

NEW STANDARD ACADEMY

Exam : MOCK- 10

NEET - JEE

Marks: 60

Date : 22-05-23

CLASS : 10TH

Time: 3 HRS

PHYSICS

1. What is the radius of curvature of a plane mirror?
2. Define optical centre and principal axis of a lens. Show the path of the refracted ray when a ray of light is incident towards the optical centre of concave lens.
3. An object is placed at the focus of a convex lens. Draw a ray diagram to locate the position of the image formed, if any. State its position and nature.
4. An object of height 5 cm is placed perpendicular to the principal axis of a concave lens of focal length 10 cm. If the distance of the object from the optical centre of the lens is 20 cm, determine the position, nature and size of the image formed using the lens formula.
5. An object of height 4.0 cm is placed at a distance of 30 cm from the optical centre 'O' of a convex lens of focal length 20 cm. Draw a ray diagram to find the position and size of the image formed. Mark optical centre 'O' and principal focus 'F' on the diagram. Also find the approximate ratio of size of the image to the size of the object.
6. What is the maximum angle of refraction when a ray of light is refracted from glass into air?
7. A convex lens is held in water. What would be the change in the focal length?

CHEMISTRY

1. Write the balanced chemical equations for the following reactions:
(a) *Calcium hydroxide + Carbon dioxide* → *Calcium carbonate + Water*
(b) *Aluminium + Copper chloride* → *Aluminium chloride + Copper*
2. Complete and balance the following equations:
(a) $NaOH + \dots \rightarrow Na_2SO_4 + H_2O$
(b) $Ca(OH)_2 + \dots \rightarrow CaCO_3 + H_2O$
3. What type of reaction is represented by the digestion of food in our body?
4. Name the various types of chemical reactions.
5. Why does the colour of copper sulphate solution change when an iron nail is kept immersed in it?
6. Which term is used to indicate the development of unpleasant smell and taste in fat and oil

containing foods due to aerial oxidation (when they are kept exposed for a considerable time)?

BIOLOGY

1. Plants absorb water from the cells explain how does the water raise the tree top?
2. list the three kinds of blood vessels of human circulatory system and write their function in a tabular form.
3. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?
4. Describe double circulation in human beings why is it necessary?
5. What is breathing, explain the inspiration mechanism?
6. What is the role of HCl in our stomach?
7. List two characteristics of lungs which make it an efficient respiratory surface.

MATHS

1. Solve the following quadratic equation for:
$$x^2 + \left(\frac{a}{a+b} + \frac{a+b}{a} \right) x + 1 = 0$$
3. If the quadratic equation $(1+a^2)b^2x^2 + 2abcx + (c^2 - m^2) = 0$ in x has equal roots prove that $c^2 = m^2(1+a^2)$. If the roots of the quadratic equation $(a-b)x^2 + (b-c)x + (c-a) = 0$ are equal, prove that $2a = b + c$.
4. Three consecutive natural numbers are such that the square of the middle number exceeds the difference of the squares of the other two by 60. find the numbers.
5. The sum of ages (in year) of a son and his father is 35 years and product of their ages is 150 years, find their ages.
6. Solve for x : $\sqrt{3}x^2 - 2\sqrt{2}x - 2\sqrt{3} = 0$
7. For what value of k , is -2 a zero of the polynomial $13x^2 + 4x + 2k$?
8. If -5 is a root of the quadratic equation $2x^2 + px - 15 = 0$ and the quadratic equation

$p(x^2 + x) + k = 0$ has equal roots, find the value of k .

9. find k so that the quadratic equation $(k+1)x^2 - 2(k+1)x + 1 = 0$ has equal roots.
10. find the value of p for which the quadratic equation $4x^2 + px + 3 = 0$ has equal roots.

