonstrate the ability to present their answer in a well-planned and logical manner, with a clearly defined structure. They will use appropriate physiological terminology confidently and accurately. Sentences and paragraphs will directly address the question in a consistent, relevant and well-structured way. There will be few, if any, errors in the use of grammar, punctuation and spelling.</p> <p><b>Level 2 [6-9 marks]</b></p> <p>Candidates will assess soundly the possible consequences of an excess of each macronutrient on both health and well-being. They will demonstrate the ability to present their answer in a planned and logical sequence using some appropriate and accurate physiological terminology. Sentences and paragraphs are for the most part relevant and material will be presented in a balanced, logical and coherent manner that addresses the question. There may be occasional errors in the use of grammar, punctuation and spelling.</p> <p><b>Sub max of 6</b> if only effects on health or well-being assessed.</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			countries than undeveloped/poorer nations. Can drive ethical feelings regarding animal husbandry as opposed to plant sources.			<p><b>Level 1 [1-5 marks]</b> Candidates are likely to simply describe the effects of excesses and dwell on aspects of <b>PIES</b> or provide vague non-scientific statements. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors in the use of grammar, punctuation and spelling may be noticeable and obtrusive.</p> <p><b>0 – response not worthy of credit.</b></p>

## APPENDIX 1

Analysis of mark distribution:

Question	AO1	AO2	AO3	AO4	Total
1(a)	5				5
1(bi)		1	1		2
1(bii)	1				1
1(c)		2	2	2	6
1(d)		2	4		6
2(a)		3	3		6
2(b)		1	2		3
2(ci)	1				1
2(cii)		2	8		10
3(a)	4	2			6
3(b)		2	2		4
3(c)				10	10
4(a)	5				5
4(b)	2	1			3
4(c)			2	10	12
5 (a)	2	2	4		8
5(b)		2	2	8	12
<b>Totals</b>	<b>20</b>	<b>20</b>	<b>30</b>	<b>30</b>	<b>100</b>

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