HALF YEARLY EXAMINATION : 2022-23

CLASS - IX (ICSE)

Time: 2 hrs. **SCIENCE PAPER -1 (PHYSICS)** M.M.: 80

Note : i) **Answer to this paper must be written on the paper provided separately. You will not be allowed to write during first 15 minutes.**

ii) **This time is to be spent in reading the questions paper.**

iii) **The time given at the head of questions paper is the time allowed for writing the answer.**

iv) **Section-I is compulsory. Attempt any four questions from section-II.**

v) **The intended marks for questions or parts of questions are given in bracket [ ].**

SECTION–A [40 Marks]

Q.1. a) If the radius of curvature of a concave mirror is 40 cm. What is its focal length ? [2]

b) Define instantaneous speed. Which instrument is used to measure it in a vehicle ? [2]

c) Define the terms (i) Pitch (ii) least count of a Screw Gauge. [2]

d) How many images are formed in a thick glass mirror ? Which is the brightest one ? [2]

e) Calculate the frequency of a second's pendulum. [2]

Q.2. a) What will happen to the value of G if : [2]

i) the distance between two objects is decreased.

ii) two bodies are taken into the vacuum.

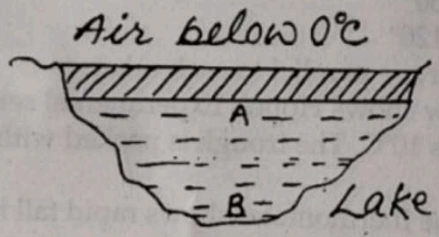
b) Draw the graph showing : [2]

i) variation of acceleration with mass if force is constant

ii) variation of acceleration with force if mass is constant

c) Name two green house gases. [2]

d) State the expected temperature at A and B. [2]



e) Name the instrument used to measure : [2]

i) mass ii) weight

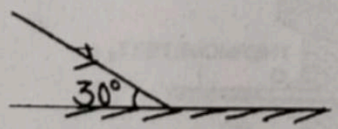
Q.3. a) A car in motion is brought to rest by applying brakes : [2]

i) Name the contact force responsible in bringing the car to rest.

ii) What is the direction of force with respect to motion of the car.

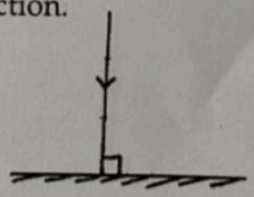
b) Draw the reflected ray and state the angle of reflection. [2]

(i)



$\angle r = ----$

(ii)



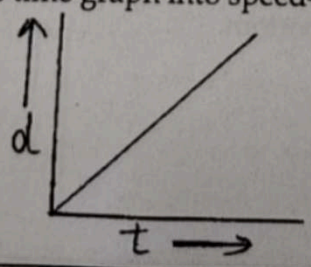
$\angle r = ----$

c) Name the characteristic which accounts for : [2]

i) It is difficult to read the text of a page in a plane mirror image.

ii) Medicines are never filled upto the brim of the bottles while packaging.

d) Change the given distance time graph into speed-time graph. [2]



e) Identify the mirror : [2]

i) used as rear view mirror in vehicles.

ii) used as shaving mirror or makeup mirror.

Q.4. a) At what temperature density of water is maximum. What will be change in the density of water if the temperature is further lowered. [2]

b) A girl standing on an oscillating swing sits down. How does the time period of a swing get affected. Give reason also. [2]

c) Define global warming. [2]

d) A feather of a bird and a cork ball is dropped from the same height in vacuum. Which will reach the ground first and why ? [2]

e) A stop watch has 10 divisions graduated between 0 (zero) and 5 second mark. What is its least count ? [2]

SECTION-II

(Attempt any four questions)

Q.5. a) An object is placed at a distance of 10 cm in front of a convex mirror of focal length 15 cm. Find the position and nature of the image formed. [3]

b) Can displacement be zero even if distance is not zero ? Give one example to explain your answer. Which is a vector quantity. [3]

c) A body is dropped freely under gravity from the top of a tower of height 78.4 m. Calculate : [4]

i) the time to reach the ground

ii) the velocity with which it strikes the ground ($g=9.8ms^{-2}$)

Q.6. a) i) What do you mean by degradation of energy. [3]

ii) Name the radiations that are absorbed by green house gases.

iii) Name the nuclear phenomenon used in Nuclear Reactor to produce electric power.

b) Find the number of images formed of a point object placed in between the two plane mirrors. [3]

i) Inclined at 60°

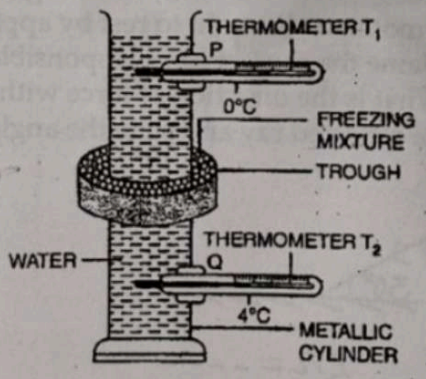
ii) Inclined at 120°

iii) If the mirror are parallel to each other.

c) The diagram below shows Hope's Experimental set up. The temperature in the metallic cylinder is 10°C. The trough is packed with a freezing mixture of ice and salt. [4]

i) Which of the thermometer shows rapid fall in temperature initially T_1 or T_2.

ii) After sometime when ice is formed will it sink to the bottom of metallic cylinder.

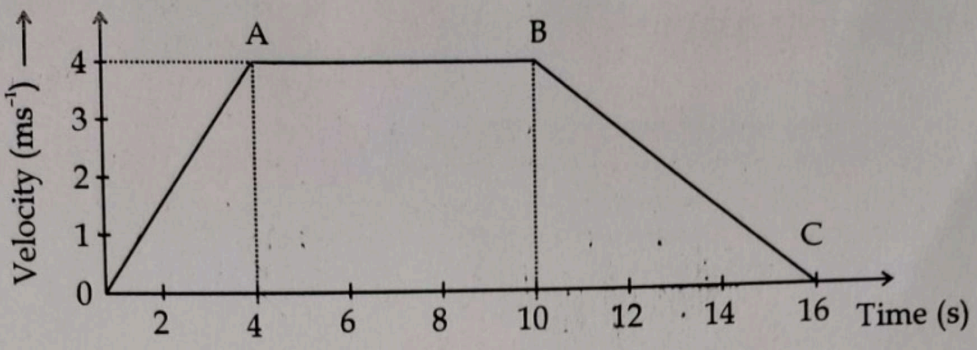


Hope's apparatus

iii) What will be the temperature of water at the bottom of cylinder when ice is formed.

iv) What does it tell about the density of ice in relation to the density of water at bottom.

Q.7. a) Velocity-time graph for a body moving in a straight line is shown in figure : [3]



i) Which part of graph represents uniform positive acceleration and calculate this acceleration.

ii) Which part of graph represents uniform negative acceleration and calculate this acceleration.

iii) Calculate the distance travelled by the body corresponding to part AB of the graph.

b) Derive third equation of motion by graphical method. [3]

c) i) What is the main source of energy for earth ? [4]

ii) Though tidal energy is a clear source of energy it is not a major source of energy. Why ?

iii) What is the energy transformation in a solar cell ?

iv) Name the energy produced when mass is lost.

Q.8. a) i) Upto what maximum distance from pole the image in convex mirror can be obtained. [3]

ii) What will be the location of object for it.

iii) Why its focus is called virtual focus ?

b) i) Define anamalous expansion of water. [3]

ii) Name any other two substances which exhibit the anamalous expansion with temperature.

c) A car travels the first 30 km with a uniform sped of 60 kmh^{-1} and the next 30km with a uniform speed of 40 kmh^{-1}. Calculate : [4]

i) The total time of journey.

ii) The average speed of the car.

Q.9. a) Name the prefix used for : [3]

i) 10^3 ii) 10^{-12} iii) 10^9

b) Give three properties of gravitational force between the two masses. [3]

c) Draw a ray diagram to show the formation of image by a concave mirror for the object beyond its centre of curvature . State two characteristics of the image. [4]

Q.10. a) i) Temperature of a gas is increased by 20°C. Convert this increase in Kelvin. [3]

ii) Define one calorie heat

iii) Relate SI unit of heat with calorie.

b) i) What are two advantages of using nuclear energy. [3]

ii) Name the nuclear power plant in Uttar Pradesh.

c) A bullet of 50 g moving with an initial velocity 100ms^{-1} strikes a wooden block and comes to rest after penetrating a distance 2cm in it . Calculate : [4]

i) Initial momentum

ii) Final momentum of bullet.

iii) Retardation caused by the wooden block.

iv) Resistive force exerted by the wooden block.

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