

NEW STANDARD ACADEMY

Marks: 80

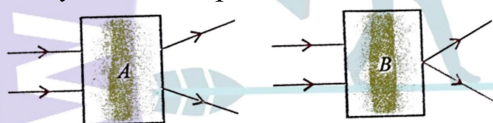
Date : 27-04-2026

CLASS : 10TH

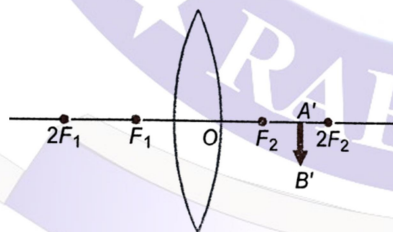
Time: 3 hours

PHYSICS

1. A 2 cm high object is placed at a distance of 20 cm from a concave mirror. A real image is formed at 40 cm from the mirror. Calculate the focal length of the mirror.
2. A dentist uses a mirror in front of a decayed tooth at a distance of 4 cm from the tooth to get a four times magnified image in the mirror. Use mirror formula to find the focal length and nature of the mirror used.
3. Define refraction of light.
4. Why does the bottom of a water tank appear raised?
5. Define a lens.
6. What type of image is given by a concave lens for all positions of object?
7. Identify the lenses placed in the boxes.



8. Define optical centre of spherical lens.
9. Discuss two types of lenses. Compare them.
10. Observe the following incomplete ray diagram of an object where the image A'B' is formed after refraction from a convex lens.



Where should object be placed for above image formation?

CHEMISTRY

1. Is copper more reactive than iron? Give a reaction in support of your answer.
2. Balance the following chemical equation:
$$\text{Pb}(\text{NO}_3)_2(\text{s}) \xrightarrow{\text{Heat}} \text{PbO}(\text{s}) + \text{NO}_2(\text{g}) + \text{O}_2(\text{g})$$
3. Give two examples of oxidant

4. Find out the oxidation no. of 'S' in H₂S
5. Name the oxidizing and reducing agent in the following reaction:
$$2\text{H}_2\text{S} + \text{SO}_2 \rightarrow 2\text{H}_2\text{O} + 3\text{S}\downarrow$$
6. Write chemical equation for the reactions taking place when
 - (i) Magnesium reacts with dilute HNO₃
 - (ii) Sodium reacts with water.
 - (iii) Zinc reacts with dilute hydrochloric acid
7. A metal salt MX, when exposed to light, splits up to form the metal M and the gas X₂. Metal M is used in making ornaments, whereas gas X₂ is used in making bleaching powder. The salt MX is itself used in black and white photography.
 - (i) Identify metal M and gas X₂
 - (ii) Mention the type of chemical reaction, involved when salt MX is exposed to light?
8. Translate the following statements into chemical equations, and then balance the equations:
 - (i) Phosphorus burns in oxygen to give phosphorus pentoxide.
 - (ii) Aluminium metal replaces iron from ferric oxide, Fe₂O₃, giving aluminium oxide and iron.
 - (iii) Carbon disulphide burns in air to give carbon dioxide and sulphur dioxide.
 - (iv) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate.
9. Oil and fat containing food items are flushed with nitrogen. Why?
10. Write one example for each of decomposition reaction
 - (i) Electricity
 - (ii) Heat
 - (iii) Light

BIOLOGY

1. What are the different pathways in which glucose is oxidized to provide energy in living organisms?

2. Where does the first step of respiration (breakdown of glucose to pyruvate) take place?
3. Why do muscle cramps occur after vigorous physical activity?
4. What is the role of ATP in cellular respiration?
5. How are the alveoli designed to maximize the exchange of gases in human lungs?
6. What is the function of the diaphragm during inhalation and exhalation?
7. How is oxygen and carbon dioxide transported in human beings?
8. Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?
9. What is difference between aerobic and anaerobic respiration?
10. How plants show exchange of gases?

MATHS

1. Are the following pairs of linear equations consistent ? Justify your answer.
 - (i) $3x+2y=8$, $6x-4y =9$
 - (ii) $2ax+by =a$, $4ax+2by-2a =0, a,b \neq 0$
2. Find the value(s) of k for which the pairs of linear equation have a unique solution:
 $kx +2y = 3$, $3x+6y = 10$
3. Find the value(s) of p for which the pairs of linear equations have no solution:
 $(3p+1)x+3y=2$, $(p^2+1)x+(p-2)y-5 = 0$.
4. For what value(s) of k the pair of linear equation has infinitely many solutions
 $kx + 3y = k-3$, $12x +ky = k$.
5. Solve the following pairs of linear equation by the substitution method:
 - (i) $s - t=3$, $\frac{s}{3} + \frac{t}{2} = 6$
 - (ii) $2x+3y = 9$, $3x+4y = 5$
6. Solve the following pairs of linear equation by the substitution method:
 - (i) $mx + ny = m^2 +n^2$, $x +y =2m$
 - (ii) $\frac{2x}{a} + \frac{y}{b} = 2$, $\frac{x}{a} - \frac{y}{b} = 4$
7. Five years ago, Amit was thrice old as Baljeet. Ten years hence, Amit shall be twice old as Baljeet. What are their present ages?
8. Two numbers are in the ratio 5: 6. If 7 is subtracted from each of the numbers, the ratio becomes 4: 5. Find the numbers.
9. Students of a class are made to stand in (complete) rows. If 4 students are extra in a row, there would be two rows less. If

- four students are less in a row, there would be four more rows. Find the number of students in the class.
10. The sum of the digits of a two digit number is 8 and the difference between the number and that formed by reversing the digits is 18. Find the number.