

20-12

MARTHOMA RESIDENTIAL SCHOOL, THIRUVALLA
SECOND TERMINAL EXAMINATION
PHYSICS

Std:IX

Marks:80

Time: 2Hrs

SECTION A

(Answer all questions)

Question 1

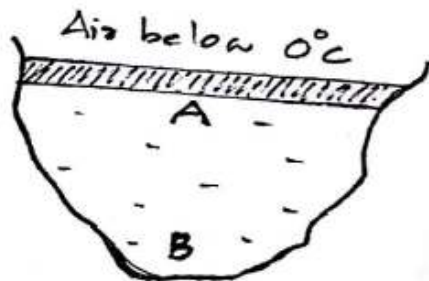
- a) (i) Define pressure
(ii) State and define the standard unit of pressure (1)
- b) (i) State Pascal's law (2)
(ii) Why does a fountain pen leaks at high altitude (1)
- c) What should be the ratio of area of cross section of a master cylinder and wheel cylinder of a hydraulic break so that a force of 15N can be obtained at each of its break shoe by exerting a force of 0.5N on the pedal? (2)
- d) List any 2 uses of mercury as a barometric liquid (2)

Question 2

- a) (i) What is buoyant force?
(ii) In what direction and at what point does the buoyant force on a body due to a liquid act (1)
- b) What is the effect of upthrust? (2)
- c) (i) State the principle of floatation (1)
(ii) A ship begins to submerge more as it sails from sea water to river water. Explain (1)
- d) State Archimedes' principle (1)
- e) (i) How relative density and density in CGS system related? (1)
(ii) The relative density of silver is 10.8. Find its density. (1)
(ii) Express the relationship between the CGS and SI units of density (1)

Question 3

- a) (i) What is thermal expansion?
(ii) How is Celsius and Fahrenheit scales related?
(iii) What is the value of ice point in Fahrenheit scale
- b) The diagram below shows a frozen pond in a cold region



- (i) State the expected temperature at A and B
(ii) Define the phenomenon responsible for the temperature mentioned in part (i)
- c) (i) What is energy degradation
(ii) Differentiate between renewable and non renewable sources of energy (Any two)
(iii) Define solar constant

Question 4

- a) (i) State and define the SI unit of electric current
(ii) If 'n' electrons pass through a cross section of a conductor in 't' time, write expression for the current through the conductor
- b) Distinguish between open and closed circuits with suitable diagram
- c) (i) State Ohm's law
(ii) A bulb draws a current of 1.5 A at 6V. Find the resistance of the filament of the bulb while glowing.
- d) (i) Define electrical resistance
(ii) 'The resistance of a wire is 1 Ohm'-Explain the meaning of the statement.

SECTION B

(Answer any 4)

Question 5

- a) (i) What is the principle of a hydraulic machine
(ii) List any 2 uses of hydraulic press (3)
- b) What do the following indicate in a barometer regarding weather?
(i) Gradual fall of mercury level
(ii) Sudden fall of mercury level
(iii) Gradual rise in mercury level (3)
- c) (i) What is an altimeter?
(ii) State its principle.
(iii) Write an expression for pressure inside a liquid . Mention the symbols used (4)

Question 6

- a) (i) Differentiate between density and relative density
(ii) The density of glass is 2.5g/cm^3 . What is its relative density? (4)
- b) (i) A body dipped into a liquid experiences an upthrust. State the factors on which upthrust on a body depends
(ii) What is the reason for upthrust? (4)
- c) Derive the relation between volume of the submerged part of the floating body, the densities of the liquid and the body (2)

Question 7

- a) (i) State the law which governs the energy flow in an ecosystem
(ii) "Energy flow in an ecosystem is linear"- Comment on the statement (3)
- b) Differentiate between heat and temperature (any 3) (3)
- c) (i) What is a solar panel? (4)
(ii) List any three advantages of using solar panel

Question 8

- a) (i) Define a secondary cell
(ii) State an advantage of secondary cell over primary cell
(iii) How is the resistance of a wire affected if its
(1) length is doubled (ii) radius is doubled
- b) (i) Differentiate between positive and negative potential
(ii) A and B are two metal spheres which are connected with the help of a metal wire. State the direction of flow of electrons in each case
- c) (i) What is an ammeter?
(ii) How is it connected in a circuit?

Question 9

- a) Explain the factors affecting resistance
- b) (i) In a hydraulic machine, a force of 2N is applied on the piston of area of cross section 10 cm^2 . What force is obtained on its piston of area of cross section 100 cm^2 ?
(ii) Why does a piece of steel sink in water, but float in mercury?
(iii) If a bowl is formed from the same steel piece, it can float in water. Why?
- c) What are the characteristic properties of upthrust?

Question 10

- a) (i) What is the effect of temperature on density?
(ii) A metal piece weighs 250gf in air and 150gf when completely immersed in water.
(1) Calculate the relative density of the metal piece
(2) How much it weighs in a liquid of density 0.8 g/cm^3
- b) List any three ways for the judicious use of energy
- c) (i) How is the reading in a barometer affected when it is taken to
(1) A mine
(2) A hill
(ii) How does the size of a gas bubble change as it rises through water? Explain.