AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	**for**: very effective convenient **against**: any **two** from: named side effects such as breast tenderness / headaches / weight gain / bleeding between periods religious belief – some religions do not allow any form of contraception no protection against STDs possible long-term health effects		4	AO2 4.5.3.4
01.2	A – pituitary gland B – thyroid gland C – adrenal gland D – pancreas E – ovary		1 1 **or** 1 1	AO3 4.5.3.4 4.5.3.5
01.3	secretes several hormones into the blood (in response to a stimulus) these stimulate other glands these release hormones which have the desired effect		1 1	AO3 4.5.3.4

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.4	**for**: very effective convenient **against**: any **two** from: • named side effects such as breast tenderness / headaches / weight gain / bleeding between periods • religious belief – some religions do not allow any form of contraception • no protection against STDs • possible long-term health effects		 1 1 2	AO1 4.5.3.5
02.1	A – pituitary gland B – thyroid gland C – adrenal gland D – pancreas E – ovary		1 1 1 1 1	AO2 4.5.3.1
02.2	secretes several hormones into the blood (in response to a stimulus) these stimulate other glands these release hormones which have the desired effect		1 1 1	AO1 4.5.3.1

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
02.3	any **six** from: • if thyroxine level falls, pituitary gland stimulated to release TSH • (increased TSH) stimulates thyroid • to release thyroxine • thyroxine controls metabolic rate • level increases to normal • if level of thyroxine too high, TSH release stops • so no more thyroxine released from thyroid		6	AO2 4.5.3.1 4.5.3.7
03.1	a constant supply of glucose is needed for respiration to provide energy for all body process / tissue function / otherwise could pass out / die high levels can damage blood vessels / other named condition		3	AO1 4.5.3.2

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
03.2	Type 1 • early onset usually diagnosed in childhood or teenage years • pancreas doesn't produce enough /any insulin Type 2 • occurs in older age groups • cells around the body are unresponsive to the insulin produced		 1 1 1 1	AO1 4.5.3.2
03.3	both are treated with a healthy low-sugar diet / carbohydrate-controlled diet Type 1 treatment requires regular insulin injections Type 2 treatment involves regular exercise often focused on weight loss / reducing obesity	accept Type 2 treatment can involve drugs – taking insulin when required	1 1 1 1	AO1 4.5.3.2
03.4	any **two** from: • increase tax on unhealthy foods • subsidies on healthy foods • encourage exercise through promotion / advertising programmes • build more / improved sport facilities • greater education about risks of Type 2 diabetes / benefits of exercise / healthy diet	accept any other reasonable suggestion which would reduce Type 2 diabetes	2	AO3 4.5.3.2

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
04.1	insulin		1	AO2 4.5.3.2
04.2	any **four** from: • chocolate bar contains sugar • absorbed into blood stream • blood glucose / sucrose levels rise • insulin secreted to cause glucose to be converted to glycogen • stored in liver • reducing blood glucose levels / sugar levels to normal		4	AO2 4.5.3.2
04.3	if a factor in internal environment increases / decreases changes take place to reduce / increase it and restore original level		1 1 1	AO1 4.5.3.7
05.1	blocked oviduct / not enough FSH produced egg and sperm can't meet / so eggs don't mature / are not released	award 1 mark for reason, 1 mark for linked explanation accept other correct reason and explanation	2	AO1 4.5.3.6
05.2	low sperm count / immotile sperm low chance of a sperm cell travelling far enough to meet egg / can't swim (far enough) to meet egg	award 1 mark for reason, 1 mark for linked explanation accept other correct reason and explanation	1 1	AO1 4.5.3.6

Question	Answers	Extra information	Mark	AO / Specification reference
05.3	any **four** from: • the woman is given FSH and LH • to stimulate the maturation of several eggs • eggs are collected from the mother and fertilised by sperm from the father in the laboratory • fertilised eggs develop into embryos • at the stage when they are tiny balls of cells, one or two embryos are inserted into the mother's uterus		4	AO1 4.5.3.6

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
05.4	any **six** from: **advantages of IVF:** • it is a safe procedure • embryos can be screened for genetic diseases • unused eggs can be used for research / donated to other couples **disadvantages of IVF:** • some people suffer side effects from the drugs used • there is a possibility of multiple births • which is dangerous for both mother and unborn babies • risk of ovarian hyper-stimulation syndrome (OHS) • mother suffers emotional and physical stress • success rates are relatively low • success rate decreases with age • embryos that are not used may be destroyed – some people believe this is unethical	do not allow more than 4 disadvantages	6	AO2 4.5.3.6

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
05.5	arguments for: • allows women who cannot conceive to become pregnant • opens the possibility of IVF treatment to those who could not otherwise afford to access it arguments against: • not offered to all / age of woman dictates if they can receive treatment and also how many cycles • less than 1 in 3 chance of success for any woman / decreasing chance of success / success rate as low as 15% by age of 38–39 • significant cost – up to £15 000 per patient • money spent by NHS on a non-life saving / non-essential procedure could be spent on other procedures / drugs • limit to number of treatments offered to an individual based on age / location	answer must have arguments for and against for full marks	4	AO3 4.5.3.6
06.1	unable to produce insulin / produce too little insulin		1	AO1 4.5.3.2
06.2	blood glucose level increases in both cases blood glucose level increases significantly more in person with Type 1 diabetes		1 1	AO2 4.5.3.2
06.3	accept any time between 7–8 am / 12–1 pm / 6–7 pm		1	AO3 4.5.3.2

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
06.4	140%	accept answer in range 125–171% award 1 mark for blood glucose before in range 70–80 mg/L, after in range 180–190 mg/L	2	AO2 4.5.3.2 MS 1c, 4a
06.5	there is currently no cure; treatment can only be managed with insulin any **four** from: • pancreas transplant available • not enough donors available / operation carries high risk / patient will need to take immunosuppressant drugs • pancreatic cell transplant • limited success in trials so far • stem cell transplant • experimental technique • no results yet from research • genetic engineering of faulty cells • theoretical technique – not yet available		1 4	AO3 4.1.2.3 4.5.3.2
07.1	pancreas		1	AO1 4.5.3.2

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
07.2	any **six** from: • negative feedback system • if blood glucose concentration is too high, insulin is released • glucose moves into cells to be used • excess glucose converted to glycagon • in liver • blood glucose levels fall • if blood glucose concentration too low, glucagon is released • causes glycogen to convert back to glucose • blood glucose levels rise	marks could be awarded for a fully annotated diagram	6	AO1 4.5.3.2
07.3	UK diabetes rate 5.4% UK rate 57% of the US rate / US rate 1.74× higher than UK rate	award 1 mark for difference = 4%	1 2	AO2 4.5.3.2 MS 1c
08.1	Stimulus		1	AO1 4.5.1 4.5.2.1 4.5.3.1
08.2	adrenaline		1	AO1 4.5.3.7

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
08.3	**similarities** • both send signals / transmit information around the body • both cause a change in another part of the body • both the endocrine system and the nervous system receive information from sensory receptors **differences** • electrical signals in nerves move more quickly / hormones travel more slowly • hormones are involved with slower, long-term change whereas nerves bring about immediate / rapid responses • hormones move in the blood whereas nerve signals pass along neurones		6	AO1 4.5.1 4.5.2.1 4.5.3.1
09.1	adrenal (glands)		1	AO1 4.5.3.7
09.2	any **two** suggestions and explanations from: • heart and breathing rates increase / stored glycogen in liver is converted to glucose – to increase respiration rate / to provide additional energy for fight or flight • pupils dilate – to let in more light for better vision • blood is diverted from digestive system to muscles – to enable more rapid movement	to award 4 marks, answers should include two effects and two linked explanations	4	AO1 4.5.3.7

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
09.3	if thyroxine level falls, detected by sensor cells in brain TSH released from pituitary gland stimulates thyroid gland to release thyroxine thyroxine levels in blood increase	accept converse	1 1 1 1 1	AO1 4.5.3.7
10.1	LH		1	AO1 4.5.3.4
10.2	Oestrogen		1	AO1 4.5.3.4
10.3	a rise in oestrogen causes the lining to thicken / develop rise in progesterone causes thickness to be retained a decrease in progesterone causes lining to be shed / lost		1 1 1	AO1 4.5.3.4
10.4	remains high so the lining would not be shed		1 1	AO3 4.5.3.4

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
11.1	any **two** from: • specialised care required which may not be widely available • highly contagious so many cases may occur in short time, overwhelming medical facilities • poor education may mean people are not aware of symptoms / risks • poor sanitation may mean body fluids of infected people may be passed to others • poor hygiene means infected body fluids could be passed between people	accept other reasonable suggestions	2	AO3 4.5.3.4
11.2	practices to contain disease were learned from earlier outbreak / better education (on symptoms / what to do if infection suspected)	accept other reasonable suggestions	1	AO3 4.5.3.4
11.3	(small quantities of) dead or weakened Ebola virus are injected into the body this stimulates white blood cells to produce antibodies if the Ebola pathogen enters the body, it is rapidly destroyed by the antibodies (preventing infection)		1 1 1 1	AO2 4.5.3.4
12.1	process where stem cells become specialised for a particular function		1	AO1 4.1.2.3

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
12.2	bone marrow / intestines / skin	accept any correct answer	1	AO1 4.1.2.3
12.3	**Advantages** – any **two** from: • only one operation required • lower risk of infection / complications from multiple operations • no short term side effects from procedure • smaller incision / operation – less pain experienced by patient **Disadvantages** – any **two** from: • no long term evidence of success • possible side effects may become evident in future • specialised procedure – will not be widely available	accept other reasonable advantages do not accept no rejection issues accept other reasonable disadvantages	2 2	AO3 4.1.2.3
13.1	carbohydrates are made up of many / more than one sugar molecule(s) joined together		1	AO2 4.2.2.1
13.2	it speeds up the breakdown of sucrose (into glucose and fructose) without being used up		1 1	AO2 4.2.2.1

AQA GCSE Science Combined Higher

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
13.3	invertase has to bind to sucrose at active site sucrose has a complementary shape which fits into the binding site		1 1 1	AO2 4.2.2.1
13.4	as fructose / glucose is sweeter, the chocolates could contain less sugar chocolate would therefore contains less energy / would cause less weight gain		1 1	AO3 4.2.2.1
14.1	bacteria		1	AO2 4.3.1.1
14.2	ribosomes		1	AO1 4.6.1.5
14.3	any **four** from: • bacterial cell wall contains protein • faulty cell wall could result in damage from osmosis • cell could burst • no enzymes could be produced • cell could not respire • proteins are needed for growth / repair • bacterium could not mend any damage	accept any sensible suggestions	4	AO3