

NEW STANDARD ACADEMY

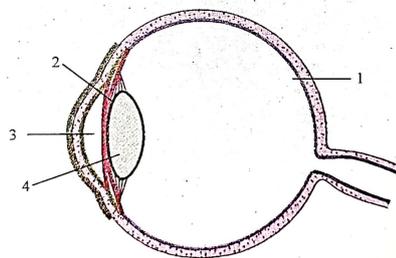
Date : 23-06-25

CLASS : 10TH

Marks: 80
Time: 3 hours.

PHYSICS

1. A convex mirror used in a bus has radius of curvature 3.5 m. If the driver of the bus locates a car at 10.0 m behind the bus, find the position, nature and size of the image of the car
2. For an object placed at a distance of 20 cm from the pole of a mirror, an image is formed 40 cm farther from object on the same side
 - (a) What is the nature of the mirror? Give reason for your answer.
 - (b) Is the image formed real or virtual? Give reason for your answer.
3. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position and nature of image.
4. The radius of curvature of a spherical mirror is 20 cm. What is its focal length?
5. Define power of accommodation
6. What is cataract of eye? What is its connection with age of a person?
7. Dolly is myopic. She is suggested corrective eye lens but she does not wear spectacles while studying will this affect her vision? How and why?
8. What is meant by colour blindness of eye? What is total colour blindness? What is partial colour blindness? What is the cause of this blindness?
9. Ravi kept a book at a distance of 10 cm from the eyes of his friend Hari. Hari is not able to read anything written on the book. Explain why?
10. Name the four parts labeled as 1, 2, 3 and 4 in the given figure. Given their functions.



CHEMISTRY

1. On heating blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), Oxygen gas and a brown gas X is formed
 - (a) Write a balanced chemical equation of the Reaction
 - (b) Identify the brown gas X evolved.
 - (c) Identify the type of reaction.
 - (d) What could be the pH range of aqueous solution of the gas X?
2. Give the characteristic tests for the following gases
 - (a) CO₂
 - (b) SO₂
3. What happens when a piece of
 - (i) zinc metal is added to copper sulphate solution?
 - (ii) aluminium metal; is added to dilute hydrochloric acid?
 - (iii) silver metal is added to copper sulphate solution?Also write the balanced chemical equation if the reaction occurs
4. What happens when zinc granules are treated with dilute solution of H₂SO₄, HCl, HNO₃, NaCl and NaOH, also write the chemical equations if reaction occurs.
5. On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.
 - (a) Write a balanced chemical equation of the reaction involved
 - (b) What other name can be given to this precipitation reaction?
6. You are provided with two containers made up of copper and aluminium. You are also provided with solution of dilute HCl, dilute HNO₃, ZnCl₂ and H₂O. In which of the above containers these solutions can be kept?

- You have been provided with three test tubes. One of them contains distilled water and other two contain an acidic solution and a basic solution respectively. If you are given only red litmus paper, how will you identify the contents of each test tube?
- Why do HCl, HNO₃, etc., show acidic characters in aqueous solution while solutions of compounds like alcohol and glucose do not show acidic character?
- Why does an aqueous solution of an acid conduct electricity?
- What are indicators? Explain type of indicators

BIOLOGY

- Give the difference between artery and vein.
- What the role of the acid in our stomach?
- Mention any three function of liver.
- Explain double circulatory system in human.
- Why is photosynthesis necessary for our survival? Name the raw materials essential for photosynthesis.
- Explain the various step of nutrition in Amoeba.
- Which organisms have a longer small intestine herbivores or carnivores? Provide a reason for your answer.
- Carbon and energy requirements of the autotrophic organisms are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll. Carbohydrates are utilized for providing energy to the plant.**
 - Write a chemical equation which occurs during photosynthesis?
 - Plants store carbohydrates in which form?
 - What is stomata?
 - What are the functions of stomata?
- What is the difference between inspiration and expiration
- Draw the labelled diagram of nephron

MATH

- The HCF and LCM of two numbers are 9 and 360 respectively. If one number is 45, find the other number.
- Prove that $\sqrt{5}$ is an irrational number.
- If α, β are zeroes of quadratic polynomial $5x^2+5x+1$, find the value of $\alpha^{-1} + \beta^{-1}$
- Solve : $99x+101y = 499$; $101x+99y = 501$
- In a triangle ABC, $\angle A = x^\circ$, $\angle B = (3x - 2)^\circ$, $\angle C = y^\circ$. Also $\angle C - \angle B = 9^\circ$. find the three angles of the triangles.
- Solve for x: $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$, $x \neq -4, 7$
- Find the value(s) of k for which the quadratic equation $x^2+2\sqrt{2}kx + 18 = 0$ has equal roots.
- The sum of two areas of two squares is 640 m². If the difference of their perimeters is 64m, find the side of the squares.
- If the mth term of an AP be $\frac{1}{n}$ and nth term be $\frac{1}{m}$, then show that its (mn)th term is 1.
- If S_n the sum of the first n terms of an AP is given by $S_n = 2n^2+n$, then find its nth term.