

City International School

FIRST TERMINAL EXAMINATION – 2013 - 2014

Date : 07/08/2013

Marks : 80

Std : X

Subject : Physics (Paper I)

Time : 2hrs

Answer to this question must be written on the paper provided separately.

You will not be allowed to write during the first 15 minutes.

This time is spent in reading the question paper.

The time at the head of this paper is the time allowed for writing the answers.

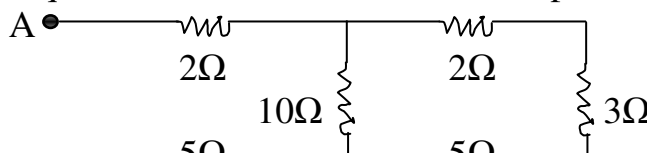
Attempt all questions from SECTION A and four questions from SECTION B.

The intended marks for questions or parts of questions are given in the bracket. ()

SECTION A [40 MARKS]

Attempt all questions

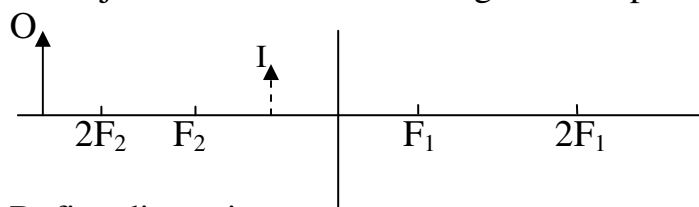
- Q. 1**
- a.
 - i. Define Non – contact forces. (2)
 - ii. State a condition necessary for equilibrium.
 - b.
 - i. Where does the position of centre of gravity lie for a cylinder? (2)
 - ii. Which motion is seen by a planet that makes it move in a circular path around the sun?
 - c. State the factor on which the following depend on. (2)
 - i. Optical density of the medium.
 - ii. Density of a medium
 - d.
 - i. What is meant by refraction of light? (2)
 - ii. What is the cause of refraction of light?
 - e. We can burn a piece of paper by focusing the sun's rays by using a particular type of lens. (2)
 - i. Name the type of lens used for the above purpose.
 - ii. Draw a ray diagram to support your answer.
- Q. 2**
- a.
 - i. Name one factor which affects the frequency of sound emitted due to vibrations in an air column. (2)
 - ii. Name the unit used for measuring the sound level.
 - b.
 - i. State a source of ultraviolet radiation. (2)
 - ii. Any one use of Infrared radiation.
 - c.
 - i. Six resistances are connected together as shown in the figure. (2)
Calculate the equivalent resistance between the points A and B.



- d. i. How is the refractive index of a medium related to its real depth and apparent depth? (2)
 ii. Which characteristic property of light is responsible for the blue colour of the sky?
- e. i. Which material is the calorimeter commonly made of? (2)
 ii. Give one reason for using this material.

- Q. 3** a. A ray of monochromatic light enters a liquid from air as shown in the diagram given below. (2)
 i. Copy the path of ray of light after it strikes the mirror and re-enters the medium of air.
 ii. Make in your diagram the two angles on the surface of separation when the ray of light moves out from liquid to air.
- b. Which characteristic of sound will change if there is a change in (2)
 i. its amplitude ii. its waveform
- c. Differentiate between heat capacity and specific heat capacity. (2)
- d. A man fires a gun and hears an echo after 5 seconds. The man moves 310m towards the hill and fires his gun again. This time he hears an echo after 3 seconds. Calculate the speed of sound. (2)
- e. i. State the SI unit of resistivity. (2)
 ii. Define Non – ohmic conductors.

- Q. 4** a. A cell supplies a current of 1.2A through two 2Ω resistors connected in parallel. When the resistors are connected in series, it supplies a current of 0.4A. Calculate the internal resistance of the cell. (2)
- b. i. State the effect of increase in pressure on the boiling point. (2)
 ii. Mention any one way of minimizing global warming.
- c. i. Write a relation between angle of minimum deviation angle of prism and angle of incidence. (2)
 ii. Another name for concave lens.
- d. 'O' is the object which forms the Image 'I' complete the ray diagram. (2)



- e. i. Define dispersion. (2)
 ii. State the cause of dispersion.

SECTION B [40 MARKS]

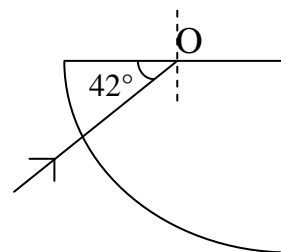
Answer any four questions from this section.

- Q. 5** a. A body of mass 50Kg has a momentum of 3000Kgms^{-1} . Calculate (3)
- Kinetic energy of the body.
 - Velocity of the body.

- b. i. Which of the following remains constant in uniform circular motion? (3)
Speed or Velocity or both.
- ii. Name the force required for uniform circular motion. State its direction.

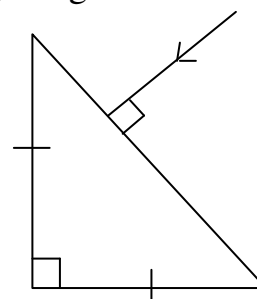
- c. i. State the principle of conservation of energy. (4)
- ii. Name the form of energy which a body may possess even when it is not in motion.
- iii. Write the two factors on which moment of force about a point depends on?

- Q. 6** a. i. Complete the path taken by the ray AO as it emerges out of the glass slab. (Given $i_c = 42^\circ$) (3)
- ii. Name the phenomenon, as the ray emerges out of the glass slab.
- iii. Define the phenomenon identified.



- b. A ray of light PQ is incident normally on the hypotenuse of an Isosceles right angled triangle prism ABC as shown in the diagram given below. (3)

- i. Copy the diagram and complete the path of ray PQ as it emerges from the prism
- ii. What is the value of the angle of deviation of this ray?
- iii. Name an instrument where this action Of prism is used.

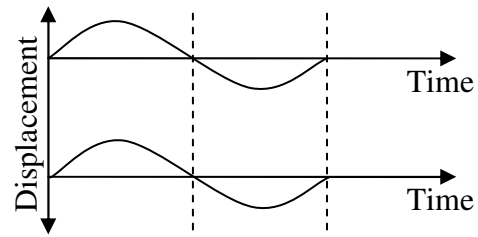


- c. A real and magnified image is obtained when an object is placed between F_1 and $2F_1$. (4)
- i. State the kind of lens used.
- ii. With the help of ray diagram, show the image formation.
- iii. State the application of such an image.

- Q. 7** a. Red light is used for the danger signal. Explain why? (3)

- b. A vibrating tuning fork is placed over the mouth of a burette filled with water. The tap is opened and the water level gradually falls. (3)
- i. What do you observe.
- ii. Name the phenomenon.
- iii. When does it happen.

- c. i. Which characteristic of sound does the following graph show. (4)
- ii. Define the above term identified.
- iii. How is the above identified characteristic related to its surface area and density of the medium.



- Q. 8** a. A cell emf 1.5V, internal resistance 1Ω is connected to the resistors of 4Ω and 20Ω in series. Draw a circuit diagram and calculate. (4)
- i. Current in the circuit.
- ii. Potential difference across 4Ω resistor.
- iii. Potential difference across the cell.
- iv. Voltage drop when current is flowing.
- b. i. State ohms law. (3)
- ii. Draw a heat labelled diagram to show the experimental verification of ohms law.
- iii. Name the limitation of ohms law.
- c. Differentiate between resistance and resistivity. (3)
- Q. 9** a. When ice in a frozen lake starts melting, its surroundings become very cold. Explain. (3)
- b. One kilogram of ice at -10°C is heated at a constant rate until the whole of it vaporizes. How much heat is required? (4)
- (Specific latent heat of fusion of ice = $336 \times 10^3 \text{ J/Kg}$
 Specific latent heat of steam = $2268 \times 10^3 \text{ J/Kg}$
 Specific heat capacity of ice = $2.1 \times 10^3 \text{ J/Kg K}$
 Specific heat capacity of water = 4200 J/K K)
- c. i. Define Global Warming. (3)
- ii. Impact of Global Warming.
- iii. Any one policy to be undertaken by the government.