



Rewarding Learning

ADVANCED

General Certificate of Education

2022

Centre Number

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Candidate Number

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Life and Health Sciences

Assessment Unit A2 3

assessing

Medical Physics

[AZ031]

WEDNESDAY 22 JUNE, MORNING



AZ031

TIME

1 hour 45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all eight** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use an electronic calculator.

Quality of written communication will be assessed in question 3.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	

Total Marks	
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(ii) Suggest **two** physical factors which may affect blood pressure.

1. _____
2. _____ [2]

(iii) The practitioner considers the reading taken to be low.

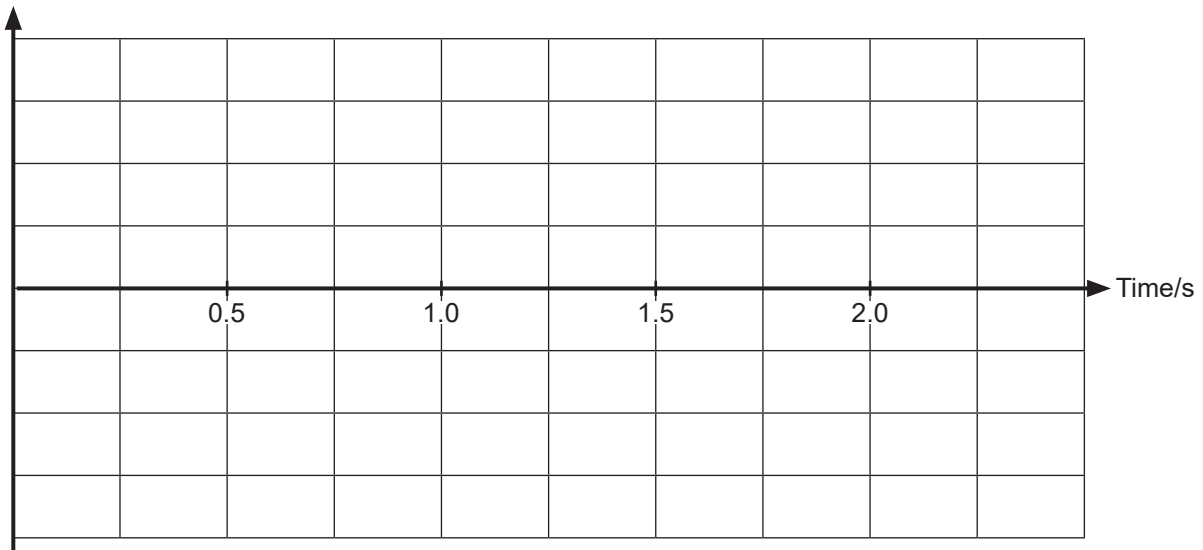
What might the practitioner do to confirm that the blood pressure reading is low?

_____ [1]

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

(ii) On the graph below, sketch a typical EEG trace over 2 seconds. [3]



Examples and purpose _____

_____ [8]

Examiner Only	
Marks	Remark

(iv) Calculate the percentage of ultrasound energy transmitted through the muscle–fat boundary.

Examiner Only	
Marks	Remark

Percentage of ultrasound energy transmitted = _____ % [2]

7 (a) A patient is to attend an outpatient appointment at a local hospital to have an MRI scan.

(i) What do the letters MRI stand for?

_____ [1]

(ii) Two of the main parts of the MRI scanner are the electromagnet and the field gradient coils.

Describe the purpose these two pieces of equipment perform.

Electromagnet: _____

_____ [2]

Field gradient coils: _____

_____ [1]

(b) (i) The doctor informs the patient of what to expect during the MRI scan.

Suggest **three** points the doctor will want to explain to the patient.

1. _____

2. _____

3. _____

_____ [3]

(ii) Before the scan takes place, a nurse discusses some very important safety concerns.

Suggest one safety issue the nurse will raise with the patient and explain why this is a safety issue.

Safety issue: _____ [1]

Explanation: _____

_____ [1]

Examiner Only

Marks

Remark

(c) State **two** advantages of having an MRI scan rather than a conventional X-ray.

1. _____

2. _____ [2]

Examiner Only	
Marks	Remark

8 A patient is suspected of having a tumour in his digestive tract. A surgeon uses an endoscope to view the digestive tract in order to make a diagnosis.

(a) (i) Describe what happens during an endoscopic procedure.

_____ [2]

(ii) Outline the main parts of the endoscope and describe in detail how each part contributes to an image of the internal body organs.

_____ [6]

(b) Doctors can also request a CT scan to examine the digestive tract.

Suggest one advantage and one disadvantage of having an endoscopic scan over a CT scan.

Advantage: _____

Disadvantage: _____

_____ [2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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