AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

MODEL EXAMINATION PAPER 2020

Physics Paper II

Time: 2 hours 15 minutes Marks: 35

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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**

RUBRIC

2. There are TEN questions. Answer ALL questions. Questions 9 & 10 each offer TWO choices. Attempt any ONE choice from each.

3. When answering the questions:

   Read each question carefully.
   Use a black pointer to write your answers.
   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)

You are given an assignment to operate a radio station broadcasting your school news and activities. If your school allocated a radio wave frequency of FM 80 Hz, then calculate the wavelength and time period of the signal of your school's radio station.

(**Note**: The speed of light in vacuum is $v = 3 \times 10^8$ m/s.)

Q.2. (Total 3 Marks)

a. Why does a ray of light bend when it crosses the boundary of two media? (1 Mark)

b. In what direction, with respect to normal, does a ray of light bend when it travels through the following media? (2 Marks)

i. From air to water

ii. From glass to water

i.

ii.

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Q.3. (Total 2 Marks)

Write any TWO uses of total internal reflection in light propagation.

1. _____

_____

2. _____

_____

Q.4. (Total 2 Marks)

Name any TWO devices that work on the basis of electrostatic phenomena.

1. _____

2. _____

Q.5. (Total 2 Marks)

Small bends in a current carrying wire affect its electrical resistance? Justify your answer keeping in view the factors affecting electrical resistance.

_____

_____

_____

_____

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Q.6. (Total 3 Marks)

a. Name and define the principle of a transformer on which it works. (2 Marks)

b. Write ONE use of a transformer. (1 Mark)

Q.7. (Total 4 Marks)

The picture that appears on the screen of a television, that uses cathode rays tube, becomes distorted when a powerful magnet is brought near the screen. Justify the given statement.

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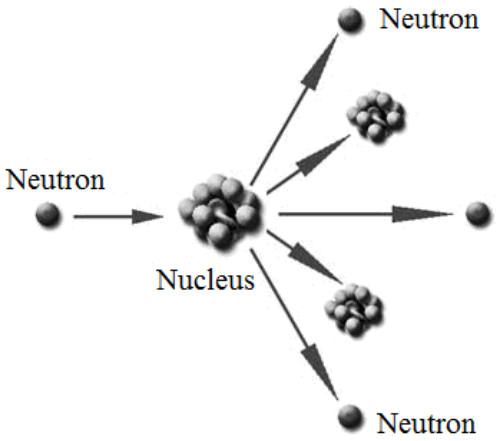
Q.8. (Total 5 Marks)

The given diagram shows a nuclear reaction.



a. Name and define the reaction shown in the diagram. (2 Marks)

b. How can we get energy from the given process? (2 Marks)

c. What is the role of neutrons in the given process? (1 Mark)

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Q.9. (Total 5 Marks)

EITHER

a. A simple pendulum is attached with a 4 m long string.

i. Find the time period of the simple pendulum if it is placed in an elevator moving upwards with an acceleration of 8 m/s^2. (3 Marks)

ii. If the elevator is moving downwards with an acceleration of 8 m/s^2, then what will be its time period? (2 Marks)

(**Note**: The value of acceleration due to gravity 'g' is 9.8 m/s^2.)

OR

b. Ali produces a sound in a big empty hall. He hears a recurring sound resembling to his original sound.

i. Name the phenomenon of the sound wave that Ali observed. (1 Mark)

ii. Explain how this phenomenon is produced in FOUR points. (4 Marks)

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Q.10. (Total 5 Marks)

EITHER

a.

i. Why large electrostatic charges can be dangerous? Give ONE example of it from daily life. (2 Marks)

ii. Long vehicles carrying inflammable materials usually have a metallic chain touching the ground during motion. Describe this statement using the phenomenon of electrostatic charges and friction. (3 Marks)

OR

b. Does the resistance of a metallic conductor rise with an increase in temperature? Explain your answer with suitable reasons. (5 Marks)

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END OF PAPER

Please use this page for rough work

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