**INDIAN SCHOOL AL WADI AL KABIR**

**DEPARTMENT OF SCIENCE 2016-17**

**CLASS XI PHYSICS**

**WS: 2 TOPIC : UNITS AND MEASUREMENTS**

1. Check whether equation “F.S $=\frac{1}{2}mv^{2}-\frac{1}{2}mu^{2}$ “is dimensionally correct, where m is the mass of the body, v its final velocity, u its initial velocity, F is force applied and S is the distance moved.
2. Can a quantity has dimensions but still has no units? (Ans: No)
3. Can there be a physical quantity that has no unit and no dimensions?( Ans: Yes, eg: Strain)
4. If ‘slap’ times speed equals power, what will be the dimensional equation for ‘slap’? ( slap = power/speed = [MLT-2 ])
5. If$ x=at+bt^{2}$, where x is in meter and t in hour, what will be the unit and dimension of ‘a’ and ‘b’?
6. If A = (12.0 ± 0.1)cm and B = (8.5±0.5)cm, find: (i) A+B (ii) A-B
7. The length and breadth of a rectangle are (5.7 ± 0.1) cm and (3.4 ± 0.2) cm. Calculate the area of the rectangle with error limits.
8. In an experiment, refractive index of glass was observed to be 1.45, 1.56, 1.54, 1.44, 1.54 and 1.53. Calculate (i) Mean value of refractive index; (ii) Mean absolute error; (iii)Fractional error; (iv) Percentage error. Express the result in terms of absolute error and percentage error.
9. A physical quantity Q is given by $=\frac{A^{2}B\_{2}^{3}}{C^{+4}D\_{2}^{1}}$ . The percentage error in A, B, C, D are 1%, 2%, 4%, 2% respectively. Find the percentage error in Q.
10. Deduce by the method of dimensions an expression for the energy of a body executing S.H.M assuming that the energy of the body depends upon(a) the mass m (b) the frequency υ and (c) the amplitude of vibration a.

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