

**GSCE**

**ADDITIONAL APPLIED SCIENCE A**

AP1 Life Care

**Specimen Paper**

Candidates answer on the question paper:

Additional materials: ruler (cm/mm), calculator

**H** **A324/02**

45 mins

Candidate  
Name

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Centre  
Number

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Candidate  
Number

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**TIME** 45 mins

**INSTRUCTIONS TO CANDIDATES**

- Write your name, centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers on the dotted lines unless the question says otherwise.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.
- Do not write in the bar code. Do not write in the grey area between the pages.
- **DO NOT WRITE IN THE AREA OUTSIDE THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.**

**INFORMATION FOR CANDIDATES**

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this paper is **36**.

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**This specimen paper consists of 16 printed pages.**

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**Answer all questions.**

1. Ruth fell down a hole and injured her arm.  
She is taken to the accident and emergency unit.

(a) A nurse asks Ruth some questions.

The nurse has a good medical knowledge but he also needs other skills to help him assess the problem.

Describe one **other** skill this nurse must have to enable him to carry out his job.

.....  
.....[1]

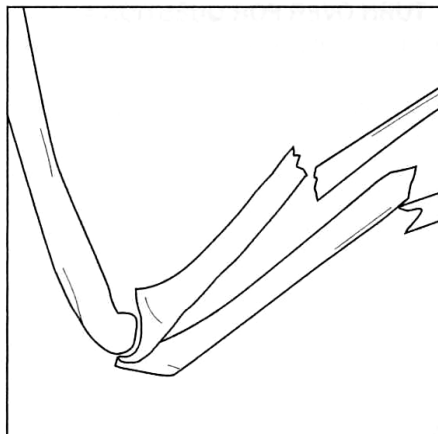
(b) Ruth is kept waiting whilst other people are rushed in before her.

Suggest why other people would be treated before Ruth.

.....  
.....[1]

(c) Ruth is taken for an X-ray.

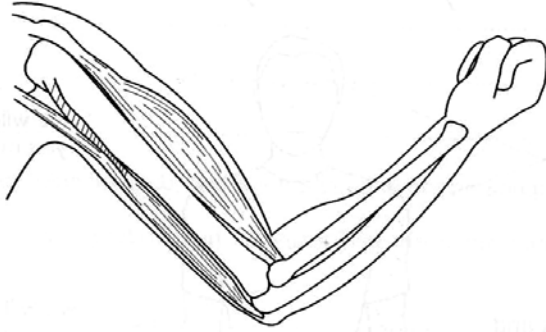
This X-ray shows the damage to Ruth's arm.



Describe what is wrong with Ruth's arm.

.....  
.....[1]

- (d) The doctor drew a diagram of Ruth's arm to explain the problem.  
Add labels to the diagram to show the **humerus** and **radius**.



[2]

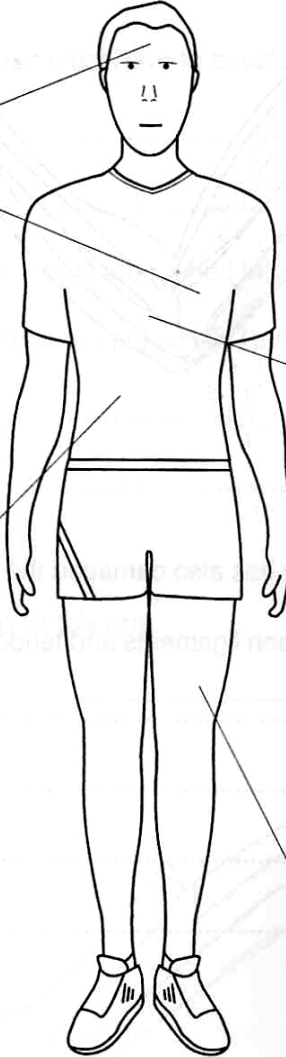
- (e) The doctor explains that Ruth has also damaged the ligaments and tendons.  
Describe the difference between ligaments and tendons.

.....  
.....  
.....  
.....[2]

[Total: 7]

2. Rebecca received this leaflet from a Health and Fitness Club.

***This is what we'll do  
for you this year***



we will relieve pain and tension

we will keep you motivated

we will relax and unwind you

we will get your heart, lungs and muscles working harder

we will increase your stamina and all round fitness

we will provide a variety of ways to work out

we will tone you up

***ULTRA FIT  
HEALTH CLUB***

Rebecca thinks the best reason for joining would be to get her heart, lungs and muscles working harder.

**(a)** Explain why this will be good for Rebecca.

.....  
.....  
.....  
.....[2]

**(b)** When Rebecca joins the club, she is introduced to her personal trainer.  
Suggest why it is important that Rebecca has the same trainer during her training programme.

.....  
.....[1]

**(c)** Rebecca fills in a questionnaire. She is surprised to see questions about her family medical history and the number of cigarettes she smokes each day.  
Explain why the club needs this information.

**(i)** family medical history.....  
.....  
.....[1]

**(ii)** number of cigarettes smoked each day.....  
.....  
.....[1]

**(d)** The trainer needs to calculate Rebecca’s body mass index.

**(i)** What **two** measurements will the trainer need, in order to calculate Rebecca’s body mass index?

1.....[2]

2.....[2]

**(ii)** Describe what the body mass index is used for.

.....

.....[1]

**(e)** Rebecca’s trainer will monitor her progress during the training programme.

Describe how this could be done.

.....

.....

.....

.....[2]

[Total: 10]

- 3. Liz works in the finance section of the National Health Service.  
She is interested in this newspaper report.

**Diabetes to eat 25% of NHS budget**

The cost of treating diabetes will consume a quarter of the NHS budget within 20 years unless the spread of the condition can be controlled.

A study into the growing cost of the illness has revealed that a deadly combination of overeating and lack of exercise could lead to financial disaster for the health service.

Tony Barnett, professor of medicine at Birmingham University and a diabetes specialist, said "the government has not realised how serious this problem is. We need a major public education exercise to make people realise the risks."

THE SUNDAY TIMES ©

- (a) Liz says public information programmes are expensive to run.  
Her manager says it may be cost effective in the long term.

(i) Explain why.

.....

.....

.....

.....

.....

.....

.....

.....

.....[4]

(ii) Describe one **other** example that shows the importance of education and public information about health.

.....

.....

.....

.....[2]



**(iii)** The NHS is funded by the tax-payer and funds are limited. The funding pays for many things, including public information programmes, nurses' and doctors' pay and medicines.

What else is NHS money spent on?

.....  
.....[1]

**(b) (i)** Explain how diabetes can sometimes be treated by controlling diet.

.....  
.....  
.....  
.....[2]

**(ii)** Controlling diet is an example of treating symptoms.  
Explain why controlling diet will not cure the problem.

.....  
.....[1]

[Total: 10]

4. George is suffering with bad headaches.  
He visits his doctor for a check up.

(a) The doctor needs to test George's urine.

(i) Suggest what the doctor might test for in the urine sample.

.....[1]

(ii) Describe what this test could diagnose.

.....  
.....  
.....  
.....[2]

(b) The doctor needs to test George's blood.

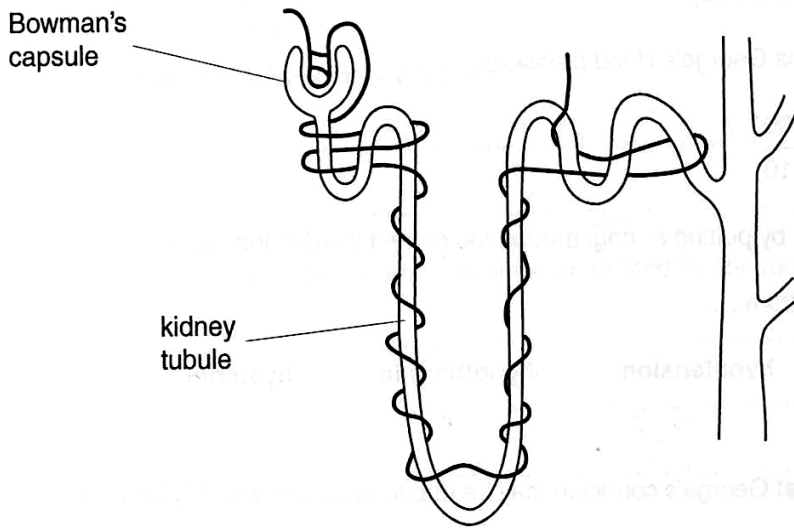
(i) Suggest what the doctor might test for in the blood sample.

.....[1]

(ii) Describe what this test could diagnose.

.....  
.....  
.....[2]

(c) The diagram shows the structure of part of a kidney.



Describe the function of the Bowman's capsule and the kidney tubule.

Bowman's capsule .....  
.....  
.....  
.....[1]

kidney tubule.....  
.....  
.....  
.....[2]

[Total: 9]

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**GCSE**

**ADDITIONAL APPLIED SCIENCE A**

AP1 Life Care

**Specimen Mark Scheme**

Maximum mark for this paper is [36]

**H**

**A324/02**

45 mins

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**This specimen mark scheme consists of 4 printed pages.**

Question Number	Answer	Max Mark
1(a)	Any one from: communication; patience; tact; trust <b>(accept any reasonable attempt)</b>	[1]
1(b)	their condition may be more life threatening; younger children in pain	[1]
1(c)	description of broken arm	[1]
1(d)	humerus labelled correctly radius labelled correctly	[2]
1(e)	ligaments hold bones together tendons attach muscle to bone	[2]
	<b>Total mark</b>	[7]
2(a)	Any two from: improve circulation; strengthen heart muscles; strengthen muscles; increase stamina; improve general health;	[2]
2(b)	Any two from: trainer can monitor progress; be familiar with any health problems; can change exercise routines to suit Rebecca's progress;	[1]
2(c)i	Any two from: to be aware of any inherited medical conditions; that may affect Rebecca's health; that may affect Rebecca's ability to use some of the machines/exercise routines;	[1]
2(c)ii	Any two from: smoking will affect health; adapted version of exercise programme needed; more monitoring of progress will be needed; <b>some routines may not be suitable;</b>	[1]
2(d)i	body mass (in kg); height (in m);	[2]
2(d)ii	Any one from: BMI provides a good range of acceptable weights; provides a reliable comparison of weight conditions; to check to see if overweight;	[1]
2(e)	Any one from: description of bleep test; description of step test; take test at start then again after few months; <b>(LRM vague but correct = 1 mark, more detailed answer = 2 marks)</b>	[2]
	<b>Total mark</b>	[10]

<p><b>3(a)i</b></p> <p>Any 4 from: public become aware; public reduce overeating and increase exercise; this reduces the numbers suffering from diabetes; less treatment needed for diabetes; less financial input;</p> <p><b>3(a)ii</b></p> <p>candidate may refer to local area health programme; <b>(1 mark for brief, vague answer, 2 marks for more detailed answer.)</b></p> <p><b>3(a)iii</b></p> <p>Any one from: equipment; buildings; training; uniforms; cleaning; services; administration; <b>(accept any correct response)</b></p> <p><b>3(b)i</b></p> <p>Any <b>two</b> from: a person with diabetes does not produce enough insulin to break down the glucose; diet low in glucose; will require less insulin;</p> <p><b>3(b)ii</b></p> <p>controlling diet does not repair the body so more insulin can be made;</p> <p style="text-align: right;"><b>Total mark</b></p>		<p>[4]</p> <p>[2]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[10]</p>
<p><b>4(a)i</b></p> <p>Any one from: presence of glucose; protein; blood;</p> <p><b>4(a)ii</b></p> <p>Glucose - diabetes; Protein - kidney damage/disease; Blood - disease of kidney/urinary system/bladder; <b>(1 mark for brief comment about diagnosis; 2 marks for detailed explanation)</b></p> <p><b>4(b)i</b></p> <p>Any one from Blood cell count Bacteria Accept: enzymes, cholesterol, sugar</p> <p><b>4(b)ii</b></p> <p>Lower red cell count: anaemia Higher white cell count: infection Sugar: diabetes</p> <p><b>4(c)</b></p> <p>Bowman's capsule: collecting duct for filtrate; where the blood is filtered; <b>(Any one)</b></p> <p>Kidney tubule: reabsorbs some water; reabsorbs all the glucose; amino acids; vitamins; minerals; urea and some water remains in tubule to form urine; reabsorbed substances pass into blood capillaries; <b>(Any two)</b></p> <p style="text-align: right;"><b>Total mark</b> <b>Overall Marks</b></p>		<p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[2]</p> <p>[1]</p> <p>[2]</p> <p>[9]</p> <p>[36]</p>

Question	Spec Reference	AO1 K&U	AO2 Appl K&U	AO3 Data	Total	G/U	F	E	D	C	B	A	A*	EP	Skills
Targets		13+2	23+2												
1a	1.5		1		1				1						
1b	1.3		1		1					1					
1c	1.3		1		1				1						
1d	1.5	2			2					2					
1e	1.5		2		2				1	1					
					<b>7</b>										
2a	1.5	2			2				1	1					
2b	1.1		1		1				1						
2ci	1.2		1		1					1					
2cii	1.2		1		1					1					
2di	1.2	2			2				2						
2dii	1.2		1		1					1					
2e	1.4		2		2					1	1				
					<b>10</b>										
3ai	1.1	1	3		4						2	1	1		
3aii	1.4	2			2						2				
3aiii	1.1	1			1						1				
3bi	1.4		2		2						1	1	1		
3bii	1.4	1			1						1	1	1		
					<b>10</b>										
4ai		1			1					1					
4aii			2		2						1	1			
4bi		1			1					1					
4bii			2		2						1	1			
4c		1	2		3					1	1	1			
					9										
		<b>14</b>	<b>22</b>		<b>36</b>				<b>19</b>		<b>17</b>				