Physics (New Book) - 9th Class Physics Chapter 1 Long Question Preparation

Q1. Write note on significant figure

Ans 1: Significant figure: All the accurately known digits and the first doubtful digit in as expression are called significant figures. It reflects the precision of measure value of a physical quantity
Explanation: The value of a physical quantity is expressed by a number, along with suitable units. The accuracy in the measurement of a physical quantity depends upon
The quality of the measuring instrument
The skills of the observer
The number of observation made
The improvement in the quality of measurement can be made by using better measuring instrument, the more is value of precision more significant figure means greater precision

Ans 2: Rules of significant figure: The follow rules are helpful in identifying significant figure
Non zero digits are always significant
Zeros between two significant figures are also significant
Final or ending zeros on the right in decimal fraction are significant
Zeros written on the left side of the decimal point for the purpose of spacing the decimal point are not significant
In whole number s that end in one or more zeros without a decimal point these zeros may or may not be significant. In such case, express the quantity using scientific notation to find the significant zeros

---

Q2. What are the significant figures in the following measurements?

Ans 1: 1- 1.66 x10^-27kg =1.66/10^27 kg = 1.66/10000000000000000000000000 kg =0.00000000000000000000000000166 kg Significant figures =3 2- 2001s Significant =4 3- 1.009m Significant =4

Q3. Write a note on Waves as carriers of Energy?

Ans 1: Waves as carriers of Energy: Energy can be transferred from one place to another through waves. Example: When we shake the stretched string up and down, we provide our muscular energy to the string. As a result, a set of wave can be seen travelling across the string. The vibrating force from the hand disturbs the particles of string and sets them in motion. These particles then transfer their energy to the adjacent particles in the string. Energy is thus transferred from one place of the medium to other. Dependence: The amount of energy carried by the wave depends on the distance of the stretched string from its rest position. That is the energy in a wave depends on the wave amplitude of wave. If amplitude and frequency are greater than more energy will be transfer. Example: If we shake the string faster, we give more energy per second to produce wave of higher frequency, and wave delivers more energy per second to the particles of the string as it moves forward. Energy. Transfer in Water: Water waves also transfer energy from one place to another. Example: If we drop a stone into pond of water. Water waves will be produce on the surface of water and will travel outward. Now if we place a cork at some distance from the falling stone. When waves reacts the cork, it will move up and down along with the motion of the water particles by getting energy from the wave. This shows that water waves like other waves transfer energy from one place to another without transferring in matter.

Q4. Define scientific notation. describe it with examples

Ans 1: Scientific Notation; In scientific notation a number is expressed as some power of ten multiplied by a number between 1 and 10. A simple but scientific way to write large or small numbers is to express them in some power of ten.
The Moon is 3.84*10m. This form of expressing a number is called the standard form or scientific notation. This saves writing down or interpreting a large numbers of zeros

Ans 2: Standard Form; Number that has on e non zero digit before the decimal preferable to taken as standard

---

Q5. What is screw gauge. How a screw gauge is used to measure diameter of thin wire

Ans 1: Definition: An instrument which can measure length correct up to 0.01 mm or 0.001 cm is called a screw gauge

Micrometer screw gauge: An instrument which can measure length correct up to 10th part of millimeter is called micro meter screw gauge

Ans 2: Construction: A simple screw gauge consists of a U shaped metal frame with a metal stud at its on end . A hollow cylinder has a millimeter scale over it along a line called index line parallel to its axis. The hollow cylinder acts as a nut. It is fixed at the end of U shaped frame opposite to the stud. A thimble has a threaded spindle inside it.

Ans 3: pitch of screw gauge: The distance moved by spindle along index line as the thimble complete on rotation is called pitch of screw gauge i.e.1mm.spindle has 100 divisions around its one end. It is the circular scale of the screw gauge. As thimble completes one rotation, 100 pass the index line and the thimble moves 1 mm along the main scale

Ans 4: Least count of the screw gauge: Least count of a screw gauge can also be found by dividing pitch of screw gauge on number of divisions on circular scale i.e. 0.01mm or 0.001 cm
Least count = Pitch of screw gauge/no .of divisions on circular scale

Ans 5: Zero correction: Knowing zero error, necessary correction can be made to fine the correction such correction is called zero correction of the instrument. OR
The inverse of zero error is called zero correction.
Note: zero correction will be positive or negative

Q6. What is measuring cylinder. Explain it

Ans 1: Measuring cylinder: A measuring cylinder is a graduated glass cylinder used to measure the volume of liquid and also to fine the volume of an irregular shaped solid object

Ans 2: Construction; It is a glass or transparent plastic cylinder. it has a scale along its length that indicates the volume in milliliter. Measuring cylinders have different capacities from 100ml to 2500ml
use: it is used to measure volume of liquid or powdered substance. It is also used to dine volume of irregular shaped solid insoluble in liquid by displacement method

Ans 3: How to use measuring cylinder: Take a measuring cylinder, place it vertically on table. pour some water into it .Note that the surface of water will be curved. Meniscus of most liquids curves downward while meniscus of mercury curves upward. Correct method to note level of liquid in cylinder is to keep eye at same level as the meniscus of liquid. It is incorrect to keep eye above or below the liquid level.
When eye is above liquid level meniscus appears higher on scale. When eye is below liquid level, the meniscus appears lower than actual height of liquid.

Q7. Write a note on Ripple Tank?

Ans 1:

Q8. Define physics and explain its branches.

Ans 1: Physics: Physics is a branch of science that deals with matter, energy and their relationship. Branches of Physics: Following ate branches of physics: 1- Machanics: It is the study of motion of objects, its causes and effects. 2- Heat: It deals with the nature of heat , modes of transfer and effects of heat 3- Sound: It deals with the physical aspects of sound waves , their production, properties and applications. 4- Light : It is the study of the physical aspects of light, its properties, working and use of optical instruments. 5- Electricity and Magnetism: It is the study of the charges at rest and in motion their effects and their relationship with magnetism. 6- Atomic Physics: it is the study of the structure and properties of atom 7- Nuclear Physics: It deals with the properties and behavior of nuclei and the particle within the nuclei: 8- Plasma Physics: It is the study of production, properties of the ionic state of matter 9- GeoPhysics It is the study of the internal structure of the Earth.

Q9. What is meant by Vernier callipers? Write its construction.

Ans 1: Vernier Callipers: A vernier callipers consist of two jaws. One is a fixed jaw with main scale attached to it. Main scale has centimeter and millimeter marks on it the other jaw is a moveable jaw, it has a vernier scale having 10 divisions over it such that each of its divisions is 0.9mm.The difference between one small division on main scale division and one vernier scale division is 0.1mm. It is called least count of the vernier callipers. Least count of =Smallest reading on main scale /no. Of decision on vernier scale Vernier Callipers LC = 1mm/10divisions = 0.1mm LC = 0.1mm = 0.01cm Zero Error and Zero Correction: First of all find the zero error. To find the zero error close the jaws of Vernie, callipers gently.Zero error will exist if zero line of the vernier scale is not coinciding with the zero of main scale Knowing the zero error , necessary correction can be made to find the correct measurement is called zero correction. Taking a Reading on Vernier Callipers: Find the diameter of a solid cylinder using vernier Callipers.Close the jaws till they press the opposite sides of the object gently. Note the complete divisions of main scale past the vernier scale zero in a tabular form. Next find the vernier scale division that is coinciding with any division on the main scale. multiply it by least count of vernier Callipers and add it in the main scale reading. This is equal to the diameter of the solid cylinder. Add zero correction (Z.C) to get correct measurement Repeat the above procedure and record at least three observations with the solid cylinder displaced or rotated each time

---

Q10. Write a note on mass measuring instruments

Ans 1: Introduction: Pots were used to measure grain in various part of the world in the ancient time . However, balances were also in use by Greeks and Romans.

Ans 2: beam balance: Beam balances are stil in use at may places . In a beam balance, the unknown mass is placed in one pan . It is balanced by putting known masses in the other pan.
Today people use many types of mechanical and electronic balances. you might have seen electronic balances in sweet and grocery shops. There are more precise than beam balances and are easy to handle.

Ans 3: Physical Balance: a physical balance is used in the laboratory to measure the mass of various objects by comparison Construction: It consists of a beam resting at the centre on a fulcrum. The beam carries scale pans over the hooks on either side. unknown mass is placed on the left pan. Find some suitable standard masses that cause the pointer to reman at zero on raising the beam

Ans 4: Lever Balance : A lever balance consists of a system of levers. When lever is lifted placing the object in one pan and standard masses on the other pan, the pointer of the lever system moves. The pointer is brought to zero by varying standard mases. LC of lever balance is 0.01g ror 10mg

Ans 5: Electronic balance: Electronic balance comes in various ranges; milligram range, gram ranges and kilogram ranges. Before measuring the mass of a body, it is switched on and its reading is set to zero. Next place the object to the weighed. The reading on the balance gives you the mass of the body placed over it.
