

# FOUNDATION COURSE

## CLASS IX

### PAPER : 03

Time : 2 hrs.

Max. Marks. : 100

P<sub>R</sub> C<sub>S</sub> M<sub>A</sub> B<sub>G</sub>

#### TOPICS COVERED:

PHYSICS : Motion

CHEMISTRY : Matter in Our Surroundings

MATHS : Surds

BIOLOGY : Chloroplast, Endoplasmic Reticulum

#### 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				

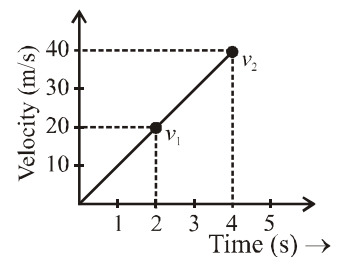
Name of the Student : \_\_\_\_\_

Centre : \_\_\_\_\_

Invigilator's Signature: \_\_\_\_\_

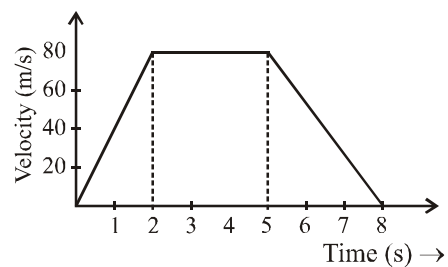
**PHYSICS**

1. The unit of rate of change in velocity is  
(a) m/s                      (b)  $\text{m/s}^2$                       (c) ms                      (d) m                      [1]
2. If displacement time graph is parallel to time axis then velocity is  
(a) variable                      (b) infinite                      (c) zero                      (d) cannot be determined                      [1]
3. A body is moving on a circular track of radius  $R$ . The displacement of the particle when it covers half the circular track is  
(a)  $\pi R$                       (b)  $R$                       (c)  $2\pi R$                       (d)  $2R$                       [1]
4. In uniform circular motion  
(a) velocity is constant                      (b) speed is constant  
(c) acceleration is constant                      (d) rate of change in velocity is constant                      [1]
5. A body starts from rest and acquires 20 m/s velocity in 5 sec. The acceleration is  
(a)  $2 \text{ m/s}^2$                       (b)  $4 \text{ m/s}$                       (c)  $4 \text{ m/s}^2$                       (d) zero                      [1]
6. A body starts from rest and acquires an acceleration  $3 \text{ m/s}^2$  in 4 sec. Find the distance covered by the body during this period.                      [1]
7. A body is thrown with velocity  $u$  from the top of a tower. If its velocity becomes  $3u$  just before striking the ground, find the height of tower.                      [1]
8. In the given velocity time graph, find the acceleration of the body.                      [2]



9. Does velocity remains constant in a uniform circular motion ? Support your answer with suitable explanation. [2]

10. In the given velocity-time graph, find the distance covered by the body during whole journey. [3]



11. Derive  $s = ut + \frac{1}{2}at^2$  by graphical method. [3]

12. A stone is thrown from a height 100 m. If it penetrates a heap of sand further 2m before finally comes to rest find the time of penetration. [3]

13. A body is moving with speed 5 m/sec on a circular track of radius 20 m. Find time period and angular velocity of the body. [5]

**OR**

Derive  $v^2 = u^2 + 2aS$  by graphical method.

## CHEMISTRY

1. At 0°C water exist as  
(a) Solid and liquid      (b) Solid and gas      (c) Liquid and gas      (d) Solid, liquid and gas      [1]
  
2. 273.15k temperature is  
(a) Melting point of ice      (b) Freezing point of water  
(c) Boiling point of water      (d) Both (a) and (b)      [1]
  
3. Solid is directly converted into gas, this phenomenon is known as  
(a) deposition      (b) fusion      (c) condensation      (iv) sublimation      [1]
  
4. At boiling point  
(a) Atmospheric pressure = vapour pressure      (b) Atmospheric pressure > vapour pressure  
(c) Atmospheric pressure < vapour pressure      (d) none of the above      [1]
  
5. Evaporation  
(a) occur at all temperature      (b) is surface phenomenon  
(c) occur due to collision between particle      (d) all of the above      [1]
  
6. Define deposition.      [1]
  
7. Define specific heat capacity.      [1]
  
8. Explain why sweating reduces down the temperature of body ?      [2]
  
  
  
  
  
  
  
  
  
  
9. Explain why water is responsible for maintenance of moderate temperature of earth.      [2]

10. Explain how density of water is maximum at 4°C ? [3]

11. Write short note on [3]  
(i) Rigidity                      (ii) Evaporation

12. Differentiate between solid and gas. [3]

13. Write brief about

(i) Boiling point

(ii) Melting point

(v) Why water float on surface of water ?

(ii) Vapour pressure

(iv) Sublimation

[5]

1. If  $x = \frac{\sqrt{5} + \sqrt{2}}{\sqrt{5} - \sqrt{2}}$  and  $y = \frac{\sqrt{5} - \sqrt{2}}{\sqrt{5} + \sqrt{2}}$ , then value of  $3x^2 + 4xy - 3y^2$  is [1]  
 (a)  $\frac{1}{3}(12 + 56\pi_0)$       (b)  $\frac{1}{6}(12 + 56\pi_0)$       (c)  $\frac{1}{5}(12 + 56\pi_0)$       (d) none of these
2. If  $x = 2 + \sqrt{3}$ , then the value of  $x^3 + \frac{1}{x^3}$  is [1]  
 (a) 50      (b) 51      (c) 52      (d) 53
3. If  $\frac{\sqrt{7} - 1}{\sqrt{7} + 1} - \frac{\sqrt{7} + 1}{\sqrt{7} - 1} = a + b\sqrt{7}$  then the values of  $a$  and  $b$  are [1]  
 (a)  $9, \frac{-2}{3}$       (b)  $\frac{-2}{3}, 0$       (c)  $\frac{-2}{3}, 9$       (d)  $0, \frac{-2}{3}$
4.  $\sqrt{50} - \sqrt{18} + \sqrt{8} + \sqrt{128} - 3\sqrt{2} =$  [1]  
 (a)  $5\sqrt{2}$       (b)  $7\sqrt{2}$       (c)  $9\sqrt{2}$       (d)  $11\sqrt{2}$
5. Value of  $\sqrt{m^2 n^2} \times \sqrt[6]{m^2 n^2} \times \sqrt[3]{m^2 n^2}$  is [1]  
 (a)  $mn$       (b)  $m^2 n^2$       (c)  $m^3 n^3$       (d)  $m^4 n^4$
6. Simplify :  $(7\sqrt{5} - 3\sqrt{2}) \times (2\sqrt{5} + 4\sqrt{2})$  [1]
7. Arrange in descending order :  $\sqrt[3]{2}, \sqrt[4]{3}, \sqrt[3]{4}$ . [1]



8. If  $x = 3 - 2\sqrt{2}$ , find the value of  $x^2 + \frac{1}{x^2}$ . [2]

9. If  $x = \frac{3 + 2\sqrt{2}}{\sqrt{3} + \sqrt{2}}$  and  $y = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ , then show that  $x^2 + xy + y^2 = 99$ . [2]

10. If  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = p + q\sqrt{15}$ , find  $p$  and  $q$  where  $p$  and  $q$  are rational numbers. [3]

11. Simplify:  $\frac{7 + 3\sqrt{5}}{3 + \sqrt{5}} - \frac{7 - 3\sqrt{5}}{3 - \sqrt{5}}$  [3]

12. Simplify:  $\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} + \frac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$  [3]

13. Prove that  $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \dots + \frac{1}{\sqrt{8}+\sqrt{9}} = 2$

[5]

## BIOLOGY

1. SER produces  
(a) Protein                      (b) Carbohydrate              (c) Lipid                      (d) Nucleic acid              [1]
  2. The most important function of endoplasmic reticulum is  
(a) Protein synthesis                      (b) Nourishing the nucleus  
(c) Secretion of materials              (d) To give shape to the cell              [1]
  3. "Endoplasmic reticulum" was discovered by  
(a) Porter                      (b) Altmann                      (c) Golgi                      (d) Benda                      [1]
  4. Cell organelles found only in plants  
(a) Golgi complex              (b) Mitochondria              (c) Plastids                      (d) Ribosomes                      [1]
  5. The bright colours of ripe fruits are due to  
(a) Leucoplasts                      (b) Chloroplasts                      (c) Amyloplasts                      (d) Chromoplasts                      [1]
  6. Why are rough endoplasmic reticulum responsible for protein synthesis ?              [1]
  7. To which cell organelle endoplasmic reticulum is associated.              [1]
  8. What do you understand by Aleuroplast ?              [2]
  9. What is the function of leucoplast and chromoplast ?              [2]
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10. What are different photosynthetic pigments ? Explain [3]

11. What are the main photosynthetic pigment and accessory photosynthetic pigments ? Explain. [3]

12. Why E.R. is considered as a cyto skeleton of the cell ? [3]

13. What is the structure of endoplasmic reticulum ? How does this particular structure help in its function ? [5]