

# ***City International School***

## **ANNUAL EXAMINATION 2015 - 2016**

**Date : 09/03/2016**

**Std : IX**

**Subject : Physics (Paper 1)**

**Marks : 80**

**Time : 2 hrs**

Answers to this paper must be written on the paper provided separately.

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

This time is to be spent in reading the question paper.

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

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

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

### **SECTION A [40 MARKS]**

**All questions in this section are compulsory.**

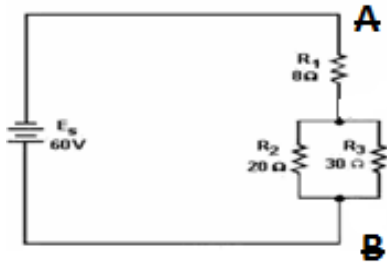
- Q. 1**
- a. Why can't transverse waves travel through gas? (2)
  - b.
    - i. What is the difference between infrasonic and ultrasonic? (2)
    - ii. What is the function of a galvanometer?
  - c. State the following: (2)
    - i. Size of the image in a convex lens when object is at  $2F$
    - ii. Nature of image in a concave lens.
  - d. The wavelength of waves produced on the surface of water is 20 cm. (2)  
If the wave velocity is  $24 \text{ ms}^{-1}$ . Find number of waves produced in one second.
  - e. With the help of a graph, show a body with free vibrations. (2)
- Q. 2**
- a. Explain why the soldiers are asked to stop marching on a bridge? (2)
  - b. A man stands at a distance of 12m from the cliff would he have heard an echo? Why? (2)
  - c.
    - i. Define principal axis. (2)
    - ii. State the condition in which a ray passes undeviated through a lens.
  - d. A current of 3 A flows through a conductor for 1.5 s. How much charge passes through a cross section of the conductor? (2)
  - e.
    - i. Define Sound (2)
    - ii. Show the relation between wave velocity, frequency and wavelength of a wave.
- Q. 3**
- a. Draw a circuit diagram to show a battery of two cells connected in series, a bulb, variable resistance and a switch. (2)

- b. i. What is the principle on which SONAR is based? (2)  
 ii. Name the characteristic of sound which enables a person to differentiate between two sounds produced by different instruments.

- c. Name the following : (2)  
 i. Position of image when object is at infinity in a concave lens.  
 ii. Position of object when the image is of the same size in a convex lens.

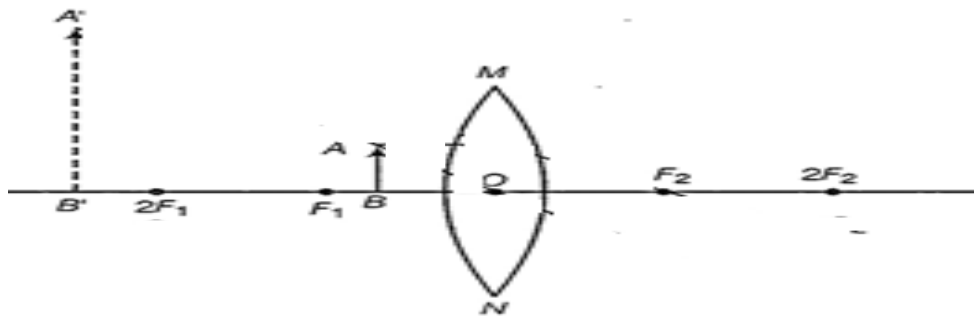
- d. What is the effect of the following factor on the velocity of sound? (2)  
 i. Pressure ii. Temperature

- e. Calculate the resistance between the points A and B (2)



- Q. 4** a. i. What is meant by echo? (2)  
 ii. Mention any one medical use of echo

- b. Complete the path of ray to show how the image ( $A'B'$ ) is formed. (2)

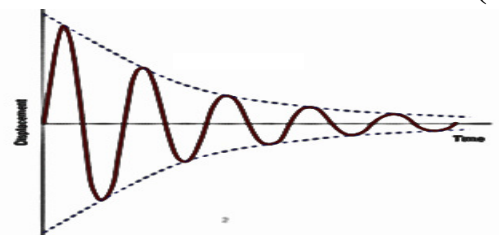


- c. Name the factors common between resistance and resistivity? (2)

- d. i. State the condition necessary for a conductor to obey Ohm's law. (2)  
 ii. Define Ohmic conductor.

- e. Look at the graph and answer the following questions. (2)

- i. What does the following graph show?  
 ii. Name the factor that affects it.

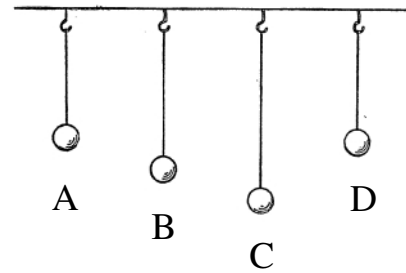


## SECTION B [40 MARKS]

Answer any four questions from this section.

**Q. 5** a. Observe the diagram and answer the following question (3)

- Which type of vibration is seen by pendulum A?
- Name the phenomenon seen by pendulum A and D
- Define the above pendulum.



b. A man stands between two cliffs and explodes a cracker. He hears two successive echoes after 3 seconds and 5 seconds. Calculate. (3)

- the distance between the nearer cliff
  - the distance from the other cliff
  - total distance between the cliff
- (Take speed of sound in air as  $340 \text{ ms}^{-1}$ )

c. How are the following components represented in an electric circuit? (4)

- cell
- Voltmeter
- load
- connecting wires

**Q. 6** a. With the help of a wave-graph show the following (3)

- wavelength
- amplitude
- crest and trough

b. Differentiate between light waves and sound waves. (3)

- State the ratio of frequencies observed in a flute with one end open. (4)
- Why does a large drum produce a much louder sound? (two reasons)
- Name the characteristic of sound that is dependent on frequency.

**Q. 7** a. i. With the help of a ray diagram show how an inverted and enlarged image is obtained in a convex lens. (4)

- State the position of the image.
- Write the characteristic of the image formed.

b. i. Define resistance. (3)

ii. How is resistivity related to resistance?

iv. Write a relation between resistance, resistivity and the other factors affecting it?

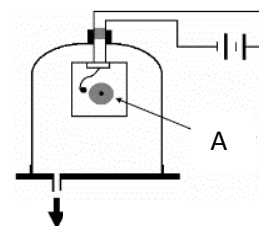
c. i. Define potential difference. (3)

ii. Which is at a higher potential a negative or positive end of a battery? Why?

- Q. 8**
- a.
    - i. State the function of an ammeter (3)
    - ii. Name the SI unit of current.
    - iii. How is an ammeter placed in an electric circuit?
  - b. Differentiate between electromotive force and terminal voltage. (3)
  - c. How does the glow of two bulbs in (2)
    - i. series get affected when one of them is removed
    - ii. parallel get affected when one of them is removed .
  - d. A wire of  $4\ \Omega$  resistance and 10 cm length is stretched to 40 cm length. Assuming that it has a uniform cross section, What will be the new resistance? (2)

- Q. 9**
- a.
    - i. Name the kinds of wave through which sound propagates in solids. (3)
    - ii. Define amplitude of a wave.
    - ii. How is frequency and wave velocity related to each other?

- b. Observe the diagram given alongside and answer the following questions. (3)
- i. Name the labeled part A
  - ii. What happens when air is removed slowly from the jar?
  - iii. Which property of sound does the above experiment prove?



- c. How do bats find their way in the dark? (2)
- d. A wave has a speed of  $240\text{ ms}^{-1}$  and a wave length of 3.2 m. What is the (2)
- i. frequency and
  - ii. time period of the wave.