

FOUNDATION COURSE

CLASS IX

PAPER : 17

Time : 2 hrs.

Max. Marks. : 100

TOPICS COVERED:

PHYSICS : Sound and Gravitation

CHEMISTRY : Atoms and Molecules

MATHS : Surface area volume, Area of Triangle and Parallelogram

BIOLOGY : Plant Kingdom

GENERAL INSTRUCTIONS :

1. Paper consist of **4 Section** each for **Physics, Chemistry, Maths** and **Biology**. Answers for each question should be given in the space provided in the question paper itself.
2. Each section contains 13 questions, all questions are compulsory.
3. Question 1 - 5 are **objective type question** of 1 Mark each.
4. Question 6 - 7 consist of 1 Marks each.
5. Question 8 - 9 consist of 2 Marks each.
6. Question 10 - 12 consist of 3 Marks.
7. Question 13 consist of 5 Marks.

	Physics	Chemistry	Maths	Biology
Marks				
Total				

Name of the Student : _____

Centre : _____

Invigilator's Signature: _____

PHYSICS

1. The acceleration due to gravity acting on two masses M_1 and M_2 ($M_1 > M_2$) will be
(a) More on M_1 (b) More on M_2 (c) Equal (d) All of the above [1]
2. An object moving with a velocity more than the velocity of sound is called
(a) Ultrasonic (b) Super sonic (c) Infrasonic (d) Both (a) and (b) [1]
3. A sound is produced by a loudspeaker and by a child. These two sounds were observed by an individual from a certain distance. If t_1 is the time of hearing of sound from loudspeaker and t_2 be the time hearing of from sound of child, then
(a) $t_1 > t_2$ (b) $t_1 < t_2$ (c) $t_1 = t_2$ (d) None of these [1]
4. Compression in a sound wave corresponds to the region of
(a) Maximum pressure (b) Maximum pressure and maximum density
(c) Minimum pressure and minimum density (d) Minimum pressure maximum density [1]
5. The acceleration due to gravity acting on two bodies, one at pole is g_1 and another standing at equator is g_2 , then
(a) $g_1 > g_2$ (b) $g_1 = g_2$ (c) $g_1 < g_2$ (d) $g_1 \leq g_2$ [1]
6. Two bodies of masses 100kg and 95 kg are heated to twice their initial temperature. What will be the effect on their masses and weight ? [1]
7. State the relation among the speeds of sound in air, water and solid i.e., which is greatest and which is least ? [1]
8. Estimate the distance between the compression and its nearest rarefaction in a sound wave in terms of wavelength. Define pitch and intensity of sound. [2]

9. A body of mass 20 kg is raised to a height of 10 m. What is the potential energy, stored in the body ($g = 10\text{m/s}^2$) ? [2]

10. What kind of wave is produced (longitudinal or transverse) ? [3]

- (i) When a string of guitar is played ?
- (ii) When a stone is thrown in a still lake ?
- (iii) When a bat produces ultrasound wave ?

11. The depth of a sea is measured by using sonar in a submarine. If the sound signal were received after a time gap of 0.8 sec after reflection. What is the depth of the sea (Assume the speed of sound in sea water = 1500 m/s). [3]

12. A sphere of mass 40 kg is attracted by a second sphere of mass 60 kg with a force equal to 4×10^{-5} N. Calculate the distance between them (Assume $G = 6 \times 10^{-11} \text{ Nm}^2 \text{ kg}^{-2}$, $g = 10 \text{ m/s}^2$) [3]

13. State and derive universal law of gravitation. What is gravity ? List its application. [5]

CHEMISTRY

1. Valency of Chlorine (Cl) is
(a) 7 (b) +1 (c) -1 (d) None of these [1]
2. Valency of A is 2 and B is 3. What is the chemical formula of molecule
(a) A_2B (b) A_2B_3 (c) A_3B_2 (d) AB_3 [1]
3. Hydrosulphuric acid is
(a) HSO_4 (b) H_3SO_4 (c) H_2SO_4 (d) HNO_3 [1]
4. How many moles in 11g of CO_2 ?
(a) $1/4$ (b) 4 (c) $1/44$ (d) None of these [1]
5. When a metal atom M (valency one), the formula of its oxide is
(a) MO (b) M_2O (c) MO_2 (d) None of these [1]
6. What are polyatomic ions? Give examples. [1]

7. What do you mean by 1 mole of oxygen ? [1]

8. Write the chemical formulae of the following.
(a) Magnesium chloride
(b) Calcium oxide [2]

9. Calculate the molar mass of the following substances.
(a) Ethyne, C_2H_2
(b) Sulphur molecule, S_8 [2]

10. What is the mass of—
(a) 2 mole of nitrogen atoms?
(b) 5 moles of carbon atoms (Atomic mass of carbon = 12)?
(c) 7 moles of sodium sulphite (Na_2SO_3)? [3]

11. A 0.24 g sample of compound of oxygen and boron was found by analysis to contain 0.096 g of boron and 0.144 g of oxygen. Calculate the percentage composition of the compound by weight. [3]

12. When 5.0 g of carbon is burnt in 10.00 g oxygen, 14.00 g of carbon dioxide is produced. What mass of carbon dioxide will be formed when 3.00 g of carbon is burnt in 50.00 g of oxygen? Which law of chemical combination will govern your answer? [3]

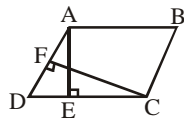
13. How many moles of electrons weigh 1 kg ?

[5]

MATHS

1. The curved surface area of a right circular cylinder of height 10 cm is 88cm^2 . The diameter of the base of the cylinder is [1]
(a) 1 cm (b) 2.5 cm (c) 2 cm (d) None of these
2. Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Its curved surface area is [1]
(a) 160 cm^2 (b) 165 cm^2 (c) 167 cm^2 (d) None of these
3. The total surface area of a hemisphere of radius 10 cm is [1]
(a) 942 cm^2 (b) 940 cm^2 (c) 842 cm^2 (d) 840 cm^2
4. The ratio of volumes of right circular cylinder and a right circular cone of same radius and height is [1]
(a) 1:3 (b) 3:1 (c) 9:1 (d) 1:3
5. The ratio of curved surface area and total surface area of a cube is [1]
(a) 3:2 (b) 4:3 (c) 2:3 (d) 2:6
6. Find the curved surface area of a hemisphere of radius 21 cm. [1]
7. The height of a cone is 16 cm and its base radius is 12cm. Find the curved surface area. [1]

8. ABCD is a parallelogram, $AE \perp DC$ and $CF \perp AD$ as shown in figure. If $AB = 18\text{ cm}$, $AE = 10\text{ cm}$ and $CF = 8\text{ cm}$, find AD. [2]



9. P and Q are any two points laying on the sides DC and AD respectively of a parallelogram ABCD. Show that $\text{area}(\triangle APB) = \text{area}(\triangle BQC)$. [2]

10. If a triangle and a parallelogram are on the same base and between the same parallels then prove that the area of the triangle is equal to half the area of the parallelogram. [3]

11. In a triangle ABC, E is the mid-point of median AD. Show that area (AED) = $\frac{1}{4}$ area (ABC). [3]

12. A cuboidal vessel is 10 m long and 8 m wide. How high must it be made to hold 380 cubic meters of a liquid? [3]

13. D, E and F are respectively the mid-points of the sides BC, CA and AB of a ΔABC . Show that

(i) ΔDEF is a parallelogram

[5]

(ii) $\text{Area}(\Delta DEF) = \frac{1}{4} \times \text{area}(\Delta ABC)$

(iii) $\text{Area}(\Delta BDEF) = \frac{1}{2} \times \text{area}(\Delta ABC)$

BIOLOGY

1. Unicellular green alga is (1)
(a) *Ulothrix* (b) *Spirogyra* (c) *Chlamydomonas* (d) All
2. Plants with seeds having a single cotyledon are (1)
(a) *Dicots* (b) *Monocots* (c) *Bryophyta* (d) All
3. Plants with naked seeds? (1)
(a) *Angiosperms* (b) *Gymnosperms* (c) *Bryophyta* (d) All
4. Why paphiopedium plant is (1)
(a) Dicot (b) Monocot (c) Gymnosperms (d) Pteridophyta
5. Plants are usually perennial evergreen and woody (1)
(a) *Gymnosperms* (b) *Angiosperms* (c) *Thallophyta* (d) *Bryophyta*
6. Why are algae called as nonembryophyta ? (1)

7. Which group of plant is called amphibian and vascular plant ? (1)
8. Fill in the blanks (2)
- (a) Pteridophytes have naked embryos that are called
 - (b) are called the amphibians of the plant kingdom.
9. Write the difference between 'cryptogams' and 'phanerogams' ? (2)
10. Match items of column (A) with items of column B (3)
- | A | B |
|------------------|----------------|
| (a) Thallophyta | (i) Pinus |
| (b) Bryophyta | (ii) Spirogyra |
| (c) Pteridophyta | (iii) Ipomoea |
| (d) Gymnosperms | (iv) Ferns |
| (e) Angiosperms | (v) Riccia |
11. How do gymnosperms and angiosperms differ from each other ? (3)

12. How are pteridophytes different from the phanerogams ? (3)

13. What are the major divisions in the plantae ? What is the basis for these divisions ? (5)