FOUNDATION COURSE

Time : 2 hrs. **CLASS IX** **Max. Marks. : 100**

PAPER : 11 $P_R C_S M_A B_D$

TOPICS COVERED:

PHYSICS : Gravitation

CHEMISTRY : Atomic Structure

MATHS : Lines, Angles and Triangles

BIOLOGY : Alinmal 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 unit of gravitational constant G is

(a) $\frac{Nm}{kg^2}$ (b) $\frac{N^2m}{kg}$ (c) $\frac{Nm^2}{kg}$ (d) $\frac{Nm^2}{kg^2}$ **[1]**

2. (i) The unit of mass is kg and weight is newton.

(ii) Mass and weight are same.

(a) (i) is correct (b) (ii) is correct (c) both are correct (d) both are wrong **[1]**

3. The mass of a body is 24 kg on earth. Its mass on moon is

(a) 4 kg (b) 6 kg (c) 12 kg (d) 24 kg **[1]**

4. The unit of gravitational constant G is

(a) $\frac{Nm^2}{kg^2}$ (b) $\frac{Nm}{kg^2}$ (c) $\frac{Nm^2}{kg}$ (d) $\frac{Nm}{kg}$ **[1]**

5. The correct expression for acceleration due to gravity is

(a) $\frac{GM}{R}$ (b) $\frac{GM}{R^2}$ (c) $\frac{gM}{R^2}$ (d) $\frac{GM}{R^3}$ **[1]**

6. Define pressure. **[1]**

7. What do you mean by relative density ? **[1]**

8. What do you mean by free fall ? **[2]**

9. Gravitational force acts on all objects in proportion to their masses. Why then, a heavy object does not fall faster than a light object ? **[2]**

10. How does the force of gravitation between two objects change when the distance between then is reduced to half ? **[3]**

11. State universal law of gravitation. Write the expression also. **[3]**

12. A ball is thrown vertically upwards with a velocity of 49 m/sec. Calculate

(i) the maximum height to which it rises.

(ii) the total time it takes to return to the surface of earth. **[3]**

13. State Kepler's laws of planetary motion.

OR

What happens to the force between two objects, if

(i) the mass of one object is doubled ?

(ii) the distance between the objects is doubled ?

Explain it mathematically. **[5]**

CHEMISTRY

1. The mass of 4 moles of aluminium atoms would be

(a) 27g (b) 54g (c) 108g (d) none of these **[1]**

2. How many grams of neon will have the same number of atoms as 4 grams of calcium ?

(a) 40g (b) 20g (c) 2g (d) none of these **[1]**

3. "A chemical compound always consists of the same elements combined together in the same proportion by mass". This is

(a) Law of conservation of mass (b) Law of constant proportion

(c) Both (a) and (b) (d) None of these **[1]**

4. The number of electrons present in Ca^{+2} ion would be

(a) 2 (b) 8 (c) 18 (d) 32 **[1]**

5. An atom loses one electrons then which one of the following is formed.

(a) Cation (b) Anion

(c) Either cation or anion (d) neither cation nor anion **[1]**

6. Write down the formula of the following **[1]**

(a) Calcium oxide (b) Magnesium chloride

7. How many grams of magnesium will have the same number of atoms as 6 grams of carbon ? **[1]**

8. If sulphur exists as S_8 molecules, calculate the number of moles in 100g of sulphur. **[2]**

9. Which contains more molecules, 4g of methane or 4g of oxygen (O_2) ? **[2]**

10. An element has a valency of 4. Write the formula for its **[3]**

(a) Oxide (b) Carbonate (c) Nitride

11. An elemetn X has a valency of 4 where as another element Y has a valency of 1. What will be the formula of the compound formed between X and Y ? **[3]**

12. Define with example **[3]**

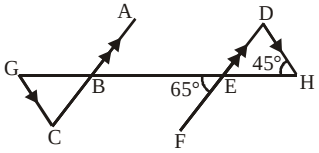
(a) Ions (b) Cations (c) Anions

13. The mass of a single atom of an element X is 2.65×10^{-23} g. What is its atomic mass ? What could this element be ? **[5]**

MATHS

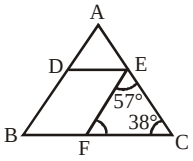
1. In the given figure GC || DH and AC || DF. $\angle BEF = 65°$, and $\angle EHD = 45°$. Find $\angle GCB$ **[1]**

(a) 60°
(b) 70°
(c) 50°
(d) 40°



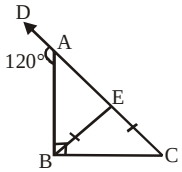
2. In the given figure, DE || BF and AB || EF $\angle FEC = 57°$ and $\angle ECF = 38°$. Find the value of $\angle ADE$ **[1]**

(a) 115°
(b) 85°
(c) 95°
(d) Can't determined



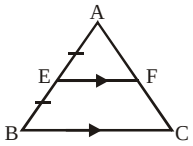
3. In the given figure, $\angle DAB = 102°, EB = EC$. Find $\angle BEC$ **[1]**

(a) 100°
(b) 90°
(c) 120°
(d) 30°



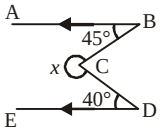
4. In the figure, EF || BC and AE = EB. If BC = 14 cm, then EF is equal to **[1]**

(a) 8
(b) 7
(c) 6
(d) Can't determined

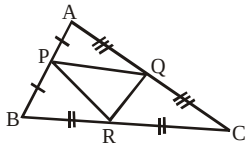


5. In the given figure, AB || ED, $\angle ABC = 45°$ and $\angle EDC = 40°$, find x **[1]**

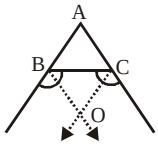
(a) 135°
(b) 140°
(c) 275°
(d) 340°



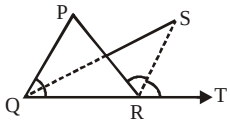
6. In the given figure, P, Q and R are the mid-points of AB, AC and BC respectively. If ar $\Delta ABC = 36$ m^2, then find the area of ΔPQR **[1]**



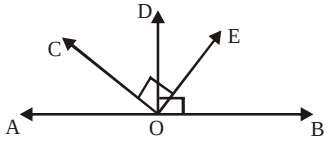
7. In the given figure BO and CO are the angle bisectors of ext $\angle B$ and ext $\angle C$ respectively. If $\angle A = 70°$, find $\angle BOC$ **[1]**



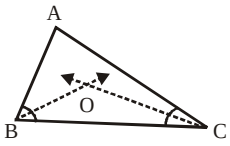
8. In the given figure, QS and RS are the bisector of $\angle PQR$ and $\angle PRT$ respectively. If $\angle P = 70°$, find $\angle QSR$. **[2]**



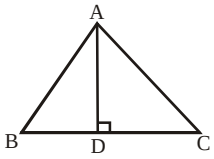
9. In the given figure $DO \perp AB$ and $CO \perp OE$. If $\angle DOE = \frac{1}{4}\angle DOC$, find $\angle EOA$. **[2]**



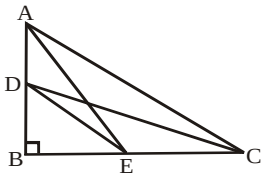
10. In ΔABC, BO and CO are angle bisectors of $\angle B$ and $\angle C$ respectively. Prove that $\angle BOC = 90 + \frac{1}{2}\angle A$ **[3]**



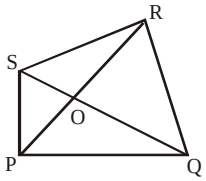
11. In the given ΔABC, $AB = AC$ and $AD \perp BC$ where AB = 16 cm and AD = 5 cm, then ar ΔABC is **[3]**



12. In rt ΔABC, D and E are some points on AB and BC respectively. Prove that $AC^2 + DE^2 = DC^2 + AE^2$ **[3]**



13. In quadrilateral *PQRS*, diagonals intersect at *O*. Show that $PQ + QR + RS + SP > PR + QS$. **[5]**



BIOLOGY

1. Which is true for bacteria ?

(a) They have nuclear membrane and cell wall

(b) They have nuclear membrane but lack cell wall

(c) They lack both nuclear membrane and cell wall

(d) They lack nuclear membrane but possess cell wall **[1]**

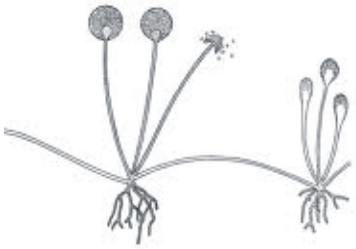
2. Vibrio cholerae is

(a) Rod shaped (b) Spherical (c) Comma shaped (d) Spirillum **[1]**

3. Paramoecium use ..... for locomotion

(a) Cilia (b) Flagella (c) Pseudopodia (d) Feet **[1]**

4. Figure shows



(a) Rhizopus

(b) Rhizobium

(c) Mushrooms

(d) Protista **[1]**

5. Which of following is used for the production of medicines/antibiotics ?

(a) Monera (b) Fungi (c) Protista (d) Rhizobium **[1]**

6. Give two differences between gram positive and gram negative bacteria. **[1]**

7. Why bryophytes are called amphibians of plant kingdom ? **[1]**

8. Name **[2]**

(a) An algae which has girdle shaped chloroplast

(b) A unicellular fungi

(c) The symbiotic association of algae and fungi

(d) A protista which is flagellate and photosynthetic

9. What is bionomial nomenclature? Explain with the help of an example. **[2]**

10. Differentiate between phanerogams and cryptogams. Give example also **[3]**

11. Match the column **[3]**

(a) Monera	(i) Yeast
(b) Protista	(ii) Ulothrix
(c) Fungi	(iii) Pseudopodia
(d) Algae	(iv) Streptococcus
(e) Penicillin	(v) Diatoms
(f) Amoeba	(vi) Antibiotic

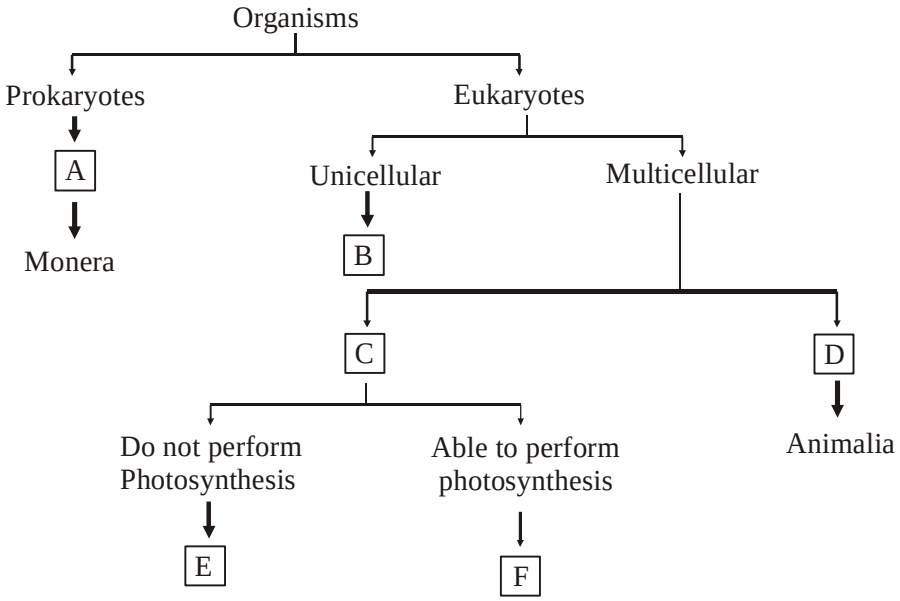
12. Draw diagrams of **[3]**

(a) Ulothrix

(b) Spirogyra

(c) Aspergillus

13. (a) **[3.5]**



(b) Write the contribution of **[1.5]**

(i) Robert Whittaker

(ii) Linnaeus