AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS IX

MODEL EXAMINATION PAPER 2018

Physics Paper II

Time: 2 hours 15 minutes Marks: 35

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 ELEVEN questions. Answer ALL questions. Questions 10 & 11 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.

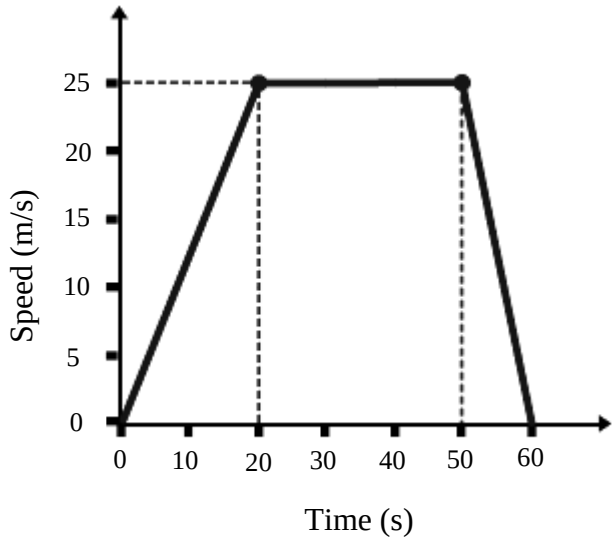
Q.1. (Total 2 Marks)

Match the prefix given in column **A** with its respective multiple given in column **B**.

Column A: Prefix	Column B: Multiples
pico	10^{-3}
kilo	10^{-12}
	10^{3}

Q.2. (Total 3 Marks)

The given speed-time graph shows the journey of a motorcyclist.



a. Calculate the acceleration of the motorcyclist in the first 20 seconds. (2 Marks)

b. For how many seconds does the motorcyclist has the constant speed? (1 Mark)

Q.3. (Total 3 Marks)

A car has mass of 1000 kg and it moves in a circular path of radius 50 m with a constant speed of 25 m/s. Calculate the centripetal force of the car.

Q.4. (Total 2 Marks)

A sphere is hollow at the centre. Where will be its centre of gravity and why?

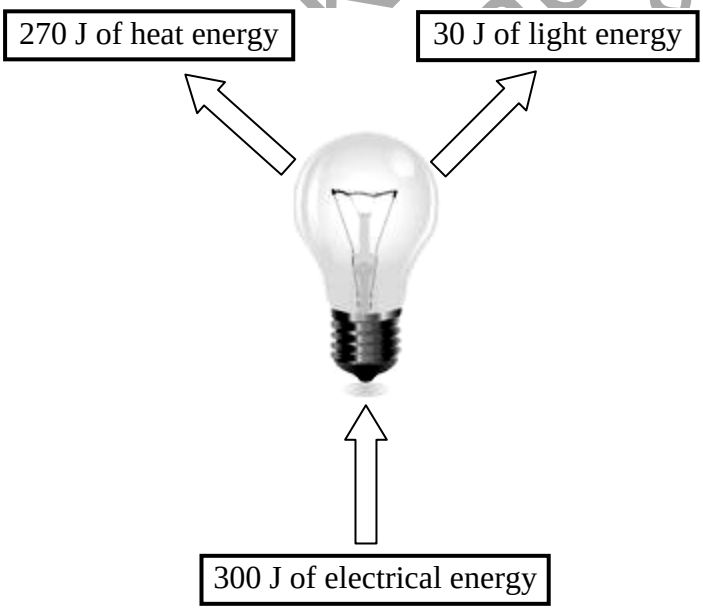
Q.5. (Total 3 Marks)

Differentiate between the orbit of a comet and the orbit of a planet.

S. No.	Orbit of a Comet	Orbit of a Planet
1		
2		
3		

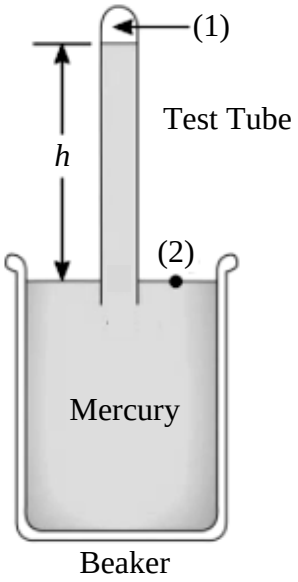
Q.6. (Total 2 Marks)

Calculate the efficiency in percentage of the light bulb shown in the given diagram.



Q.7. (Total 2 Marks)

In the given diagram, a test tube filled with mercury is inverted into a beaker that is also filled with mercury. Assume that the closed end of the test tube is a vacuum.



Compare the pressure at points (1) and (2) for the given diagram.

Q.8. (Total 4 Marks)

The length of a metallic conductor is 6 m and its area of cross section is 18 m^2. If the temperature difference between two surfaces of the conductor is 50 K and the rate of heat flow through the conductor is 40×10^3 W, then calculate the thermal conductivity of the conductor.

Q.9. (Total 4 Marks)

An ice cube of 250 g is at 0^oC. Calculate the amount of heat energy needed for complete melting of the ice cube into water without any change of temperature.

(**Note**: Latent heat of fusion of ice is 3.36×10^5 J/kg.)

Q.10. (Total 5 Marks)

EITHER

a. A body is moving with an acceleration (a) having initial velocity (A) and after a certain time (t), its velocity becomes (B). The distance covered by the body during this time is (S).

Using the given information, derive Newton's equation of motion, i.e. $2aS = B^2 - A^2$. (5 Marks)

OR

b. Seatbelts and airbags are two safety features provided in cars to protect passengers during any accident.

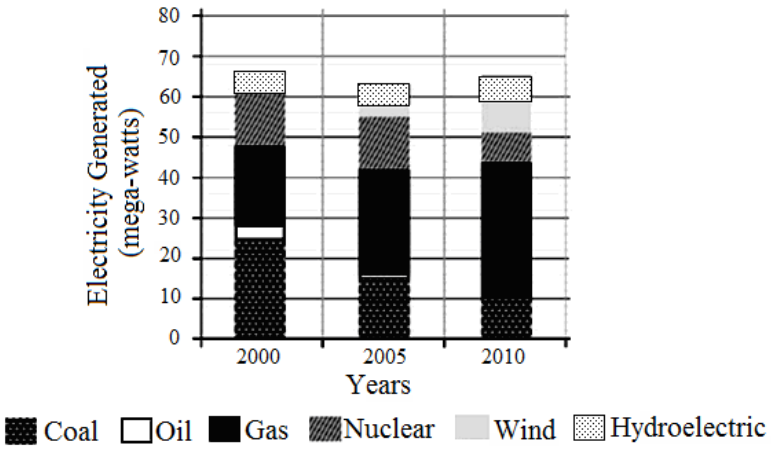
i. Explain these features with the help of the phenomenon of momentum. (3 Marks)

ii. Relate the phenomenon explained in part (i) to a person that jumps from reasonable height? (2 Marks)

Q.11. (Total 5 Marks)

EITHER

a. The given graph shows the energy sources used by a small scale electricity generation plant from the year 2000 to 2010. In this graph, the electricity produced in mega-watt units is plotted on the *y*-axis while the time in years is on the *x*-axis.



i. Name any ONE renewable energy source used for power generation shown in the graph.
ii. Approximately how many mega-watts of electricity is generated from non-renewable energy sources in the year 2005?
iii. Name the largest power generation source in the year 2010.
iv. Highlight any TWO environmental issues associated with non-renewable energy sources.

(5 Marks)

OR

b. Submarines, as compared to ships are designed in such a way that they can either float or submerge under water.

i. Name and state the principle on which submarines work. (2 Marks)

ii. Explain the working of submarines with reference to the principle identified in part (i). (3 Marks)

END OF PAPER

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