INDIAN SCHOOL AL WADI AL KABIR

DEPARTMENT OF SCIENCE 2018 – 19

CLASS XI **PHYSICS** **DATE: 30.05.18**

WS. NO. 3 **CHAPTER : UNITS AND MEASUREMENT** **NAME:**

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1. **What should be the Unit of a Physical Quantity?**
2. **What are fundamental and derived quantities? Give two examples of each.**
3. **A digital watch shows the time as 10: 11: 12 AM and an old fashioned clock which has no second hand shows time as 10: 13 AM. Identify which is precise and which is accurate. Give a reason for your answer.**
4. **In an experiment, refractive index of a glass was observed to be 1.54, 1.53, 1.44, 1.54, 1.56 and 1.45. Calculate (i) Average absolute error (2) Relative error and (3) Percentage error. Express the result in terms of absolute error and percentage error.**
5. **Two resistors of** $R_1 = 100 \pm 3\Omega$ **and** $R_2 = 200 \pm 4\Omega$ **are connected in series. Find the maximum absolute error in the equivalent resistance of the combination. Express Equivalent resistance with percentage error.**
6. **In an experiment to determine density of an object mass and volume are recorded as,** $m = (3 \pm 0{\cdot}12)$ kg and $V = (10 \pm 1)\ m^3$ **respectively. Calculate the fractional error and percentage error in the measurement of density (d) = mass (m)/ volume (v).**
7. **If the formula for a physical quantity is :**

$$W = \frac{a^4 b^3}{c^{\frac{1}{3}}\sqrt{d}}$$

and if the percentage errors in the measurement of a, b, c and d are 1%, 3%, 3% and 4% respectively. Calculate the percentage error in W.

8. **Explain the parallax method to determine the distance between the earth and a planet.**
9. **Solve:**

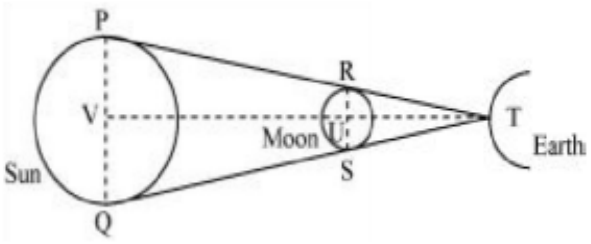
In Ohm's experiment, the values of an unknown resistance were found to be 4.12 Ω, 4.08 Ω, 4.22 Ω and 4.14 Ω. Calculate absolute error, relative error and percentage error in these measurement.

[Ans. : 0.04, 0.0096, 0.96 %]

10. **Solve:**

It is a well-known fact that during a total solar eclipse the disk of the moon almost completely covers the disk of the Sun.

Find the diameter of the Moon.



Distance of the Moon from the Earth = 3.84×10^8 m

Distance of the Sun from the Earth = 1.496×10^{11} m

Diameter of the Sun = 1.39×10^9 m