# DELHI PUBLIC SCHOOL NEWTOWN
# SESSION 2020-2021
# FINAL TERM ONLINE EXAMINATION

**CLASS: IX** **FULL MARKS: 50**
**SUBJECT: PHYSICS** **TIME: 1HOUR 30 MINUTES**

***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.***

***Section A is compulsory. Attempt any four questions from Section B.***
***The intended marks for questions or parts of questions are given in brackets [ ]***
***This paper consists of two printed pages***

**SECTION – A (10 Marks)**

**Question 1**

a) **The wavelength of light is 6000Å. Express it in (i) nm and (ii) m.**
b) **The time period of swing decreases as one stands up on the swing. Why is this so?**
c) **How is potential at a point measured? Hence define a potential difference of 1 V.**
d) **An iron sphere and a wooden sphere of identical radius are both submerged totally inside water. Find out the ratio of water displaced by both and compare the buoyant forces acting on them.**
e) **"Induction precedes attraction". Justify the statement.**

**[2+2+2+2+2=10]**

**SECTION-B (40 marks)**
**(Attempt any four questions)**

**Question 2**

a) **Why do we consider acceleration due to gravity as positive during downward motion of a body? Give two reasons why two different masses dropped from a height in vacuum reach the ground together.**
b) **Define gravitational constant G and state it's value in SI unit. How do we ascertain that gravitational force follows inverse square law?**
c) **A spaceship travelling in space at 300 kms$^{-1}$, fires its engine for 15 seconds, such that its final velocity is 600 kms$^{-1}$. Calculate the total distance(in km) travelled by the ship in one minute starting from the time of firing**

**[3+3+4 = 10]**

**Question 3**

a) **A weather forecasting balloon of volume 12m$^3$ contain hydrogen of density 0.09 kgm$^{-3}$. The mass of the empty balloon is 6.92 kg. The balloon floats in air of density 1.3 kgm$^{-3}$. The volume of the equipment carried by the balloon is negligible compared to balloon's volume. Find the total mass of hydrogen and balloon, the mass of air displaced by the balloon and mass of the equipment.**
b) **Write any three properties for proper choice of unit to measure a physical quantity.**
c) **A metal cube of side 5 cm and density 7.9 gcm$^{-3}$ is suspended by a thread and completely immersed in a liquid of density 1.1 gcm$^{-3}$. Find the upthrust on the cube and tension in the thread.**

**[4+3+3 = 10]**

**Question 4**

a) **Draw a ray diagram to illustrate the formation of a virtual, magnified and upright image by a concave mirror. Write one application of obtaining such an image.**
b) **What is the principle of a hydraulic machine? How does it work as a force multiplier?**
c) **When same quantity of heat energy is imparted to different bodies, they get heated to different temperatures. Why is this so? What is the significance of absolute zero?**

**[4+3+3= 10]**

**Question 5**

a) **How does the velocity of sound get affected by (i) change in amplitude of sound wave (ii) the presence of moisture content in air and (iii) change in wavelength of sound wave?**
b) **An object is placed (i) symmetrically and (ii) asymmetrically between two plane mirrors at an angle $40^o$. Find the number of images formed. If a ray be incident on a plane mirror such that the reflected ray is perpendicular to the incident ray, find the angle of incidence.**
c) **List any three distinguishing features between a primary cell and a secondary cell. Define 1 ampere.**

**[3+3+4=10]**

**Question 6**

a) **How do we conclude about the presence of a uniform magnetic field by viewing magnetic lines of force? Why do the magnetic lines never intersect?**
b) **Draw the magnetic field lines of a bar magnet with its north pole facing the geographic north. Indicate the positions of neutral points and write their significance.**
c) **Draw a labeled electrical circuit comprising of a battery, rheostat, ammeter, voltmeter, plug key and a load(bulb). Show the direction of current flow and mark the polarities of the meters. State Ohm's law.**

**[3+4+3= 10]**