AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

ANNUAL EXAMINATIONS (THEORY) 2024

Physics Paper II

Time: 1 hour 50 minutes Marks: 25

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 SEVEN questions. Answer ALL questions. Questions 6 & 7 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. DO NOT write your answers in pencil.
   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 2 Marks)

An online purchasing company delivered a fragile item to its customer in a triangular box. The breadth and height of the box was 15 cm and 20 cm respectively.

Calculate the volume of the triangular box upto two significant figures.

(**Note**: Volume (V) = Breadth × Height)

Q.2. (Total 3 Marks)

A hanging picture frame is in a state of static equilibrium. The picture frame has a mass of 0.3 kg and is suspended from a single point by a thin wire.

If a small object of 0.1 kg is hung at any one corner from the bottom of the picture frame, then explain how the addition of the small object affects the balance of these forces and the stability of the picture frame.

Q.3. (Total 2 Marks)

An apple falls on Earth due to the Earth's attraction force. However, the Earth does not show movement towards the apple.

Describe the given phenomenon in TWO points.

Q.4. (Total 3 Marks)

Describe in THREE points, how evaporation causes cooling.

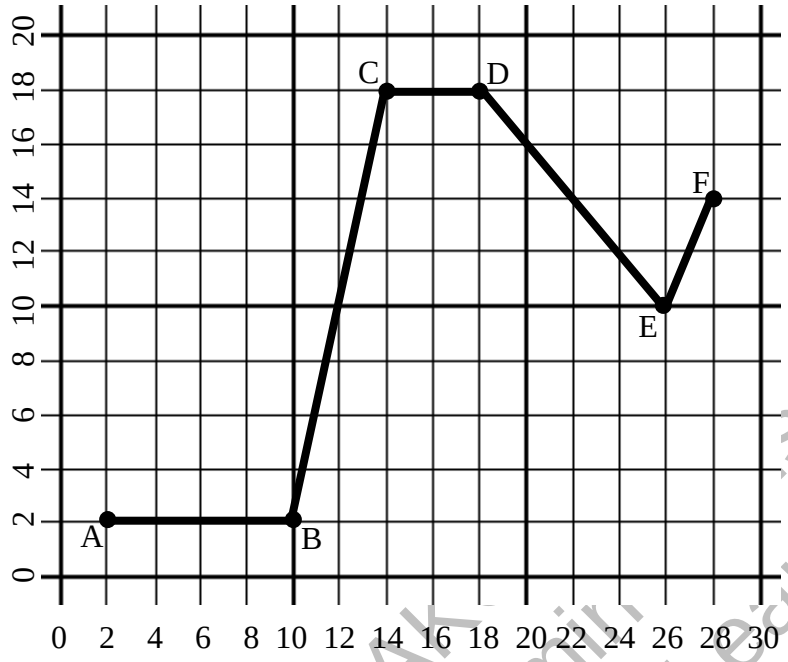
Q.5. (Total 3 Marks)

Describe the transfer of heat through radiation in TWO points. Support your answer with an example.

Q.6. (Total 6 Marks)

EITHER

a. The following graph shows the path ABCDEF on which a boy walks.



Using the above graph calculate the

i. distance between A to B, B to C, C to D, D to E and E to F. (4 Marks)

ii. total distance covered. (1 Mark)

iii. total displacement covered. (1 Mark)

(**Note**: One small division is equal to one metre.)

OR

b. A sports bicycle acquires a velocity of 25 m/s from the state of rest when a force of 100 N acts on it for 5 s. Find

i. the mass of the bicycle. (4 Marks)

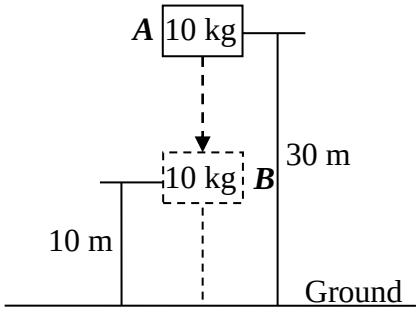
ii. the momentum of the bicycle after 5 s. (2 Marks)

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

Q.7. (Total 6 Marks)

EITHER

a. The diagram shows a block is dropped from a point ***A*** and moves to a point ***B***.



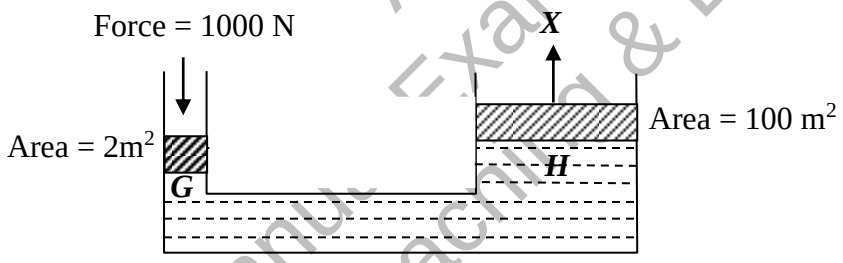
i. Calculate the change in potential energy (P.E.) of the block at point ***B*** with respect to ground. (3 Marks)

ii. Calculate the velocity of the block when it reaches to the point ***B***. (3 Marks)

(**Note**: Take the value of acceleration due to gravity 'g' as 10 m/s^2.)

OR

b. The given figure shows the brake system of a vehicle.



i. Name the law which is used in the given brake system. (1 Mark)

ii. Calculate the pressure exerted by the liquid at ***G*** and ***H*** and the force that is applied at ***X***.

(5 Marks)

END OF PAPER

Please use this page for rough work