



# INDIAN SCHOOL DARSAIT DEPARTMENT OF PHYSICS



Subject : Physics

Topic : Revision worksheet

Worksheet No. 15

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Class & Division : XI A/B

Roll Number : \_\_\_\_

## 1 Define the following –

- |                        |                                  |
|------------------------|----------------------------------|
| (a) isothermal process | (b) molar specific heat capacity |
| (c) adiabatic process  | (d) regelation                   |
| (e) sublimation        | (f) resonance                    |
| (g) damped oscillation | (h) SHM (Simple Harmonic Motion) |
| (i) surface tension    | (j) surface energy               |
| (k) magnus effect      | (l) Doppler's effect             |
| (m) angle of contact   | (n) specific heat capacity       |
| (o) standing waves     | (p) beats                        |

## 2 State following theorems/laws-

- (a) Bernoulli's theorem for a non-viscous liquid.
- (b) Law of equipartition of energy
- (c) Laws of Thermodynamics
- (d) Newton's law of cooling
- (e) Law of continuity of fluids
- (f) Laws of Black body radiation
- (g) Stoke's law
- (h) Pascal's Law

## 3 Derivations

- (a) Derive an expression for the ascent of a liquid in a capillary tube.
- (b) What is the principle of a refrigerator? Explain working the working of a refrigerator with block diagram.

- (c) Describe Carnot's heat engine. Draw the PV indicator diagram for the cycle of events between two temperatures  $T_1$  and  $T_2$ .
- (d) What are the basic assumptions of kinetic theory of gases? On their basis, derive an expression for the pressure exerted by an ideal gas.
- (e) Derive the expressions of velocity and acceleration in SHM.
- (f) Prove Bernoulli's Theorem
- (g) Obtain the expression for terminal velocity.
- (h) Derive excess pressure within (a) a liquid drop, (b) an air bubble within a liquid and (c) soap bubble
- (i) Obtain the expression for mean free path of gas molecules.
- (j) Derive the ratio of molar specific heat capacities for a diatomic gas.
- (k) Obtain the expression for apparent frequency of sound when an observer is approaching the source of sound.