

**GCE**

**Health and Social Care**

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

Advanced GCE

**Mark Scheme for June 2014**

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support, which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2014

## Annotations

Annotation	Meaning
	Blank Page – this annotation <b>must</b> be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response.
	Level 4
	Level 3
	Level 2
	Level 1
	Tick
	Cross
	Benefit of doubt
	Seen -
	Omission
	Too vague
	Plus – use for positives
	Tick plus – use for developed answers

Question		Answer	Marks	Guidance	
				Content	Levels of response
1	a	<p><b>One</b> mark for each structure identified, <b>Four</b> required from:</p> <ol style="list-style-type: none"> <li>1. ball &amp; socket, ball</li> <li>2. hinge</li> <li>3. saddle/ pivot</li> <li>4. spinal/ slightly moveable /facet</li> </ol>	<b>4 x 1</b>	<p>One mark for each correct answer. Minor errors in spelling are acceptable</p> <p>Accept gliding / sliding for 4</p>	



Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>visual processing</li> <li>perception and recognition of auditory stimuli, memory, and speech</li> </ul>			
	(c)	<p><b>Arthritis</b></p> <p>cartilage wearing away</p> <p>a lack of synovial fluid</p> <p>autoimmunity</p> <p>infection</p> <p>or a combination of several factors working together, for example:</p> <ul style="list-style-type: none"> <li>genetic makeup</li> <li>a physically demanding job,</li> <li>repetitive movements</li> <li>a previous injury</li> <li>some infections or allergic reactions may cause short-term arthritis.</li> <li>Obesity, which places extra strain on joints</li> </ul> <p><b>Osteoporosis</b></p> <ul style="list-style-type: none"> <li>bones losing their density.</li> <li>loss of calcium</li> <li>lack of vitamin D</li> <li>smoking</li> <li>Ageing.</li> <li>Women are at greater risk.</li> </ul>	8	<p><b>Levels checklist</b></p> <p><b>Level 3</b> Clear, detailed and accurate discussion of the causes of a named dysfunction. Accurate terminology and follows a logical sequence.</p> <p><b>Level 2</b> Sound discussion of the causes of a named dysfunction. Sound terminology but does not always follow a logical sequence Occasionally lacks clarity.</p> <p><b>Level 1</b> Limited discussion with poor terminology used. Shows limited points of understanding.</p>	<p><b>Level 3 [7-8 marks]</b> Candidates will provide a fully developed discussion of the causes 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 2 [4-6 marks]</b> Candidates will provide a discussion 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 noticeable errors of grammar, punctuation and spelling.</p> <p><b>Level 1 [1-3 marks]</b> Candidates' will describe the causes in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>• Changes in oestrogen levels after menopause can affect bone density.</li> <li>• early menopause (before the age of 45)</li> <li>• they have a hysterectomy before the age of 45</li> <li>• their periods are absent for a long time (more than six months) as a result of over-exercising or over-dieting</li> </ul> <p>Men:</p> <ul style="list-style-type: none"> <li>• For most men who develop osteoporosis, the cause is unknown. However, there is a link to the male hormone testosterone,</li> </ul> <p>Diseases of the hormone-producing glands:</p> <ul style="list-style-type: none"> <li>• hyperthyroidism (overactive thyroid gland)</li> <li>• disorders of the adrenal glands, such as Cushing's syndrome</li> <li>• reduced amounts of sex hormones (oestrogen and testosterone)</li> <li>• disorders of the pituitary gland</li> <li>• hyperparathyroidism (overactivity of the parathyroid glands)</li> </ul> <p>Other causes</p> <ul style="list-style-type: none"> <li>• a family history of osteoporosis</li> </ul>			<p>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 marks</b> for nil response or answers not worthy of credit</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<ul style="list-style-type: none"> <li>• a parental history of hip fracture</li> <li>• a low body mass index (BMI) of 19 or less</li> <li>• long-term use of high-dose corticosteroid treatment</li> <li>• heavy drinking and smoking</li> <li>• rheumatoid arthritis</li> <li>• malabsorption problems, as experienced in coeliac disease and Crohn's disease</li> <li>• some drugs used in breast cancer and prostate cancer treatment that affect hormone levels</li> <li>• long periods of inactivity, such as long-term bed rest</li> </ul> <p><b>Parkinson's Disease</b></p> <ul style="list-style-type: none"> <li>• Loss of dopamine producing nerve cells.</li> <li>• Dopamine acts as a messenger between the parts of the brain and nervous system that help control and co-ordinate body movements.</li> <li>• It is not known why the loss of nerve cells associated with Parkinson's disease occurs</li> <li>• Maybe a combination of genetic changes and environmental factors.</li> </ul> <p><b>Genetics</b></p> <ul style="list-style-type: none"> <li>• Several genetic changes (mutations) have been identified as increasing risk</li> </ul>			<p><b>Do not accept smoking as cause for Parkinsonism</b></p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<ul style="list-style-type: none"> <li>Rarely genetic inheritance cause.</li> </ul> <p>Environmental factors</p> <ul style="list-style-type: none"> <li>Suggested that pesticides and herbicides may contribute</li> </ul> <p><b>Other causes</b></p> <ul style="list-style-type: none"> <li>medication eg some types of antipsychotic medication,</li> <li>stroke</li> </ul> <p><b>Multiple Sclerosis</b></p> <ul style="list-style-type: none"> <li>Exact reason not known.</li> <li>combination of environmental and genetic factors.</li> <li>Autoimmune condition – body's immune system mistakes the myelin sheath of nerve cells for a foreign substance and attacks it.</li> <li>This can disrupt the messages travelling along nerve fibres. <i>It can slow them down, jumble them, send them down a different nerve fibre, or stop them from getting through completely.</i></li> <li>Scarring can be left (<i>known as sclerosis</i>). Eventually destroys the myelin sheath (demyelination), which can damage the underlying nerve fibre.</li> </ul>			

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p><b>Genetic factors</b></p> <ul style="list-style-type: none"> <li>• Not directly inherited, <i>although research has shown people who are related to someone with MS are more likely to develop it.</i></li> </ul> <p><b>Sunlight and vitamin D</b></p> <ul style="list-style-type: none"> <li>• More likely to occur in countries far from the equator.</li> <li>• People living further from the equator are exposed to less sunlight and, therefore, have less vitamin D in their bodies. Some studies have found a link between lower levels of vitamin D and incidence of MS.</li> <li>• Smoking <i>chemicals may affect immune system.</i></li> <li>• Viral infection -The Epstein-Barr virus (EBV)</li> </ul> <p><b>Stroke</b></p> <ul style="list-style-type: none"> <li>• age – <i>you are more likely to have a stroke if you are over 65 years old</i></li> <li>• family history – <i>if a close relative (parent, grandparent, brother or sister) has had a stroke, your risk is likely to be higher</i></li> <li>• ethnicity – <i>if you are south Asian, African or Caribbean, your risk of stroke is higher, partly because rates of diabetes and high blood pressure</i></li> </ul>			

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p><i>are higher in these groups</i></p> <ul style="list-style-type: none"> <li>• your medical history – <i>if you have previously had a stroke, TIA or heart attack, your risk of stroke is higher</i></li> <li>• blood clots (Ischaemic strokes), fatty cholesterol-containing deposits known as plaques block the flow of blood to the brain.</li> <li>• Aging:</li> <li>• smoking</li> <li>• high blood pressure (hypertension)                      Factors include                     <ul style="list-style-type: none"> <li>obesity</li> <li>high cholesterol levels</li> <li>high caffeine intake</li> <li>smoking</li> <li>excessive alcohol intake</li> <li>stress</li> </ul> </li> <li>• family history <i>of heart disease or diabetes</i></li> <li>• Diabetes, <i>particularly if poorly controlled, as the excess glucose in the blood can damage the arteries.</i></li> <li>• irregular heartbeat (atrial fibrillation),</li> <li>• coronary artery disease</li> <li>• mitral valve disease (disease of the heart valve)</li> <li>• cardiomyopathy (wasting of the heart muscle)</li> <li>• pericarditis (inflammation of the bag surrounding the heart)</li> <li>• hyperthyroidism (overactive thyroid gland)</li> </ul>			

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<ul style="list-style-type: none"> <li>• blood vessel in the brain bursts and bleeds into the brain <i>Haemorrhagic strokes</i>.</li> <li>• A traumatic head injury can also cause bleeding into the brain.</li> <li>• a lack of exercise</li> </ul>			
<b>2</b>	<b>a</b>	<p><b>One</b> mark for each structure identified, <b>four</b> required from:</p> <ol style="list-style-type: none"> <li>1. Aorta</li> <li>2. (Superior )Vena cava</li> <li>3. Right Atrium (auricle)</li> <li>4. Right Ventricle</li> </ol>	<b>4x1</b>	One mark for each correct answer. Minor errors in spelling are acceptable	

Question		Answer	Marks	Guidance	
				Content	Levels of response
2	b	<p><b>Red Blood Cells (Erythrocytes)</b></p> <ul style="list-style-type: none"> <li>• haemoglobin bonds with oxygen</li> <li>• which picks up oxygen as the blood passes through the lungs,</li> <li>• transports it around the body</li> <li>• releases it to organs and tissues</li> </ul> <p><b>Platelets (thrombocytes)</b></p> <ul style="list-style-type: none"> <li>• which help prevent abnormal or excessive bleeding</li> <li>• part of the clotting process</li> <li>• assists in forming clots by triggering enzyme pathways on exposure to air</li> </ul> <p><b>White Blood Cells/ Leucocytes (any named white cell)</b></p> <ul style="list-style-type: none"> <li>• defending the body against pathogens</li> </ul> <p><b>Lymphocytes</b></p> <ul style="list-style-type: none"> <li>• two types of cells.</li> <li>• T cells attack virus-infected and malignant cells / Killer T cells</li> <li>• B cells produce and release antibodies</li> <li>• Creation of memory cells</li> <li>• Maintain immunity</li> </ul> <p><b>Phagocytes</b></p> <ul style="list-style-type: none"> <li>• engulfs and digests bacteria, dead cells and tissues</li> </ul>	10	<p><b>If structure is included it must be linked to function to gain credit</b></p> <p><b>Levels checklist</b></p> <p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>• Clear, detailed and accurate explanation</li> <li>• detailed functions of each type of blood cell identified</li> <li>• High QWC.</li> </ul> <p><b>Level 2</b></p> <p>an explanation that includes the functions of each type of blood cell identified. Sound terminology but does not always follow a logical sequence Occasionally lacks clarity/some errors.</p> <p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Limited discussion with poor terminology used.</li> <li>• identify or describe the function</li> <li>• low QWC</li> </ul> <p>Reference to structure allowed if included in the context of function.</p>	<p><b>Level 3 [9-10 marks]</b></p> <p>Candidates will provide a fully developed explanation that includes detailed functions of at least two types of blood cell. 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 explanation that includes the functions of at least two types of blood cell. Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be noticeable errors of grammar, punctuation and spelling.</p> <p><b>Sub max of 5 for one type done well</b></p> <p><b>Level 1 [1-4 marks]</b></p> <p>Candidates' will identify or describe the function 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</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
						and answers may be list like.  <b>0 marks</b> = no response worthy of credit
2	c		<p>Candidate will compare the ways that a vein differs from an artery.</p> <ul style="list-style-type: none"> <li>• Veins have valves arteries do not</li> <li>• Veins carry low pressure blood, arteries carry high pressure blood</li> <li>• Veins carry blood back to the heart, arteries carry blood away from the heart</li> <li>• Oxygen content of blood in veins is lower / except pulmonary vein whereas arteries have a high oxygen content</li> <li>• Thinner walls and less tissue layers than an artery</li> <li>• Veins are less elastic than arteries which have muscular walls.</li> <li>• Veins do not have a pulse whereas arteries do</li> </ul>	6		<p><b>Level 2 [4-6 marks]</b> Candidates will provide a developed comparison that includes accurate terminology and follows a <b>logical sequence</b>. 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 basic comparison that includes accurate terminology. Likely to be listlike, Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be noticeable errors of grammar, punctuation and spelling.</p> <p><b>0 marks</b> no response worthy of credit</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
3	a	<p><b>One</b> mark for each structure identified, <b>four</b> required from:</p> <ol style="list-style-type: none"> <li>1. Prostate</li> <li>2. Urethra</li> <li>3. Vas Deferens/sperm duct</li> <li>4. Epididymis</li> </ol>	4 x 1	One mark for each correct answer. Minor errors in spelling are acceptable	

Question		Answer	Marks	Guidance	
				Content	Levels of response
3	b	<p>Candidates will describe possible causes of male infertility</p> <p><b>Semen</b></p> <ul style="list-style-type: none"> <li>• Decreased number of sperm or no sperm at all.</li> <li>• Decreased sperm mobility</li> <li>• Abnormal sperm shape</li> <li>• Sperm produced but blocked duct prevents passage (<i>eg cystic fibrosis, STIs</i>)</li> </ul> <p><b>Testicles</b></p> <ul style="list-style-type: none"> <li>• an infection of the testicles</li> <li>• testicular cancer</li> <li>• testicular surgery</li> <li>• a congenital defect</li> <li>• undescended testicles</li> <li>• trauma (injury) to the testicles</li> <li>• varicoceles</li> <li>• Sterilisation – vasectomy</li> </ul> <p><b>Ejaculation disorders</b></p> <ul style="list-style-type: none"> <li>• retrograde ejaculation</li> <li>• premature ejaculation</li> </ul> <p><b>Erectile dysfunction</b></p> <ul style="list-style-type: none"> <li>• Stress</li> <li>• Psychological issues</li> <li>• Arterial damage</li> <li>• Diabetes</li> <li>Prostate cancer treatment</li> </ul>	4	<p><b>Levels checklist</b></p> <p><b>Level 2</b> Clear and detailed description that includes accurate terminology and follows a logical sequence.</p> <p><b>Level 1</b> A basic description that is accurate and uses appropriate terminology but does not always follow a logical sequence May lack clarity.</p>	<p><b>Level 2 [2-4]</b> Candidates will describe in-depth at least two possible causes of male infertility. They will demonstrate the ability to organise their answer, using appropriate terminology. Sentences and paragraphs will be generally accurate. There may be noticeable errors of grammar, punctuation and spelling.</p> <p><b>Level 1 [1-2]</b> Candidates will describe one or two causes of male infertility. Sentences have limited coherence and structure,. Errors in the use of grammar, punctuation and spelling may be noticeable and obtrusive.</p> <p><b>0 marks</b> for nil response or answers not worthy of credit</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p><b>Medicines and drugs</b></p> <ul style="list-style-type: none"> <li>• Sulfasalazine.</li> <li>• Anabolic steroids.</li> <li>• Chemotherapy.</li> <li>• Herbal remedies</li> <li>• Illegal drugs (<i>eg marijuana and cocaine</i>)</li> <li>• Alcohol</li> </ul> <p><b>Occupational and environmental factors</b></p> <ul style="list-style-type: none"> <li>• Sexually transmitted infections (STIs)</li> <li>• Smoking</li> <li>• Obesity</li> <li>• Exposure to certain pesticides, metals, and solvents.</li> </ul>			

Question		Answer	Marks	Guidance	
				Content	Levels of response
3	c	<p><b>Before In Vitro Fertilization</b></p> <ul style="list-style-type: none"> <li>• Hormone therapy approximately two weeks before IVF</li> <li>• Fertility drugs to stimulate egg production</li> <li>• Blood tests and ultra sounds to determine the best time to retrieve eggs.</li> <li>• Eggs removed just before ovulation</li> </ul> <p><b>Egg Retrieval</b></p> <ul style="list-style-type: none"> <li>• Egg removal by surgical means</li> <li>• Needle through abdominal wall to extract eggs.</li> <li>• local anaesthesia or sedation.</li> <li>• Man will produce a semen sample.</li> </ul> <p><b>Fertilization</b></p> <ul style="list-style-type: none"> <li>• Eggs inspected for quality</li> <li>• Sperm will be separated from the semen.</li> <li>• Active sperm will be joined with the eggs in a laboratory dish.</li> </ul> <p><b>Embryo Formation</b></p> <ul style="list-style-type: none"> <li>• Pre-embryo formation confirmed by visual inspection.</li> <li>• Pre-embryos retained in nutrient fluid for the next 2 to 3 days</li> </ul> <p><b>Implantation</b></p> <ul style="list-style-type: none"> <li>• Catheter used to transfer the embryos through the cervix to the woman's</li> </ul>	12	<p><b>Analysis should include detailed examination of the process, with reference to the impacts</b></p> <p><b>Levels checklist</b></p> <p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>• Answer has a planned and logical sequence using appropriate and accurate terminology.</li> <li>• Detail of process and some consideration of impact</li> </ul> <p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• limited ability to organise their answer, some appropriate terminology</li> <li>• Unbalanced – good analysis of process but weak reference to impacts OR good analysis of impacts with weak process</li> </ul> <p><b>Level 1</b></p> <p>Description and assessment will be limited, little evidence of appropriate terminology.</p> <p><b>Accept</b> injection of sperm nucleus into egg if explained</p>	<p><b>Level 3 [10-12 marks]</b></p> <p>Candidates will give an accurate and fully developed analysis of in-vitro fertilisation. They will demonstrate the ability to present their answer in a logical sequence using appropriate and accurate 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>Level 2 [6-9 marks]</b></p> <p>Some analysis of IVF (descriptive at lower end)</p> <p>Evidence of understanding but some points not fully developed, using some appropriate terminology. Sentences and paragraphs will not always be relevant and material will be presented in a way that does not always address the question. Minor errors of grammar, punctuation and spelling.</p> <p><b>Level 1 [1-5 marks]</b></p> <p>Candidates will identify/describe in-vitro fertilisation. The description will be limited with little evidence of</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p>uterus.</p> <ul style="list-style-type: none"> <li>Two to three fertilized eggs implanted to improve success rate</li> </ul> <p><b>Pregnancy</b></p> <ul style="list-style-type: none"> <li>hormones given during the next two weeks to aid in the implantation</li> <li>Pregnancy test to confirm success.</li> </ul> <p><b>Impact of process</b></p> <ul style="list-style-type: none"> <li>Costs (time and money)</li> <li>Stress</li> <li>Intrusiveness of procedure</li> <li>Risk of multiple births</li> <li>Increase birth defects</li> <li>Risk of miscarriage</li> <li>Ethical/moral opinions</li> </ul>			<p>the use of appropriate terminology. 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 marks</b> no response worthy of credit</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
4	a	<p>Candidates explain the function of oxygen and carbon dioxide exchange in the lungs.</p> <p><b>Function</b></p> <ul style="list-style-type: none"> <li>• Oxygen required for cellular respiration</li> <li>• Oxygen needed to provide energy for life processes especially in muscles</li> <li>• Oxygen consumption increases with and after exercise- repaying oxygen debt</li> <li>• Oxygen has to be transported to body tissues by blood</li> <li>• Carbon dioxide is a by-product of cellular respiration</li> <li>• Dissolves in cytoplasm and blood plasma becoming carbonic acid</li> <li>• Increasing levels of carbonic acid result in blood acidosis</li> <li>• Results in falling pH</li> <li>• Potentially would result in malfunction of enzymes leading to death</li> <li>• Carbon dioxide must therefore be expelled from the body – lungs main site of removal</li> </ul> <p><b>Process</b></p> <ul style="list-style-type: none"> <li>• Diffusion across one cell thickness (very thin) walls of the alveoli.</li> <li>• The diffusion distance is very small.</li> <li>• To maximise the amount of diffusion taking place, the alveoli have a huge total surface area</li> </ul>	10	<p><b>Levels checklist</b></p> <p><b>Level 3</b> <b>Detailed explanation of function</b></p> <p>Clear and accurate explanation that is actually accurate Accurate terminology and follows a logical sequence.</p> <p><b>Level 2</b></p> <p><b>Some explanation of function or Focus on gaseous exchange</b></p> <p>An explanation that is accurate and uses sound terminology but does not always follow a logical sequence May lack clarity.</p> <p><b>Level 1</b></p> <p>Mainly descriptive. Low QWC</p>	<p><b>Level 3 [9-10 marks]</b></p> <p>Candidates will provide a fully developed explanation of the function including reference to the roles and properties of oxygen and carbon dioxide. 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>The explanation of the function will be accurate but will be focused on the process of gaseous exchange with some attempt at explaining the reasons for this process or may lack sufficient detail for level 3.</p> <p>Accurate terminology. Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be noticeable errors of grammar, punctuation and spelling.</p> <p><b>Level 1 [1-4 marks]</b></p> <p>Muddled explanation (largely descriptive) of function and/or process.</p> <p>Sentences and paragraphs are not</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<ul style="list-style-type: none"> <li>• The alveoli have a moist lining to help dissolve the gases,</li> <li>• They are surrounded by many tiny capillaries so there is a high volume of blood for the gases to pass into and out of.</li> <li>• Maintenance of diffusion gradient by ventilation</li> <li>• Details of transport of oxygen and carbon dioxide</li> </ul> <p>Any other valid comment</p>			<p>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 marks=</b> no response worthy of credit</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
4	b	<p><b>Dysfunctions</b></p> <ul style="list-style-type: none"> <li>• Bronchitis</li> <li>• Emphysema</li> <li>• Lung cancer</li> <li>• Asthma</li> <li>• COPD</li> <li>• Cystic fibrosis</li> </ul> <p><b>Effects could be:</b></p> <ul style="list-style-type: none"> <li>• Poor lung function</li> <li>• Susceptibility to lung infections / pneumonia (<i>secondary infections</i>)</li> <li>• Over production of mucus</li> <li>• Slows and clogs airway cilia</li> <li>• Narrowing of airways (<i>in asthma</i>)</li> <li>• Cough/shortness of breath/wheezing</li> <li>• Cyanosis (<i>blue lips</i>)</li> <li>• Poor circulation,</li> <li>• Oedema,</li> </ul> <p>If the candidate is describing cystic fibrosis then credit should be given to physiological effects that apply to other body systems, for example:</p> <ul style="list-style-type: none"> <li>• Impaired digestion</li> <li>• Weight loss</li> <li>• Fatty stools</li> <li>• Diabetes/pancreatitis</li> <li>• Jaundice/liver disease</li> <li>• Reduced fertility in women/sterility in men</li> <li>• Increased salt in sweat</li> </ul>	10	<p><b>Do not accept</b> descriptions of treatment (eg relievers, medication or Intellectual, Social or Emotional effects)</p> <p><b>Levels checklist</b></p> <p><b>Level 3</b> Detailed analysis of the physiological effects. Answer has a planned and logical sequence using appropriate and accurate terminology.</p> <p><b>Level 2</b> Explanation of the physiological effects. Limited ability to organise their answer, some appropriate terminology</p> <p><b>Sub max of 5</b> if only one effect given</p> <p><b>Level 1</b> Description and assessment will be limited with little evidence of appropriate terminology.</p>	<p><b>Level 3 [8-10 marks]</b> Candidates will provide a fully developed analysis of at least two physiological effects that includes accurate terminology and follows a logical sequence. Answer is supported by use of accurate description of the effects. 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 [4-7 marks]</b> Candidates will provide some analysis of at least two physiological effects that includes accurate terminology. The analysis of the effects will be mostly accurate. Sentences and paragraphs are generally relevant but may have minor inaccuracies or lack clarity and depth of understanding. There may be noticeable errors of grammar, punctuation and spelling. <b>Sub max 5 for only one effect</b></p> <p><b>Level 1 [1-3 marks]</b> Candidates will describe (identify) the physiological effects in a limited manner. Their use of appropriate terminology will be limited.</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			Any other valid comment			<p>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 marks =no response worthy of credit</b></p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
5		<p><b>Health</b> Candidates will evaluate how diet can affect the health and well-being of an individual</p> <p><b>Negative effects/poor diet</b></p> <ul style="list-style-type: none"> <li>• Being <b>obese or overweight</b> substantially increases the risk of morbidity from several conditions, including heart disease, hypertension, type 2 diabetes, stroke, osteoarthritis, sleep apnoea, and several types of cancer.</li> <li>• A diet that is lacking in <b>vitamins</b> and antioxidants can weaken the body's immune system.</li> <li>• Excessive amounts of <b>protein</b> can lead to kidney and bladder stones and the pain and immobility associated with this problem</li> <li>• <b>LDL cholesterol</b> that can form fatty deposits in the arteries and contribute to: <ul style="list-style-type: none"> <li>heart disease</li> <li>stroke</li> <li>infertility</li> <li>organ failure</li> </ul> </li> <li>• <b>Dehydration</b> can lead to poor brain function and low mental performance</li> <li>• Continued dehydration can lead to the lowering of kidney function</li> <li>• Excessive intake of <b>carbohydrates</b> leads to obesity and increases the risk</li> </ul>	20	<p>Candidates may approach this question from a variety of perspectives including: effects on body systems; effects of different nutrients/food groups; dietary lifestyle (difference between inputs and expenditure of energy). Any of these approaches are acceptable and the marks awarded will depend on the quality of the response as compared with the level descriptors.</p> <p><b>Levels checklist</b></p> <p><b>Level 4</b> Detailed evaluation Considers both positive and negative impact on health with some reference to well-being</p> <p>a well-planned and logical answer, with a clearly defined structure and conclusion</p> <p><b>Level 3</b> An evaluation of at least two possible effects on health and possibly well-being of diet The answer is planned and logical using appropriate and accurate terminology. With a limited conclusion</p>	<p><b>Level 4 [17-20 marks]</b> Candidates will give a detailed balanced evaluation of diet that includes both positive and negative impact on both health and well-being. They will consider the benefits of a good diet and the consequences of a poor one. Answers will be supported by detailed relevant examples.</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 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 3 [11-16 marks ]</b> Candidates will evaluate the effect of diet on health and may refer to well-being. They will consider the benefits of a good diet and the consequences of a poor one on health. They may omit reference to well-being but their answer is factual and detailed. Evaluation will</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p>of morbidity from several conditions, including:</p> <ul style="list-style-type: none"> <li>heart disease,</li> <li>hypertension,</li> <li>type 2 diabetes,</li> <li>stroke,</li> <li>osteoarthritis,</li> <li>sleep apnoea,</li> <li>several types of cancer.</li> </ul> <ul style="list-style-type: none"> <li>• too much <b>salt</b> increases the risk of hypertension and can lead to heart attack and stroke</li> <li>• low levels of <b>potassium</b> leading to heart conditions such as arrhythmia</li> <li>• Diets that have low to no levels of <b>fibre</b> can increase your risk of certain cancers that include breast and colon cancer.</li> <li>• Low fibre can cause constipation and reduced well-being</li> <li>• <b>Foods low in vitamins and minerals</b>, can affect fertility. The chances of having a child are reduced by diets containing high levels of sugary foods, junk food, foods high in saturated fat and little fresh fruit and vegetables.</li> </ul> <p><b>Physical well-being</b></p> <ul style="list-style-type: none"> <li>• Any of the above may affect physical well-being, the effect given must be appropriate and specific.</li> </ul>		<p><b>Level 2</b> Explanation of at least two effects on health and well-being of diet A sub-max of 10 will be awarded for one effect explained in depth. Limited ability to organise their answer, some appropriate terminology</p> <p><b>Level 1</b> Description and assessment will be Limited, little evidence of appropriate terminology.</p>	<p>be predominantly health related.</p> <p>They will demonstrate the ability to present their answer in a planned and logical sequence using appropriate and accurate 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>Level 2 [6-10 marks]</b> Candidates will attempt to evaluate the effect of diet on health and/or well being. They will possibly only consider poor or beneficial effects or refer simplistically either to health or well-being.</p> <p>They will demonstrate limited ability to organise their answer, using some appropriate terminology. Sentences and paragraphs will not always be relevant and material will be presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling.</p>

Question		Answer	Marks	Guidance	
				Content	Levels of response
		<p><b>Intellectual well-being</b></p> <ul style="list-style-type: none"> <li>This will normally be linked to the effects of not understanding why a poor diet is affecting the individual.</li> </ul> <p><b>Emotional well-being</b> A diet lacking in vitamins, nutrients and fibre can increase the risk of emotional problems that include</p> <ul style="list-style-type: none"> <li>mood swings,</li> <li>nervousness,</li> <li>depression.</li> </ul> <p><b>Social well-being</b></p> <ul style="list-style-type: none"> <li>Comments may be linked to extremes of weight loss or gain</li> </ul> <p><b>Positive effects/Good diet</b></p> <ul style="list-style-type: none"> <li>Proteins required for growth and repair of tissues and enzymes</li> <li>Carbohydrates required for energy</li> <li>Complex carbohydrates avoid swings in blood sugar levels</li> <li>Fats required for cell membranes, nerves, hormones</li> <li>Insoluble NSPs required for bowel action</li> <li>Water required to replace that lost, aid kidney function, maintain blood volume and keep skin supple</li> <li>Vitamins are required for the immune system which protects individuals from infections such as cold and flu's as well as the damaging effects of free</li> </ul>			<p><b>Level 1 [1-5 marks]</b> Candidates' description of the effects of diet on an individual will be limited, with little evidence of the use of appropriate terminology. Responses will be vague and/or not address the question. They may answer the question only in the terms of PIES.</p> <p>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 marks=</b> no response worthy of credit</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p>radicals that attack the body's cells.</p> <ul style="list-style-type: none"> <li>• Certain vitamins cannot be produced by the body such as vitamin C this helps to repair skin and cells.</li> <li>• calcium which helps to make our bones stronger. A diet lacking in calcium can increase the risk of bone disease such as osteoporosis.</li> <li>• Neurotransmitters, such as dopamine, endorphins, glutamine and serotonin are manufactured from the enzymes, amino acids, minerals, fatty acids, amino acids, proteins and carbohydrates in the foods eaten</li> <li>• HDL cholesterol that can remove fatty deposits in the arteries and reduce the incidence of heart disease and stroke</li> <li>• Soluble NSPs can increase the production of HDL</li> <li>• Omega 3 oils are beneficial to cardiovascular health</li> <li>• Omega 6 oils are beneficial to brain development</li> <li>• Fruit and vegetables contain phytochemicals that are both beneficial to body systems and appear to offer protection from certain cancers.</li> <li>• Opposite references to the negative aspects listed above.</li> <li>• Any other valid comment</li> </ul>			

**OCR (Oxford Cambridge and RSA Examinations)**  
**1 Hills Road**  
**Cambridge**  
**CB1 2EU**

**OCR Customer Contact Centre**

**Education and Learning**

Telephone: 01223 553998

Facsimile: 01223 552627

Email: [general.qualifications@ocr.org.uk](mailto:general.qualifications@ocr.org.uk)

[www.ocr.org.uk](http://www.ocr.org.uk)

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

**Oxford Cambridge and RSA Examinations**  
**is a Company Limited by Guarantee**  
**Registered in England**  
**Registered Office; 1 Hills Road, Cambridge, CB1 2EU**  
**Registered Company Number: 3484466**  
**OCR is an exempt Charity**

**OCR (Oxford Cambridge and RSA Examinations)**  
**Head office**  
**Telephone: 01223 552552**  
**Facsimile: 01223 552553**

© OCR 2014

