

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X EXAMINATION

MAY 2015

Physics Paper II

Time: 2 hours 25 minutes Marks: 40

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

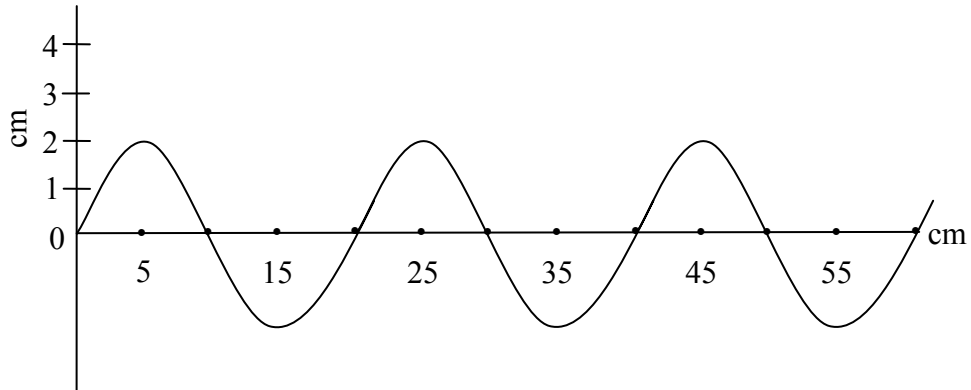
**I agree that this is my name and school.
Candidate's signature**

2. RUBRIC. There are ELEVEN questions. Answer ALL questions. Questions 9, 10 & 11 each offer TWO choices. Attempt any ONE choice from each.
3. When answering the questions:

Read each question carefully.
Use a black pencil for diagrams. DO NOT use coloured pencils.
DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
Complete your answer in the allocated space only. DO NOT write outside the answer box.
4. The marks for the questions are shown in brackets ().
5. You may use a simple calculator if you wish.

Q.1. (Total 4 Marks)

A transverse wave is shown in the given diagram.



If the frequency of the wave is 10 Hz, then find its velocity in m/s and time period.

(Note: Extract data from the given question and provide your answers in SI units.)

Q.2.

(Total 3 Marks)

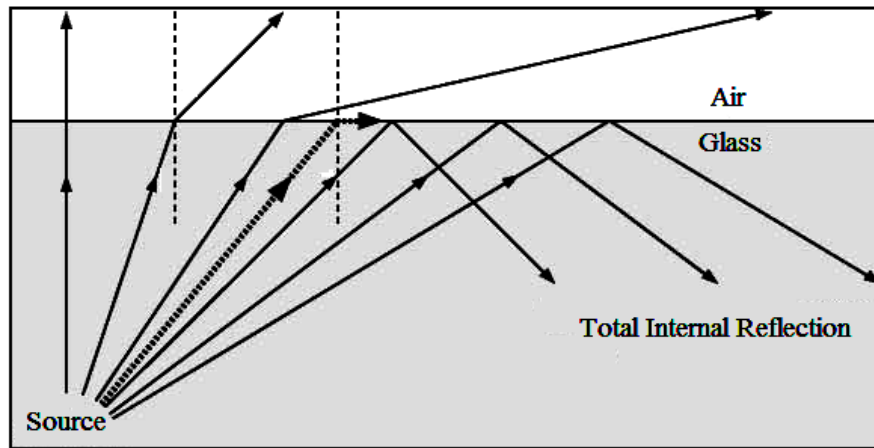
Categorise the following as True OR False and give a reason to justify any ONE of your answers.

- i. Light travels slower through glass than empty space. _____
- ii. When light travels from glass to air, its path bends towards the normal. _____

Q.3.

(Total 2 Marks)

The below diagram shows the phenomenon of total internal reflection.

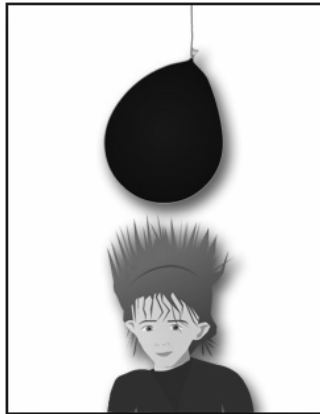


Write TWO conditions for the occurrence of total internal reflection.

Q.4. (Total 3 Marks)

a. Rubbing a balloon against hair causes the balloon and hair to become charged.
TRUE OR FALSE? (1 Mark)

b. How will the total amount of charges present on the balloon and the hair change, if at all, after the balloon is rubbed against the hair? Justify your answer. (2 Marks)



Q.5.

(Total 3 Marks)

Describe and draw the current-voltage (I-V) characteristics graph for a metallic conductor, a filament lamp and a thermistor.

Metallic conductor:

Graph

Filament lamp:

Graph

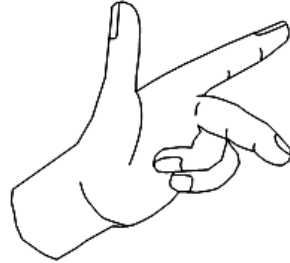
Thermistor:

Graph

Q.6.

(Total 3 Marks)

The given figure shows the direction of the magnetic field, the current and the force on a conductor according to Fleming's left hand rule.



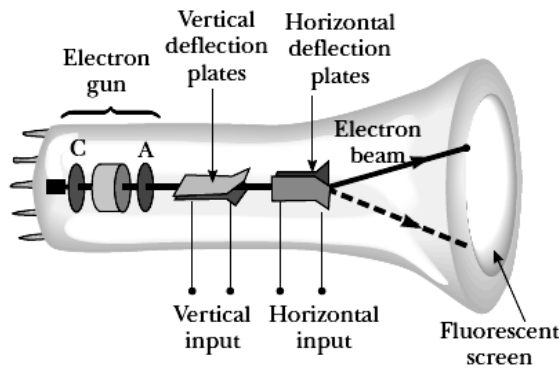
Match the items in column I with the items in column II using arrows (————>).

Fleming's Left Hand Rule		
Column I	Arrow	Column II
The thumb		The direction of the current
The index finger		The direction of the magnetic field
The middle finger		The direction of the force acting on a conductor

Q.7.

(Total 3 Marks)

The given diagram shows a cathode rays oscilloscope (CRO).



Summarize the basic principle of a cathode rays oscilloscope in THREE points.

Q.8.

(Total 4 Marks)

a. Complete the given statement:

Alpha (α) decay is the emission of helium _____ . (1 Mark)

b. Determine whether the given decay process is possible or not?

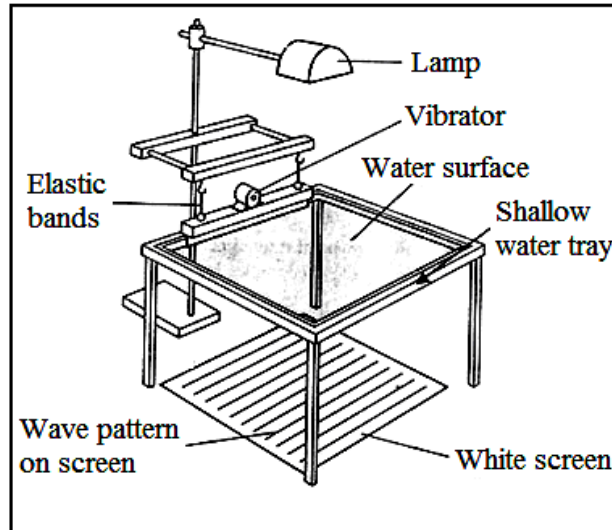


PLEASE TURN OVER THE PAGE

Q.9. (Total 5 Marks)

EITHER

a. Name the given instrument. Reflection, refraction and diffraction are properties of waves. With the help of the given instrument, describe any TWO of them.



OR

b. Unwanted noise can be a source of stress and irritation for many people. It also affects reading ability and concentration in school-going children.



Discuss noise pollution with reference to the amplitude, frequency and wavelength of sound.

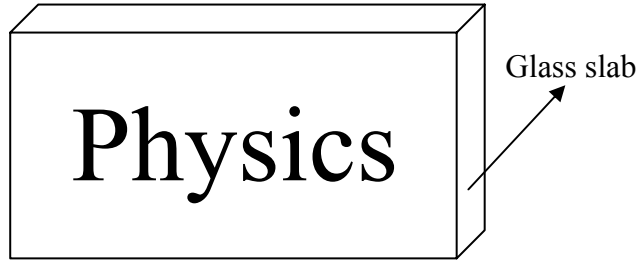
Q.10.

(Total 5 Marks)

EITHER

a. An image placed under a glass slab appears to be raised by 8 mm.

If the refractive index of glass is 1.5, find the actual thickness of the glass slab.



OR

b. If the focal length of a convex lens is 10 cm and an object is placed at the distance of 10.5 cm from it, then find the distance of the image formed.

(Note: Extract and write data from the given question.)

Please use this page for rough work