Practice Question Set For A-Level
Subject : Physics
Paper-3 Topic: Section B (Section 10_ Medical Physics)

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

(a) Explain how a piezoelectric crystal is caused to generate waves of ultrasound.

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(4)

(b) In medical applications of ultrasound a short pulse of duration about 1 μs is often used.

(i) Explain why the pulse of ultrasound must be short.

_____

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(ii) Short voltage pulses applied to the piezoelectric crystal make it vibrate and emit *short* pulses only if the crystal assembly is modified. Explain the modification which is necessary.

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_____

(3)

(c) (i) Under what conditions is ultrasound reflected strongly at boundaries between two types of material?

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(ii) State **two** physical properties of the materials which determine the proportion of ultrasound which is reflected at a boundary.

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(iii) Explain what a coupling medium or gel is and why, and where, it is used.

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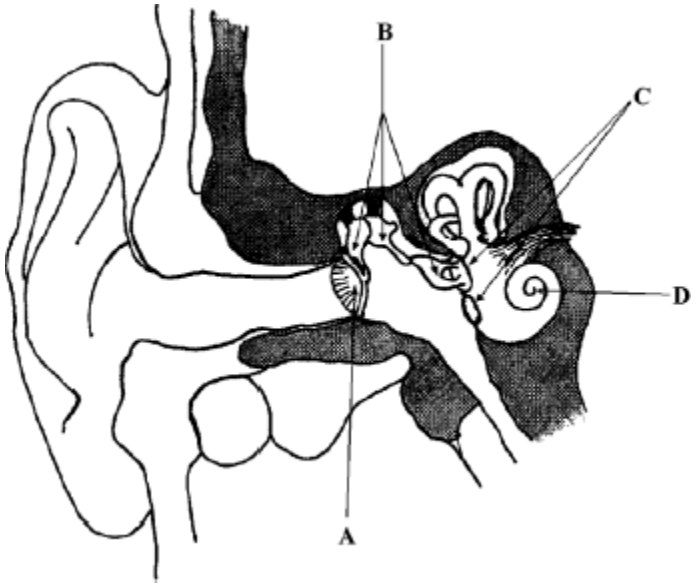
(5)

(Total 12 marks)

Q2.

The diagram shows a vertical section through the human ear. Solid bone is shaded grey.



Name and state the function of the parts labelled A, B, C and D.

A name _____

function _____

_____

B name _____

function _____

_____

C name _____

function _____

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_____

D name _____

function _____

_____

(Total 8 marks)

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