



GCE MARKING SCHEME

APPLIED SCIENCE AS/Advanced

JANUARY 2013

INTRODUCTION

The marking schemes which follow were those used by WJEC for the January 2013 examination in GCE APPLIED SCIENCE. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

GCE APPLIED SCIENCE

SECTION A

Question			Answers	Marks
1			(Obesity is a condition where) weight gain has got to the point that it poses a serious threat to health	1
2			Any three from: <ul style="list-style-type: none"> • respiratory difficulties • chronic musculoskeletal problems • skin problems • infertility 	3
3			Body mass index	1
4	(a)		$105/(1.78)^2$ = 33.1 (accept 33)	1
	(b)		Obese	1
	(c)		Puberty and growth spurts at different times	2
5	(a)	(i)	Maximum ventricular pressure	1
		(ii)	Minimum ventricular pressure	1
	(b)		Stress, drugs (accept smoking in place of drugs), <u>lack of/insufficient</u> exercise, high salt intake	2
6			Most cases avoidable.	1
			High cost/demand on resources	1
7			Any four <ul style="list-style-type: none"> • Chemoreceptors in the main vessels monitor changes in the blood • Impulses are sent to the respiratory centre in the brain • alters the breathing rate via impulses to the respiratory muscles • increased carbon dioxide from respiration lowers pH • depth and rate of breathing are increased 	4

Question		Answers	Marks
8	(a)	Provide the heart with oxygen and nutrients	2
	(b)	Abnormal electrical activity (causing) irregular heart beat	2
	(c)	Any two rows to max 4: Structural features Function Thick walls (1) Withstand high pressure (1) Elastic arterial wall (1) Allows recoil of arteries (1) Small lumen (1) Increases pressure (1)	4
9		Sparse data/little direct evidence	1
10		Any two from: <ul style="list-style-type: none"> • Cost to NHS • resources used up • productivity 	2
TOTAL SECTION A			31

SECTION B

Question		Answers	Marks
11	(a)	A bronchiole B capillary	1 1
	(b)	Lowers the surface tension Keeping the alveoli open	1 1
	(c)	Three of: Moist One cell thick Supply of capillaries Large surface area	3
	(d)	Diffusion	1
12	(a)	Plot. All points correct (2), One error (1), More than two errors (0) If no line then award maximum of 1 mark (Do NOT accept bar graph)	2
		Axis	1
		Appropriate scale	1
	(b)	Eating a meal	1
	(c)	No difference in glucose level between the sexes	1
	(d)	Carbon dioxide, oxygen, urea, <i>hormones</i> , nutrients, named ion. NOT 'heat'.	2
(e)		Clot the blood	1
		Erythrocytes (not red blood cells)	1
		Fight infection (not disease)	1
13	(a)	Peak flow meter	1
	(b)	Place disposable mouthpiece on	1
		Zero scale	1
		Take deep breath	1
		Blow hard Do three times and take mean	1

Question			Answers	Marks
13	(c)		Muscular spasms Constriction/inflammation bronchioles Reduced air flow	3
	(d)		Any two from: <ul style="list-style-type: none"> • higher prevalence of asthma in children than adults • asthma may not have been previously diagnosed in child • asthma better controlled in adults 	2
14	(a)	(i)	The joint would heat up	1
		(ii)	Patient needs to be still to prevent blurring	1
		(iii)	No proven danger	1
	(b)		Any two from: <ul style="list-style-type: none"> • 3D imaging • any plane • no ionising radiation 	2
	(c)		Any two from: <ul style="list-style-type: none"> • different room • lead apron • limited exposure Lead screen (Not just screen)	2
	(d)		Show up soft tissue absorb x-rays	2

Question			Answers	Marks
15	(a)		A Vena cava	1
			B Pulmonary artery	1
			C Right ventricle	1
			D Left atrium	1
	(b)		Stop backflow	1
			between right ventricle and right atrium	2
	(c)	(i)	Ventricular contraction	1
		(ii)	To allow blood to pass into the ventricle	1
	(d)		Resist pressure/stronger to pump harder Pump to rest of bodies as opposed just to the lungs	2
	TOTAL SECTION B			



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