

Health and Social Care

Advanced GCE

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

Mark Scheme for January 2012

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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

	Good response/positive
	Negative
	Attempts evaluation
	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
1	(a)	<p>One mark for each structure identified, EIGHT required</p> <ol style="list-style-type: none"> 1. aorta 2. (Superior) vena cava 3. right atrium 4. right ventricle 5. left ventricle 6. left atrium 7. pulmonary artery 	<p>7x1</p> <p>7</p>	<p>One mark for each correct answer. Minor errors in spelling are acceptable.</p>
	(b)	<p>One mark for each type of blood cell, THREE required Two marks for each description, THREE required</p> <p>Red Blood Cells (Erythrocytes)</p> <ul style="list-style-type: none"> • contain hemoglobin • oxyhaemoglobin • an iron rich protein which picks up oxygen as the blood passes through the lungs transports it around the body • releases it to organs and tissues throughout the body • concave shape / large surface area for diffusion <p>Platelets</p> <ul style="list-style-type: none"> • (thrombocytes) are tiny disc-shaped cells which help prevent abnormal or excessive bleeding by forming clots • activates clotting process in the presence of air and foreign material <p>White Blood Cells (any named white cell)</p> <ul style="list-style-type: none"> • play a major role in defending the body against disease producing bacteria, viruses and fungi • there are three main types of leukocytes, with each type performing a specific infection-fighting function • engulfs foreign bodies • phagocytosis (the process of) 	<p>3x1 3x2</p> <p>9</p>	<p>Identification does not have to be a sentence.</p> <p>The second part of the question asks for a 'description', therefore, a short phrase or a short sentence is required. One word responses are not acceptable – <i>sub-max of 3 for identification-type answers only.</i></p> <p>One mark for the identification of the cell type.</p> <p>Candidates may write about three different white cells.</p> <p>Accept any other appropriate response.</p>

Question	Answer	Marks	Guidance
	<p>Monocytes</p> <ul style="list-style-type: none"> • defend the body against bacterial infection <p>Granulocytes</p> <ul style="list-style-type: none"> • include neutrophils, eosinophils and basophils, neutrophils, phagocytes • combat infection by rapidly increasing in number • engulfing and destroying foreign substances • they then die and, in turn, are ingested by monocytes • eosinophils and basophils also play infection fighting roles <p>Lymphocytes</p> <ul style="list-style-type: none"> • consist of two types of cells which combine forces to create a complex interaction to regulate the immune response • T cells attack virus-infected and malignant cells • B cells produce and release antibodies, or protein substances, which bind to infectious agents • and help prevent them from doing damage to the body 		

Question		Answer	Marks	Guidance
1	(c)	<p>One mark for each difference, FOUR required</p> <ul style="list-style-type: none">• veins have valves• carries low pressure blood• carries blood back to the heart• oxygen content of blood in veins is lower / except pulmonary vein• thinner walls / less layers than an artery• veins have no pulse• veins have larger / wider lumen	4x1 4	Identification does not have to be a sentence.

Question		Answer	Marks	Content	Guidance
					Levels of response
2	(a)	<p>Candidate will describe how the function of the musculo-skeletal system can be affected by the chosen dysfunction.</p> <p>Dysfunctions</p> <ul style="list-style-type: none"> • arthritis • Parkinson's • multiple sclerosis • osteoporosis <p>Arthritis (rheumatoid and osteo) Function</p> <ul style="list-style-type: none"> • linked to mobility, supporting body weight, pain on movement, joint surfaces being unprotected causing joint deformity <p>Effect</p> <ul style="list-style-type: none"> • inflammation of one or more joints causing redness, swelling, pain and loss of joint mobility • may be caused by wear and tear or may be a symptom of a generalised disease • swelling can be due to fluid collections • osteoarthritis is the gradual destruction of weight bearing joints and sometimes the hands, it cannot be reversed • rheumatoid arthritis affects hands, knees, shoulders, ankles and can produce painless round rheumatoid nodules under the skin / can cause damage to tissue throughout the body unlike osteoarthritis <p>Osteoporosis Function</p> <ul style="list-style-type: none"> • support and mobility are most affected 	10	<p>The question asks for a 'description', therefore, a phrase or a complete sentence is required.</p> <p>Candidates will not always use the phrases as printed. Marks will be given for the general principal.</p> <p>Accept any other appropriate response.</p>	<p>Level 3 [8 – 10 marks] Candidates will provide a fully developed description that includes accurate terminology. Description of effects will be accurate and well developed. 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5 – 7 marks] Candidates will provide a developed description that includes accurate terminology. Description of effects will be accurate. 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 some errors of grammar, punctuation and spelling.</p> <p>Level 1 [0 – 4 marks] Candidates' will provide a simple description. Their use of appropriate terminology will be limited. Description of effects may be limited. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors of grammar, punctuation and spelling may be noticeable and intrusive.</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p>Effect</p> <ul style="list-style-type: none"> • bones lose their density • worse with age and more common in women, • fractures are common in hip wrist and spine with associated nerve damage • the bones lose calcium, phosphate and the matrix breaks down • linked to bone weakness, fractures and joint destruction, mobility, pain and deformity <p>Parkinson's</p> <p>Function</p> <ul style="list-style-type: none"> • control of movement, support and mobility (lack of) <p>Effect</p> <ul style="list-style-type: none"> • disease of the central nervous system giving gradual, progressive muscle tremors, rigidity and clumsiness • a mask-like expression, awkward shuffling walk with a stooped posture and a slow monotonous voice • walking, talking and tasks become progressively difficult • gross motor dysfunction • later stages mental deterioration and dementia occur; person becomes a danger to themselves, prone to accidents • dopamine pump is affected and cell potentials altered <p>Multiple sclerosis</p> <p>Function</p> <ul style="list-style-type: none"> • control of movement, support and mobility(lack of) • lack of sensation, eg picking up a hot plate • visual disruption causing inherent dangers • effects on balance • effects on body and organ / functions 			

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			<p>Effect</p> <ul style="list-style-type: none"> • progressive and debilitating CNS disease involving on going destruction of the myelin sheaths of nerves • this effectively causes short circuits in the system and disrupts signals - therefore all systems can be affected in some way • the cause or trigger is said to be viral • auto immune response is that T cells target myelin as foreign • gross motor dysfunction • leading to reduced mobility, inability to control movements and potential onset of areas of paralysis <p>Other problems include:</p> <ul style="list-style-type: none"> • visual • sensory • coordination • balance problems 			

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2	(b)	<p>Arthritis</p> <p>Diagnosed by:</p> <ul style="list-style-type: none"> • blood test: rheumatoid factors are a variety of antibodies that are present in 70% – 90% of people with rheumatoid arthritis (RA) • X-ray: shows joint changes and bone surface destruction and deformity • clinical assessment showing: swelling in one or more joints • early morning stiffness for more than a few minutes • recurring pain or tenderness in a joint, or inability to move it normally • obvious redness or warmth in a joint • unexpected weight loss, fever or weakness combined with joint pain <p>Treated by:</p> <ul style="list-style-type: none"> • NSAID's / steroids and pain control / analgesia • surgical intervention eg joint replacement • injections of gold salts, D-penicillamine and chloroquine • physiotherapy • acupuncture. • gentle exercise • injections of synovial fluid substitutes 	10	<p>The question asks for a 'description', therefore, a phrase or a complete sentence is required.</p> <p>Candidates will not always use the phrases as printed. Marks will be given for the general principal.</p> <p>Candidates may use a collection of methods.</p> <p>Accept any other appropriate treatment.</p> <p>Accept any other appropriate response.</p>	<p>Level 3 [8 – 10 marks] Candidates will provide a fully developed description that includes accurate terminology. Description of the diagnosis and treatment will be accurate and well developed. 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5 – 7 marks] Candidates will provide a developed description that includes accurate terminology. Description of the diagnosis and treatment will be accurate. 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 some errors of grammar, punctuation and spelling.</p> <p>Level 1 [0 – 4 marks] Candidates' will provide a simple description. Their use of appropriate terminology will be limited. Description of the diagnosis and treatment may be limited. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors of grammar, punctuation and spelling may be noticeable and intrusive.</p>

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			<p>Osteoporosis</p> <p>Diagnosed by:</p> <ul style="list-style-type: none"> • clinical history • identification of risk factors in your personal history and physical examination • blood test • hormones produced by the brain (LH and FSH) and ovaries in women (oestradiol) or testicles in men (testosterone) may be measured to identify any deficiency • X-ray • DXA scan (dual X-ray absorptiometry scan) is used to measure the thickness (or density) of the bone - here an x-ray beam is directed at a small area of bone (usually the heel, spine, hip, or wrist) - the thicker your bone is, the less x-ray beam will pass through it <p>Treatment includes:</p> <ul style="list-style-type: none"> • HRT • vitamin D • calcium supplements • calcitonin injections may help • preventative lifestyle changes prove most effective when started young 			

Question			Answer	Marks	Guidance	
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			<p>Parkinson's</p> <p>Diagnosed by: The most common way to test for Parkinson disease is thorough physical and systemic neurological examination.</p> <p>This may include:</p> <ul style="list-style-type: none"> • tests to gauge the patient's reflexes • muscle strength • coordination • balance • gait • smoothness of movement <p>Physicians, when trying to test for the illness, may also look for a family history of Parkinson disease.</p> <p>Treatments include:</p> <ul style="list-style-type: none"> • levodopa and carbidopa to decrease tremors and rigidity • surgical grafting of dopamine secreting neurones • surgery to destroy nerve pathways (ablation) • use of canaboids to reduce symptoms 			

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			<p>Multiple sclerosis</p> <p>Diagnosis:</p> <ul style="list-style-type: none"> • EVOKE responses • neurological examination • clinical examination • diagnosing multiple sclerosis is not easy • there is no specific test for multiple sclerosis and it is not even certain that it is only one disease - MS diagnosis is a process of eliminating all other possibilities • typically, people who have finally been diagnosed with definite MS will have been through several diagnostic stages • this process is often drawn out over months or years • MRI allows much more accurate diagnoses of neurological conditions like multiple sclerosis • it can readily differentiate between normal and demyelinated white brain matter • lumbar puncture and examination of the CSF cannot be used to definitively diagnose nor exclude multiple sclerosis, but the results can be indicative of MS and are used to support a clinical diagnosis • no cure but various drug treatments are available to suppress symptoms and effects, eg Interferon Beta • lifestyle changes to support overall treatment • rest and support required until periods of remission 			

Question		Answer	Marks	Guidance	
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3	(a)	<p>Renal function</p> <ul style="list-style-type: none"> • blood is filtered in the glomeruli (Bowman's capsule) in the cortex of the kidney • waste products (urea and electrolytes) and excess water are filtered out under pressure • water and other valuable minerals / chemicals are reabsorbed in the loop of Henley • the urine produced collects in the calyces and • then drains into the pelvis of the kidney • peristaltic waves transfer the urine down the ureter • without reflux • into the bladder which is a large muscular sac • when the bladder is full, nerve sensations cause the bladder to contract under voluntary control • forcing the urine through the urethra and out of the body • urine travel is in one direction only; system is designed not to reflux back • osmoregulatory function • role of hypothalamus and ADH 	10	<p>The question asks for a 'description', therefore, a phrase or a complete sentence is required.</p> <p>Candidates will not always use the phrases as printed. Marks will be given for the general principal of function.</p>	<p>Level 3 [8 – 10 marks] Candidates will provide a fully developed description that includes accurate terminology. Description of the function will be accurate and well developed. 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5 – 7 marks] Candidates will provide a developed description that includes accurate terminology. Description of the function will be accurate. 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 some errors of grammar, punctuation and spelling.</p> <p>Level 1 [0 – 4 marks] Candidates' will provide a simple description. Their use of appropriate terminology will be limited. Description of the function may be limited. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors of grammar, punctuation and spelling may be noticeable and intrusive.</p>

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3	(b)	<p>Peritoneal dialysis</p> <ul style="list-style-type: none"> • uses the person's peritoneal membrane to act as a dialysis mechanism, less expensive and involved • it involves filling the abdominal cavity via a catheter with a dialysate solution in a closed system which can be uncomfortable • waste products from the blood then diffuse across the peritoneal membrane which is a slow process • this may take several hours and restricts activity • the fluid is then drained back into the bag which can be difficult • this is replaced by a fresh bag of dialysate and the process is carried out again can take longer than haemodialysis <p>Haemodialysis</p> <ul style="list-style-type: none"> • involves filtering the blood through an artificial kidney called a dialyser which is expensive / time consuming • the patient has a semi-permanent arterio-venous shunt inserted into the vessels of their wrist so they can connect to the machine via an artery which is prone to infection / blockages • inside the dialyser the blood is run through tubes and across a semi-permeable membrane/ clotting risk / air embolus risk • on the other side of which is the dialysate which allows waste products to be continuously removed, efficiently • as the dialysate is being constantly changed no worries about drainage into a bag • the cleaned (dialysed) blood enters the body through the shunt via a vein in the wrist so patient has restricted movement 	10	<p>All of the treatments may have similar complications or concerns or could be better than another treatment for various reasons which the candidate will develop.</p> <p>Accept any other appropriate response.</p> <p>Candidates will not always use the phrases as printed. Marks will be given for the general principal of the treatment.</p>	<p>Level 3 [8 – 10 marks] Candidates will provide a fully developed analysis that includes accurate terminology. Analysis of the treatment will be accurate and well developed. 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5 – 7 marks] Candidates will provide an analysis that includes accurate terminology. Analysis of the treatment will be accurate but limited. 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 some errors of grammar, punctuation and spelling. <i>Sub-max 7 for a collection of methods.</i></p> <p>Level 1 [0 – 4 marks] Candidates' will provide a description. Their use of appropriate terminology will be limited. Description of the function may be limited. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors of grammar, punctuation and spelling may be noticeable and intrusive.</p>

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			<p>Renal transplant</p> <ul style="list-style-type: none"> • the operation lasts about four hours and is carried out under a general anaesthetic which has risks • a donor kidney that has to be cross matched for acceptability which means there could be a long wait • is removed from the donor and has to be implanted in a matter of hours leaving no time for second thoughts / or errors • the surgeon will make an incision in the abdomen either on the right or left side depending on where to insert the kidney which leaves a scar • they do not usually remove failed kidneys unless they are causing problems which could mean a second operation or surgical wound • the new kidney will be placed above the pelvic brim and connected to the iliac vessels so that the kidney is supplied with blood, the position may give rise to increased infections from the ureter's insertion point • the ureter is then connected to the bladder so that urine can drain away • a stent (plastic tube) may be inserted to stop the ureter blocking - this will have to be removed later in another procedure, can get stuck • the kidney usually starts functioning immediately but may not thus causing concern and surgical problems • anti-rejection drugs are taken by the patient to reduce the risk of rejection - these may or may not work - the body may automatically reject the organ anything up to three years later for no reason 			

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			<p>Drug therapy Treatment will be relative to the dysfunction chosen, eg the use of immuno-suppressant drugs with transplant patients or the use of anti-coagulants on dialysis patients.</p> <ul style="list-style-type: none"> • lithotripsy: the use of sound waves to destroy renal calculi • can be done by immersing the patient in a tank of water as the acoustic couple • surgically an ultrasound probe is used to blast the calculi in situ • uroscopic removal of stones is done by using a snare or basket in theatre and under anaesthetic • surgical removal of stones under x-ray or ultrasound control either using a fibre optic laparoscope • diet and fluids can be controlled; reducing protein helps reduce the problems in renal failure as does reducing fluids • increasing fluids can help in the flushing out of small renal calculi • drugs, diuretics, antibiotics, anti-inflammatory drugs to increase urine production to move stones <p>Nephrotic Syndrome</p> <ul style="list-style-type: none"> • steroid treatment • immunosuppressants • diuretics • dialysis • transplant • other drug therapies <p>Effects of the treatment on time, change in appearance, coping with side effects, disruption to routines, availability of donor organs.</p>			

Question		Answer	Marks	Guidance
4	(a)	One mark for each structure identified, SIX required 1. trachea, cartilage 'rings', wind pipe 2. lung 3. thyro-cricoid cartilage/ voice box , larynx 4. bronchus 5. bronchiole 6. alveoli	6x1 6	One mark for each correct answer. Minor errors in spelling are acceptable.

Question		Answer	Marks	Guidance	
				Content	Levels of response
4	(b)	<p>Diagnostic techniques</p> <p>Chest X-Ray</p> <ul style="list-style-type: none"> chest X-ray is a procedure used to evaluate organs and structures within the chest for symptoms of disease chest X-rays include views of the lungs, heart, small portions of the gastrointestinal tract, thyroid gland, and the bones of the chest area they can show infection, change in structure and evidence of previous disease processes <p>Cat Scan / MRI</p> <ul style="list-style-type: none"> it provides detailed, cross-sectional views of all types of tissue the preferred method for diagnosing many different cancers and other chronic changes in the lung it allows a physician to confirm the presence of tissue change and measure its size, precise location the extent of the involvement with other nearby tissue invaluable in diagnosing and the treatment of vascular diseases in the chest that can lead to more serious problems <p>Blood / sputum testing</p> <ul style="list-style-type: none"> blood tests help doctors check for certain diseases and conditions - they also help check the function of your organs and show how well treatments are working a sample of blood taken from an artery (arterial blood gas) can show low levels of oxygen (hypoxemia) and high levels of carbon dioxide (respiratory acidosis) used to identify infections 	10	<p>The question asks for a 'explanation', therefore, a phrase or a complete sentence is required.</p> <p>Inclusion of incorrect forms of diagnosis will not attract marks.</p> <p>Candidates will relate tests to their chosen dysfunction.</p>	<p>Level 3 [8 – 10] Candidates will provide a fully developed explanation that includes accurate terminology. At least two descriptions of the diagnosis and the information they provide will be provided. 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5 – 7 marks] Candidates will provide two explanation s that include accurate terminology. Description of how they help will be accurate. 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 some errors of grammar, punctuation and spelling. <i>Sub-max of five if one description completed fully.</i></p> <p>Level 1 [0 – 4 marks] Candidates' will provide a simple explanation. Their use of appropriate terminology will be limited. Description of diagnosis and the information provided may be limited. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Errors of grammar,</p>

Question			Answer	Marks	Guidance	
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			<p>White Blood Cell Count (WBC)</p> <ul style="list-style-type: none"> • this test measures the number of white blood cells in a drop (microliter) of blood • a low WBC may be due to a viral infection, a toxic reaction that is limiting production of normal WBCs • a high WBC count may indicate infection - an increased risk of infection occurs once the WBC drops • analysis of the coughed-up phlegm can tell doctors which germ caused the infection and how infectious it is <p>Peak Flow</p> <ul style="list-style-type: none"> • peak flow can measure the maximum volume rate of air someone can blow during the first second or so of expiration • score is based on age and height and the best of three in comparison to normal function • by checking what an individual's 'personal best' peak flow is during times of no symptoms • the decrease in peak flow during an asthma attack can be identified and monitored • when the peak flow drops significantly, concern about the asthma rises • conversely, a peak flow which remains at a high level helps in reassuring that the asthma is under control and perhaps any medications being used may be decreased • peak flow can help when asthma is getting worse and may show changes before you feel them • it can allow the doctor to adjust the treatment to prevent emergency hospitalisations • peak flow meter may help the doctor identify causes of your asthma at work, home or play • it can help to determine what might be triggering asthma • peak flow meter can also be used during an asthma episode 			punctuation and spelling may be noticeable and intrusive.

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<ul style="list-style-type: none"> • it can help you determine the severity of the episode and if further medication is required • application of spirometry techniques <p>Clinical examination The clinician can assess a patient by observing the following</p> <ul style="list-style-type: none"> • temperature • respirations • blood pressure • and the general look of the patient and how they are behaving and reacting to stimulus <p>Cystic fibrosis</p> <ul style="list-style-type: none"> • clinical examination • sweat test • genetic analysis • blood tests • use of peak flow and spirometry 			

Question		Answer	Marks	Guidance
4	(c)	<p>One mark for each principle, FOUR required</p> <p>Steroids</p> <ul style="list-style-type: none"> • Corticosteroids (steroids) are used to reduce inflammation • and mucus production in the airways of the lungs • they also reduce the swelling and narrowing of the airways • help other quick-relief medicines work better <p>Antibiotics</p> <ul style="list-style-type: none"> • an antibiotic inhibits or abolishes • the growth of micro-organisms • such as bacteria, fungi, or protozoa • they are used to treat secondary infections • they have no effect on viruses eg Influenza <p>Ventolin</p> <ul style="list-style-type: none"> • is used to relax the muscle that constrict the airways • and thus help the flow of respiratory gases • and the balance of oxygen and carbon dioxide • use of inhaler (one mark regardless of colour) <p>Surgery</p> <ul style="list-style-type: none"> • wedge resection - the surgeon removes a small wedge-shaped piece of lung that contains the lung cancer and a margin of healthy tissue around the cancer <p>Chemotherapy</p> <ul style="list-style-type: none"> • a small tube in a vein in the arm or the back of the hand to administer the drug that kills the cells 	4x1 4	<p>Short answers that are not full sentences are acceptable as are bullet points.</p> <p>One or more may be applied.</p> <p>Accept any other appropriate answer.</p>

Question	Answer	Marks	Guidance
	<p><i>Other ways of giving chemotherapy medicines include:</i></p> <ul style="list-style-type: none"> • tablets or capsules • injections into the area around the spinal cord • injections into a muscle or injection under the skin <p><i>Radiotherapy</i></p> <ul style="list-style-type: none"> • for each fraction of radiotherapy the patient will be asked to sit or lie down in a fixed position - the radiotherapy equipment can be positioned with great accuracy to target the beam of radiation exactly on the right spot • beam is directed at a tumour that is near the surface of the skin to avoid destroying unaffected cells • radiation destroys cancerous cells <p><i>Other treatments (with suitable explanations)</i></p> <ul style="list-style-type: none"> • physiotherapy • transplants • drug therapy • avoidance of triggers in asthma 		

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5		<p>Physiological effects that may be linked to IBS, gall stones or ulcers and celiac disease</p> <p>An explanation may be given for the following examples:</p> <ul style="list-style-type: none"> • reflux • gastritis • constipation • diarrhoea • vomiting blood • pyloric stenosis • vomiting • pain • flatulence • blood in the stools • jaundice <p><i>Physiological effects that may be linked to Coeliac disease</i></p> <ul style="list-style-type: none"> • most of the gastrointestinal symptoms and signs of celiac disease are due to the inadequate absorption of fat • gastrointestinal symptoms of fat malabsorption include diarrhoea, malodorous flatulence, abdominal bloating • and increased amounts of fat in the stool • the unabsorbed fat is broken down by intestinal bacteria into fatty acids • and these fatty acids promote secretion of water into the intestine, resulting in diarrhoea • fatty stools typically are large in volume, foul smelling, greasy • light tan or light grey in colour, and tend to float in the toilet bowl • oil droplets (undigested fat) also may be seen floating on 	20	<p>The question asks for a 'explanation', therefore, a phrase or a complete sentence is required.</p> <p>Bullet points will indicate identification unless they are fully formed descriptions. This may only take them as far as the second mark band.</p> <p>The list is not definitive but most responses will be covered by these areas of common effects.</p>	<p>Level 4 [16 – 20 marks]</p> <p>Candidates will give detailed explanation of the effects on the health, well being and life style from the named dysfunction. 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 of grammar, punctuation and spelling.</p> <p>Level 3 [11 – 15 marks]</p> <p>Candidates will explain the effects on the health, well being and life style from the named dysfunction. 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 some errors of grammar, punctuation and spelling.</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p>top of the water</p> <ul style="list-style-type: none"> • loss of intestinal villi also causes malabsorption of carbohydrates, particularly the sugar lactose • signs and symptoms of malabsorption of lactose are particularly prominent in individuals with celiac disease who have underlying lactose intolerance • a genetically determined reduction in the activity of lactase • symptoms of lactose malabsorption (diarrhoea, excessive flatulence [passing gas]) • abdominal pain and abdominal bloating or distension occur because unabsorbed lactose passes through the small intestine and into the colon <p>Signs and symptoms of malnutrition and vitamin or mineral deficiencies</p> <ul style="list-style-type: none"> • symptoms of malnutrition and vitamin or mineral deficiencies include: <ul style="list-style-type: none"> - weight loss, fluid retention, anaemia, osteoporosis, bruising easily, peripheral neuropathy (nerve damage), infertility, and muscle weakness • normal protein levels in the blood are necessary to keep fluid from leaking out of blood vessels and into the body's tissues • when blood protein levels fall as in coeliac disease, fluid leaks into many tissues (oedema) but particularly the ankles and feet • which swell due to the oedema <p>Anaemia: lack of absorption of vitamin B12 and iron can lead to anaemia</p> <p>Osteoporosis: lack of absorption of vitamin D and calcium can lead to osteoporosis and bone fractures</p>			<p>Level 2 [6 – 10 marks] Candidates will describe the effects on the health, well being and life style from the named dysfunction. 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> <p>Level 1 [0 – 5 marks] Candidates will identify possible the effects on the health, well being and life style from the named dysfunction. Their answer will be limited and may contain little evidence of the use of appropriate terminology. Sentences and paragraphs have limited coherence and structure, with little relevance to the main focus of the question. Answers may be list like. Errors of grammar, punctuation and spelling may be noticeable and intrusive.</p>

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p>Easy bruising: lack of absorption of vitamin K can lead to diminished ability of blood to clot and hence to easy bruising or excessive bleeding</p> <p>Peripheral neuropathy (nerve damage): deficiencies of vitamins B12 and thiamine may contribute to nerve damage with symptoms of poor balance, muscle weakness, and numbness and tingling in the arms and legs</p> <p>Infertility: untreated celiac disease can lead to infertility in women, lack of menses (menstruation), spontaneous abortions and low birth weight infants</p> <p>Muscle weakness: lack of absorption and low levels of potassium and magnesium can lead to severe muscle weakness, muscle cramps, and numbness or tingling sensations in the arms and legs</p> <p>Effects</p> <p>Physical</p> <ul style="list-style-type: none"> • mobility problems and the inability to move around • carry out daily tasks • personal hygiene and • take part in gainful employment • education • recreation <p>Intellectual</p> <ul style="list-style-type: none"> • lack of understanding of the problems and causes their dysfunction • poor education on the effects dysfunction • failure to believe the facts and effects 			

Question			Answer	Marks	Guidance	
					Content	Levels of response
			<p><i>Emotional and social effects:</i></p> <ul style="list-style-type: none"> • effects from reduced: mobility • daily living tasks • personal hygiene • socialising • personal relationships <p><i>Any other appropriate activity that cannot be achieved and an assessment of the practicalities of daily living.</i> These may well be linked to the above and include expansion on the following topics:</p> <ul style="list-style-type: none"> • stress • disempowerment • isolation • low self esteem • fear • reduced self worth • reduced self concept • personal isolation due to illness or stigma <p>Diabetes and cystic fibrosis will be accepted as a linked digestive dysfunction and will be marked accordingly.</p> <p>The application of appropriate PIES effects should also be rewarded. Any other valid evaluative comment.</p>			

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