

# FOUNDATION COURSE

## CLASS IX

### PAPER : 17

Time : 2 hrs.

Max. Marks. : 100

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#### TOPICS COVERED:

PHYSICS : Sound and Gravitation

CHEMISTRY : Atoms and Molecules

MATHS : Surface area volume, Area of Triangle and Parallelogram

BIOLOGY : Plant Kingdom

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#### 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: \_\_\_\_\_



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  $4 \times 10^{-5} \text{N}$ . 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

- Valency of Chlorine (Cl) is  
(a) 7                      (b) +1                      (c) -1                      (d) None of these                      [1]
- 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]
- Hydrosulphuric acid is  
(a)  $HSO_4$                       (b)  $H_3SO_4$                       (c)  $H_2SO_4$                       (d)  $HNO_3$                       [1]
- How many moles in 11g of  $CO_2$  ?  
(a)  $1/4$                       (b) 4                      (c)  $1/44$                       (d) None of these                      [1]
- 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]
- 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 ?

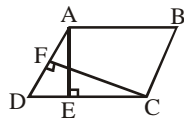
[5]



**MATHS**

1. The curved surface area of a right circular cylinder of height 10 cm is  $88\text{cm}^2$ . 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)  $160\text{ cm}^2$                       (b)  $165\text{ cm}^2$                       (c)  $167\text{ cm}^2$                       (d) None of these
3. The total surface area of a hemisphere of radius 10 cm is [1]  
(a)  $942\text{ cm}^2$                       (b)  $940\text{ cm}^2$                       (c)  $842\text{ cm}^2$                       (d)  $840\text{ cm}^2$
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  $\Delta ABC$ . Show that

(i)  $\Delta DEF$  is a parallelogram

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

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

[5]

## 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) Pteriophytes 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)