

Health and Social Care

Advanced GCE

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

Mark Scheme for June 2011

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, 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 2011

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

Question		Expected Answer	Mark	Rationale/Additional Guidance
1	(a)	<p>One mark for each structure identified, FOUR required</p> <ol style="list-style-type: none">1. cerebral hemisphere/cerebrum2. corpus callosum3. cerebellum4. medulla (oblongata)/brain stem/pons.	<p>4x1</p> <p>[4]</p>	One mark for each correct answer. Minor errors in spelling are acceptable as long as the meaning's clear.

Question		Expected Answer	Mark	Rationale/Additional Guidance
1	(b)	<p>One mark for each correct function, FOUR required</p> <p>Cerebellum</p> <ul style="list-style-type: none"> • regulation and coordination of movement/posture/balance • fine tuning muscle movements • regulation of learnt patterns eg playing the violin • motor responses. <p>Medulla</p> <ul style="list-style-type: none"> • controls autonomic functions, and relays nerve signals between the brain and spinal cord; functions include: respiration, blood pressure, swallowing, vomiting, defecation, urination, reflexes, heart rate, breathing rate. <p>Corpus Callosum</p> <ul style="list-style-type: none"> • route communication between the two hemispheres. <p>Cerebral Hemisphere</p> <ul style="list-style-type: none"> • language is mostly represented on the left hemisphere • non-verbal skills tend to be represented on the right hemisphere • frontal lobe – associated with reasoning, planning, parts of speech, movement, emotions, and problem solving • parietal lobe – associated with movement, orientation, recognition, perception of stimuli • occipital lobe – associated with visual processing • temporal lobe – associated with perception and recognition of auditory stimuli, memory, and speech 	<p>4x1</p> <p>[4]</p>	<p>One word responses are not acceptable and are not awarded a mark.</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
1 (c) (i)	<p>Level 3 [5-6 marks] Candidates will provide a fully developed description of how the body can be affected by a dysfunction in the musculo-skeletal or neural systems 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [3-4 marks] Candidates will provide a sound description of how the body can be affected by a dysfunction in the musculo-skeletal or neural systems that that includes accurate terminology. The description of the effects will be 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.</p> <p>Level 1 [0-2 marks] Candidates will attempt to describe how the body can be affected by a dysfunction in the musculo-skeletal or neural systems in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p> <p>Arthritis</p> <ul style="list-style-type: none"> • joints will be stiff and painful affecting co ordination • may be swollen affecting mobility • pain may be worse after you have been exercising 	[6]	<p>One word responses are not acceptable and are not awarded a mark per point.</p> <p>Levels checklist</p> <p>Level 3 Fully developed description Dysfunction of musculo-skeletal or neural system Accurate terminology Logical sequence/clear understanding Description of at least two effects High level QWC</p> <p>Level 2 Sound description Dysfunction of musculo-skeletal or neural system Some terminology Description of at least two effects Some understanding Possible errors in QWC</p> <p>Level 1 Likely to be list-like/identification Dysfunction of musculo-skeletal or neural system Limited terminology Identification of effect(s) Limited understanding Possible noticeable and intrusive errors in QWC</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none"> • can't move the joint as much or as easily as before. • may make creaking sounds called crepitations and give rise to emotional effects • as arthritis progresses, joints may become misshapen and look knobby, and they may be unstable affecting balance and or protection • times when your symptoms are worse than at others and affected by changes in the weather or the amount of activity • sometimes pain and stiffness can be more severe in the early stages • if you have severe or advanced arthritis, it's possible that you will feel pain all the time, even at night and when you are resting • fatigue. <p>Osteoporosis</p> <ul style="list-style-type: none"> • loss of calcium • thinning of bones • early indication is a broken wrist • falls leading to broken hips happen most commonly in your late 70s or 80s • fractures in the spine are caused by a fall • can be caused by minor incidents like reaching into a cupboard or lifting a heavy bag, or even after a coughing fit • lower back or upper area of the spine compression fractures • will heal but they won't return to their previous shape causing height loss or stooping • this in turn can lead to shortness of breath, protruding stomach, indigestion problems, incontinence, poor mobility. 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Parkinson's Disease The symptoms of Parkinson's disease often start on one side of your body first and then affect both sides. The main symptoms are listed below:</p> <ul style="list-style-type: none"> • shaking (muscle tremor) often starts in the hand with circular movements. It usually affects your arms and legs, but sometimes also your head and jaw • the tremor is most obvious when you're at rest, and is reduced when you're moving or sleeping • stiffness (rigidity), which makes your limbs feel difficult to move • slow movement or an inability to move are common in people with Parkinson's disease • people with Parkinson's disease often walk with a slow shuffle. <p>As different muscles become affected you may develop:</p> <ul style="list-style-type: none"> • problems with posture and balance – you may have falls and have difficulty turning in bed or getting out of a chair • speech changes – your speech may become quiet or rapid, making it hard for others to understand you • loss of facial expression – you may smile less, frown more and blink slowly • small handwriting. <p>Other symptoms that you can have aren't related to movement. These can include:</p> <ul style="list-style-type: none"> • mental health problems – including depression, loss of memory, difficulty reasoning • bowel and bladder problems such as constipation and the need to urinate often • problems with swallowing • weight loss 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none"> • impotence • low blood pressure when you stand up • increased saliva and sweating • sleep problems and tiredness. <p>Multiple Sclerosis</p> <ul style="list-style-type: none"> • demyelination of nerves • eye problems, including pain and blurred or double vision • fatigue • muscle weakness, stiffness and spasms • bladder and bowel problems • loss of balance, coordination and dizziness • pain • numbness or tingling of your skin • difficulty speaking and swallowing • sexual difficulties. <p>Stroke</p> <ul style="list-style-type: none"> • sudden weakness, numbness or paralysis often down one side of the body, affecting the face, arm, leg or whole side • problems communicating, being unable to talk or understand what others are saying, or an alteration in speech, such as slurring words • sudden blurring, loss or disturbance of vision, especially in one eye • swallowing difficulties • dizziness, loss of balance or coordination • sudden severe headache • behaviour changes, which may include being slower to react than before the stroke. 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
1	<p data-bbox="235 231 280 263">(c)</p> <p data-bbox="302 231 347 263">(ii)</p> <p data-bbox="392 231 1193 502">Level 3 [5-6 marks] Candidates will provide a fully developed description of two diagnostic techniques to detect a dysfunction in the musculo-skeletal or neural system that includes accurate terminology. The answer is supported by the use of accurate descriptions of the techniques. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There will be few, if any, errors of grammar, punctuation and spelling.</p> <p data-bbox="392 534 1193 837">Level 2 [3-4 marks] Candidates will provide a developed description of two diagnostic techniques to detect a dysfunction in the musculo-skeletal or neural system. The description of the technique will be 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. <i>Sub-max of three if one done well.</i></p> <p data-bbox="392 869 1193 1141">Level 1 [0-2 marks] Candidates will attempt to describe one or two techniques in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p> <p data-bbox="392 1173 1193 1316">Clinical observation</p> <ul data-bbox="392 1212 1193 1316" style="list-style-type: none"> • Doctor will look for evidence relating to the symptoms previously outlined in 1(c) can be applied to all dysfunctions. <p data-bbox="392 1348 1193 1380">Imaging techniques</p>	[6]	<p data-bbox="1350 231 2072 263">Levels checklist</p> <p data-bbox="1350 295 2072 534">Level 3 Fully developed description 2 diagnostic techniques Accurate descriptions of the techniques Accurate terminology Clear understanding High level QWC</p> <p data-bbox="1350 566 2072 837">Level 2 Sound description 2 diagnostic techniques Generally accurate descriptions of the techniques Some terminology Some understanding Possible errors in QWC <i>Sub-max 3 for one technique done well</i></p> <p data-bbox="1350 869 2072 1077">Level 1 Likely to be list-like/identification 1 or 2 diagnostic techniques Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p> <p data-bbox="1350 1109 2072 1141">The technique must be appropriate to the dysfunction</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Accept principles of how the technique works</p> <ul style="list-style-type: none"> • X-rays – these can reveal any damage to the joints caused by the condition and are most useful when confirming osteoarthritis/osteoporosis • in the early stages of the disease, an x-ray might reveal no changes or damage. <p>CAT/MRI Scan</p> <ul style="list-style-type: none"> • unlike other imaging methods, CT/MRI scanning offers detailed views of different tissue types including lungs, bones, soft tissues and blood vessels • CT/MRI scans are commonly performed on the head and abdomen. Head scans are an effective method of checking the brain for suspected tumours, bleeding, or swelling of the arteries. They are also useful for investigating the brain following a stroke • tears (lacerations) of the joint (that might happen as a result of trauma or wear and tear), can be revealed by CT/MRI scan • CT/MRI scanning can identify normal and abnormal tissue, making it a useful tool to plan areas for surgery and as a guide for taking tissue samples and needle biopsies • CT/MRI scans may also be used to assess vascular (blood flow) conditions to different parts of the body. Also to assess injury and disease to bones, particularly in the spine and to assess bone density when investigating osteoporosis. <p>Blood tests</p> <ul style="list-style-type: none"> • there are many types, all measuring the levels of different blood cells and chemicals as appropriate • they can indicate abnormal cells, infection and how much inflammation there is in the body 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none"> • calcium is one of the most important minerals in the body. Abnormal calcium levels in the blood may be a sign of bone disease, osteoporosis or another disorder • vitamin D levels. This measure assesses whether you have a deficiency of vitamin D, which is essential for your body's absorption of calcium. <p>Spinal Fluid Analysis</p> <ul style="list-style-type: none"> • it contains a variety of substances, particularly glucose (sugar), protein, and white blood cells from the immune system • the fluid is withdrawn through a needle in a procedure called a lumbar puncture • it can also demonstrate abnormal cells and infection as well as: • viral and bacterial infections, such as meningitis and encephalitis • multiple sclerosis, a disease that affects the myelin coating of the nerve fibres of the brain and spinal cord • any other suitable dysfunction. <p>Evoked Potential Tests</p> <ul style="list-style-type: none"> • neurological examinations, changes and weaknesses in reflexes and senses. 		

Question		Expected Answer	Mark	Rationale/Additional Guidance
2	(a)	<p>One mark for each, SEVEN required</p> <ul style="list-style-type: none"> • aorta • (superior) vena cava • right atrium • right ventricle • left ventricle • left atrium • pulmonary artery. 	<p>7x1</p> <p>[7]</p>	<p>Minor errors in spelling are acceptable.</p>
2	(b)	<p>Level 3 [8-9 marks] Candidates will provide a fully developed description of at least two types of blood cell that includes accurate functions of each type of blood. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [5-7 marks] Candidates will provide a sound description of at least two types of blood cell that includes the functions of each type 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. <i>Sub-max of 5 for one done well.</i></p> <p>Level 1 [0-4 marks] Candidates' will identify or describe the function of one or two blood cells in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p>	<p>[9]</p>	<p>Levels checklist</p> <p>Level 3 Fully developed description 2 types of blood cell Accurate functions of each type of blood cell Accurate terminology Clear understanding High level QWC</p> <p>Level 2 Sound description 2 types of blood cell Functions of each type of blood cell Some terminology Some understanding Possible errors in QWC <i>Sub-max 5 for one done well</i></p> <p>Level 1 Likely to be list-like/identification 1 or 2 types of blood cell Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Red Blood Cells (Erythrocytes)</p> <ul style="list-style-type: none"> • contain haemoglobin • 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 • any structural comment related to function. <p>Platelets (thrombocytes)</p> <ul style="list-style-type: none"> • are white cell fragments • are tiny disc-shaped cells • which help prevent abnormal or excessive bleeding • part of the clotting process/by forming clots. <p>White Blood Cells (any named white cell) 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.</p> <p>Monocytes</p> <ul style="list-style-type: none"> • defend the body against bacterial infection. <p>Granulocytes include neutrophils, eosinophils and basophils. Neutrophils, phagocytes.</p> <ul style="list-style-type: none"> • 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>Cont/...</p>		<p>Cells identified can be separate phrases or can be included in the general description for a mark.</p> <p>Candidates may describe different types of white blood cell if they so choose.</p>

Question			Expected Answer	Mark	Rationale/Additional Guidance
			<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/Killer T 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/Marker B cells. <p>Or any other appropriate response</p>		
2	(c)		<p>One mark for each, FOUR required</p> <ul style="list-style-type: none"> • veins have valves arteries do not • veins carry low pressure blood, arteries carry high pressure blood • veins carry blood back to the heart, arteries carry blood away from the heart • oxygen content of blood in veins is lower/except pulmonary vein where as arteries have a high oxygen content • thinner walls and less tissue layers than an artery • veins are less elastic than arteries which have muscular walls • veins do not have a pulse where as arteries do. 	<p>4x1</p> <p>[4]</p>	One word responses are not acceptable and are not awarded a mark.

Question		Expected Answer	Mark	Rationale/Additional Guidance
3	(a)	<p>One mark for each, SEVEN required</p> <ul style="list-style-type: none"> • bladder • prostate • urethra • penis • vas deferens • epididimis • testicle. 	<p>7x1</p> <p>[7]</p>	<p>Minor errors in spelling are acceptable, as long as the meaning/intention's clear.</p>
3	(b)	<p>Candidates will explain why the testes are outside of the body cavity.</p> <ul style="list-style-type: none"> • because the temperature of the testicles must be lower than the rest of the body temperature • they have to be at a lower temperature than our bodies 37 (98.6) degrees • allows their temperature to be a few degrees lower than the rest of the body • for optimal sperm production and storage • in cold weather, testicles pull up nearer to the body to maintain their consistent temperature • sperm production is temperature related. 	<p>3x1</p> <p>[3]</p>	

Question	Expected Answer	Mark	Rationale/Additional Guidance
3 (c)	<p>Level 3 [8-10] Candidates will provide a fully developed description 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 will be few, if any, errors in the use of grammar, punctuation and spelling.</p> <p>Level 2 [5-7] Candidates will provide a sound description of in vitro fertilisation. 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 [0-4] Candidates will attempt to describe in vitro fertilisation. The description will be limited with 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. Errors in the use of grammar, punctuation and spelling may be noticeable and obtrusive. Answers may be list like.</p> <p>Before In Vitro Fertilization</p> <ul style="list-style-type: none"> • hormone therapy will begin approximately two weeks before the in vitro fertilization (IVF) procedure • fertility drugs will be given to stimulate production of eggs in the ovaries • blood tests and ultra sounds will be administered during this period to determine the best time to retrieve the 	[10]	<p>Levels checklist</p> <p>Level 3 Fully developed description Logical sequence Accurate terminology Clear understanding High level QWC</p> <p>Level 2 Sound description Limited organisation of answer Some terminology Some understanding Possible errors in QWC</p> <p>Level 1 Likely to be list-like/identification Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p> <p>One word responses are not acceptable and are not awarded a mark.</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>eggs</p> <ul style="list-style-type: none"> • the eggs must be removed just before ovulation in order to be used for IVF. <p>Egg retrieval</p> <ul style="list-style-type: none"> • removing eggs used to be done through surgical means as an outpatient • a needle is inserted into the ovary and eggs are extracted • general anaesthesia is not necessary; local anaesthesia or other sedating drugs may be given • after a brief rest, the woman can resume normal activities • while the woman is undergoing this procedure, the man will produce a semen sample. <p>Fertilization</p> <ul style="list-style-type: none"> • the fluid taken from the woman will be examined by an embryologist to make sure eggs are present • usually two to four eggs have been extracted • meanwhile, sperm will be separated from the semen • when the eggs are ready to be fertilized, active sperm will be joined with the eggs in a laboratory dish • this process of assisted reproduction, where the eggs and sperm are joined in the laboratory dish, is called in vitro fertilization. <p>Embryo Formation</p> <ul style="list-style-type: none"> • usually within 18 hours after fertilization, it is possible to determine if the egg or eggs have been successfully fertilized and are growing into pre-embryos • the pre-embryos are placed into a special mixture that mimics the inside of the fallopian tubes 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none"> • for the next 2 to 3 days of the incubation period, embryos form, ready to be implanted. <p>Implantation</p> <ul style="list-style-type: none"> • the doctor will use a catheter to painlessly transfer the embryos through the cervix to the woman's uterus • it is not uncommon to use two to three or more fertilized eggs for implantation • this method gives a better chance of an egg successfully implanting • patient rests for the next hour. <p>Pregnancy</p> <ul style="list-style-type: none"> • hormones are given during the next two weeks to aid in the implantation of the egg or eggs • if the IVF is successful, the eggs will attach to the uterine wall and a pregnancy test will be positive. 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
4 (a)	<p>Candidate will describe the structure and one function of the following. One mark for a description of the structure and one mark for a correct function.</p> <p>Trachea</p> <ul style="list-style-type: none"> • flexible fibro elastic and muscular structure to allow movement of the neck • rigid structure to maintain patency • connects the larynx with the bronchi • allows the transport of air to the lungs. <p>Ciliated Lining</p> <ul style="list-style-type: none"> • a collection of fine hairs that cover the inside of the trachea • they help to trap small particle and foreign bodies • move in waves in one direction back up towards the head • goblet cells release mucus to trap foreign bodies. <p>Diaphragm</p> <ul style="list-style-type: none"> • a large dome shaped muscle that contracts and relaxes • causing the chest cavity to increase and decrease in volume • allowing the lungs to expand and contract (breathing) • forms the division between the abdomen and the thoracic cavity • keeping the abdominal organs in their correct place. 	<p>3x1 3x1 [6]</p>	<p>One mark for each correct function which does not have to be a full sentence. Minor errors in spelling are acceptable.</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
4 (b)	<p>Level 3 [5-6 marks] Candidates will provide a comprehensive explanation that includes accurate terminology and follows a logical sequence. Answer is supported by use of accurate description of the process. Sentences and paragraphs are relevant with accurate use of appropriate terminology. There will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [3-4 marks] Candidates will provide a sound explanation that includes accurate terminology. The description of the process will be 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.</p> <p>Level 1 [0-2 marks] Candidates will attempt to explain the process in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p> <ul style="list-style-type: none"> • gas exchange happens by passive diffusion of gases • this is across the very thin walls of the alveoli • the diffusion distance is very small • in order to maximise the amount of diffusion taking place, the alveoli have a huge total surface area • the alveoli have a moist lining to help dissolve the gases • they are surrounded by many tiny capillaries so there is a high volume of blood for the gases to pass into and out of 	[8]	<p>Candidates may also describe only the mechanical process.</p> <p>Which ever they attempt should have a logical sequence. Small errors in the sequence will be accommodated providing they are not intrusive Levels checklist</p> <p>Level 3 Comprehensive explanation Accurate description of the process Logical sequence Accurate terminology Clear understanding High level QWC</p> <p>Level 2 Sound explanation Generally accurate descriptions of the process Some terminology Some understanding Possible errors in QWC</p> <p>Level 1 Likely to be list-like/identification Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none"> • as a result of gas exchange, the proportion of oxygen and carbon dioxide in the inhaled/exhaled air changes • the air breathed in containing a higher percentage of oxygen and • a lower percentage of carbon dioxide than the air we breathe out • the carbon dioxide in the blood being dissolved in the plasma • rib cage moves upward • diaphragm flattening, increasing pressure • diaphragm relaxing, decreasing pressure • role of pleural membrane in chest movement • role of intercostals muscles in chest movement • the principal of diffusion. <p>Any other valid comment.</p>		

Question	Expected Answer	Mark	Rationale/Additional Guidance
4 (c)	<p>Level 3 [7-8 marks] Candidates will provide a fully developed discussion of the effects of a named respiratory disorder 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 will be few, if any, errors of grammar, punctuation and spelling.</p> <p>Level 2 [4-6 marks] Candidates will give a sound discussion of the effects that include accurate terminology. The description of the effects of a named respiratory disorder will be 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.</p> <p>Level 1 [0-3 marks] Candidates will attempt to discuss the effects of a named respiratory disorder in a limited manner. Their use of appropriate terminology will be limited. Sentences and paragraphs are not always relevant, with the material presented in a way that does not always address the question. There may be noticeable errors of grammar, punctuation and spelling and answers may be list like.</p> <p>Dysfunctions</p> <ul style="list-style-type: none"> • bronchitis • emphysema • lung cancer • asthma • COPD • cystic fibrosis. 	[8]	<p>The question asks for a 'description', therefore, a phrase or a complete sentence is required.</p> <p>One word responses are not acceptable and are not awarded a mark.</p> <p>Levels checklist</p> <p>Level 3 Fully developed discussion Effects of a named respiratory disorder Accurate description of the effects Logical sequence Accurate terminology Clear understanding High level QWC</p> <p>Level 2 Sound discussion Effects of a named respiratory disorder Some terminology Some understanding Possible errors in QWC</p> <p>Level 1 Likely to be list-like/identification Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Effects could be</p> <ul style="list-style-type: none"> • slows and clogs airway cilia • poor lung function • lung infections/pneumonia • bronchiectasis • bronchiolitis • pneumothorax • pleural effusions • cough. <p>All of which are debilitating diseases that can cause great discomfort and distress, leading to severe symptoms such as</p> <ul style="list-style-type: none"> • shortness of breath • other systemic problems such as poor circulation • peripheral circulation problems • oedema • blood poisoning • secondary infections • the inability to move around, carry out daily tasks • take part in gainful employment. <p>Intellectual</p> <ul style="list-style-type: none"> • lack of understanding of the problems • lack of understanding due to poor education on the effects of the dysfunction • failure to believe the facts and the prognosis. <p>Emotional effects</p> <p>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/low self-worth/low self-concept 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<ul style="list-style-type: none">• fear. <p>Social</p> <ul style="list-style-type: none">• personal isolation due to illness or stigma• limited social interaction• family break up• loss of social status• social dependency. <p>Any other valid comment</p>		

Question	Expected Answer	Mark	Rationale/Additional Guidance
5	<p>Level 4 [16-20] Candidates will give a fully developed discussion of at least two possible causes of infertility in both women and men. 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>Level 3 [11-15] Candidates will discuss at least two possible causes of infertility in both women and men. 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>Level 2 [6-10] Candidates will attempt to discuss the possible causes of infertility in both women and men. 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. <i>A sub-max of 10 will be awarded for one cause explained in depth.</i></p>	[20]	<p>Levels checklist</p> <p>Level 4 Fully developed discussion 2 causes of infertility in men and 2 in women Logical sequence Clearly defined structure Accurate terminology Clear understanding High level QWC</p> <p>Level 3 Sound discussion 2 causes of infertility in men and 2 in women Planned and logical sequence Mostly accurate terminology Clear understanding for the most part Occasional errors in QWC</p> <p>Level 2 Some attempt at discussion, lacking detail Limited ability to organise their answer Some appropriate terminology Some errors in QWC <i>Max 10 marks for 2 causes for either men or women or only one cause for men and one cause for women</i></p> <p>Level 1 Likely to be list-like/identification Limited terminology Limited understanding Possible noticeable and intrusive errors in QWC</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Level 1 [0-5] The candidates discussion of the causes will tend to be more descriptive/identification only, with 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. Errors in the use of grammar, punctuation and spelling may be noticeable and obtrusive.</p> <p>Infertility in women Ovulation problems can occur as a result of a number of conditions that are outlined below.</p> <ul style="list-style-type: none"> • premature ovarian failure – when your ovaries stop working before the age of 40 • polycystic ovary syndrome (PCOS) – a condition which makes it more difficult for the ovaries to produce an egg • thyroid problems – both an overactive and an underactive thyroid can prevent ovulation • chronic conditions – if you have a debilitating condition, such as cancer or AIDS, it can prevent your ovaries from releasing eggs • hormonal imbalances • failure to ovulate • anorexia/excessive exercise/low body fat. <p>Womb and fallopian tubes If the womb or fallopian tubes become damaged or stop working, then it may be very difficult to conceive naturally. This can occur following a number of procedures or conditions:</p> <ul style="list-style-type: none"> • pelvic surgery – this can sometimes cause damage and scarring to the fallopian tubes • cervical surgery – this can sometimes cause scarring, or shorten the cervix (neck of the womb) • submucosal fibroids – are benign (non-cancerous) 		<p>Bullet points will indicate identification unless they are fully formed descriptions. This may only take them as far as Level 2.</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>tumours that develop in the muscle underneath the inner lining of the womb, and may prevent implantation</p> <ul style="list-style-type: none"> • endometriosis – this is a condition where cells, normally found in the womb lining, start growing on other organs. This can cause adhesions in the pelvis and limit the movement of the fimbria (tiny fronds at the end of the fallopian tubes) which direct the egg into the tube • previous sterilisation – some women choose to be sterilised if they do not wish to have any more children. Sterilisation involves blocking the fallopian tubes to make it impossible for an egg to travel to the womb. This process is rarely reversible • causes of blocked fallopian tubes • hostile cervical mucus • congenital/malformations of uterus. <p>Medicines and drugs The side effects of some types of medication and drugs can affect your fertility. Non-steroidal anti-inflammatory drugs (NSAIDs) – long-term use or a high dosage of NSAIDs like ibuprofen or aspirin can make it more difficult to conceive.</p> <ul style="list-style-type: none"> • chemotherapy – the medicines used with chemotherapy can sometimes cause ovarian failure, which means your ovaries will no longer be able to function properly • illegal drugs – drugs such as marijuana and cocaine can seriously affect fertility, making it more difficult to ovulate. They may also adversely affect the functioning of your fallopian tubes • age/menopause • infertility in women is also linked to age. Women in their early twenties are about twice as fertile as women in their late thirties. The biggest decrease in fertility begins during the mid thirties. 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Infertility in men</p> <p>Semen The most common cause of male infertility is abnormal semen. Semen can be abnormal for a number of reasons:</p> <ul style="list-style-type: none"> • decreased number of sperm – a very low sperm count, or no sperm at all • decreased sperm mobility – decreased sperm mobility, it will be harder for sperm to swim to the egg • abnormal sperm – sperm can be an abnormal shape, making it harder for them to move and fertilise an egg. <p>Testicles If they are damaged, it can seriously affect the quality of the semen. This may occur if:</p> <ul style="list-style-type: none"> • an infection of the testicles • testicular cancer • testicular surgery • injury. <p>Ejaculation disorders</p> <ul style="list-style-type: none"> • some men have a condition which makes it difficult for them to ejaculate. For example <ul style="list-style-type: none"> – retrograde ejaculation, causes you to ejaculate semen into your bladder – the ejaculatory ducts can also sometimes become blocked, or obstructed, and this too can make it difficult to ejaculate normally – impotence. <p>Medicines and drugs</p> <ul style="list-style-type: none"> • sulfasalazine – this is an anti-inflammatory medicine used to treat conditions such as Crohn's disease and rheumatoid arthritis This medicine can decrease your number of sperm. However, its effects are only 		

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>temporary</p> <ul style="list-style-type: none"> • anabolic steroids – long-term use, or abuse, of anabolic steroids can reduce your sperm count and sperm mobility • chemotherapy – chemotherapy can sometimes severely reduce the production of sperm. <p>Factors that affect both men and women There are a number of factors that can affect fertility in both men and women. These include:</p> <ul style="list-style-type: none"> • weight – being overweight, or obese, reduces both male and female fertility. In women, it can affect ovulation. Being underweight can also impact on fertility, particularly for women, who will not ovulate if they are severely underweight • sexually transmitted infections (STIs) – there are several STIs which can cause infertility. The most common is chlamydia, which can damage the fallopian tubes in women and cause swelling and tenderness of the scrotum in men • smoking – not only does smoking affect your general and long-term health, it can also affect fertility • occupational and environmental factors – exposure to certain pesticides, metals and solvents can affect fertility in both men and women • stress – if either are stressed, it may affect the relationship. Stress can reduce sexual desire therefore reducing the frequency of sexual intercourse • severe stress may also affect female ovulation and can limit sperm production. <p>Any other valid comment.</p>		

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

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

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 2011