

NEW STANDARD ACADEMY

Marks: 80

Date : 25-08-25

CLASS : 10TH

Time: 3 hours.

PHYSICS

1. Name a device that helps to maintain a potential difference across a conductor.
 2. How is voltmeter is connected in a circuit to measure the potential difference between two ends?
 3. What happens to resistance of a conductor when its area of cross-section is increased?
 4. A given length of a wire is doubled on itself and this process is repeated once again. By what factor does the resistance of the wire change?
 5. Two resistors of $10\ \Omega$ and $15\ \Omega$ are connected in series to a battery of 6 V. How can the values of current passing through them be compared?
 6. Define the term 'volt'
 7. Draw a schematic diagram for the three resistors connected in series along with a key, ammeter and a battery.
 8. How much current will an electric bulb draw from a 220 V source, if the resistance of the bulb filament is $1200\ \Omega$?
 9. How much current will an electric heater coil draw from a 220 V source, if the resistance of the coil is $100\ \Omega$?
 10. Resistance of a metal wire of length 1m is $26\ \Omega$. If the diameter of the wire is 0.2 mm, what will be the resistivity of the metal?
4. (a) Given below are the steps for extraction of copper from its ore. Write the reaction involved.
 - (i) Roasting of copper (I) sulphide
 - (ii) Reduction of copper (I) oxide with copper (I) sulphide.
 - (iii) Electrolytic refining(b) Draw a neat and well labelled diagram for electrolytic refining of copper
 5. Metal that exists in liquid state is obtained by heating its sulphide in the presence of air. Identify the metal.
 6. A student is working in a laboratory with metal 'E' which is stored under kerosene oil. Somehow a small piece of this metal falls in a beaker containing water and starts burning
 - (i) Name the metal 'E'.
 - (ii) Write chemical equation for reaction when metal 'E' reacts with water. State the nature (acidic/basic/neutral) of the product obtained.
 - (iii) Name the process by which this metal 'E' is obtained from molten chloride.
 7. Most metals do not react with bases but zinc metal does. Suggest a reason. Write an equation for the reaction between Zn and NaOH.
 8. A student added few pieces of aluminium metal to two test tubes A and B containing aqueous solutions of iron sulphate and copper sulphate. In the second part of her experiment, she added iron metal to another test tubes C and D containing aqueous solutions of aluminium sulphate and copper sulphate. In which test tube or test tubes will she observe colour change? On the basis of this experiment, state which one is the most reactive metal and why?
 9. What are ionic or electrovalent compounds? Give an example of ionic compound. Explain with reason four properties of these compounds.

CHEMISTRY

1. What happens when
 - (a) ZnCO_3 is heated in the absence of oxygen ?
 - (b) a mixture of Cu_2O and Cu_2S is heated?
2. A metal M does not liberate hydrogen from acids but reacts with oxygen to give a black coloured product. Identify M and black coloured product and also explain the reaction of M with oxygen
3. Give the steps involved in the extraction of metals of low and medium reactivity from their respective sulphide

10. (I) Explain the formation of calcium chloride with help of electron dot structure. (At. no. Ca = 20, Cl = 17)
 (II) Why do ionic compounds not conduct electricity in solid state but conduct electricity in molten and aqueous state

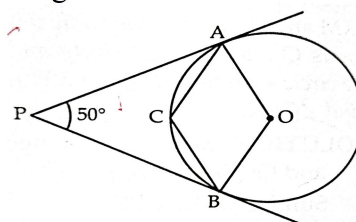
BIOLOGY

1. Explain dihybrid cross with suitable examples.
2. Explain causes of variations with their significance
3. If the sperm bearing Y chromosome fertilizes an egg, will the child born be exactly identical to his father? Explain with reason.
4. Name any artificial ecosystem.
5. List two biotic components of a biosphere.
6. Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F_1 , and F_2 , generations when he crossed the tall and short plants? Write the ratio he obtained in F_2 , generation plants.
7. What is an ecosystem?
8. If a pea plant with wrinkled seeds and heterozygous tall plants were self-pollinated. What will be the phenotypes of plants of F_2 , generation?
9. Sonu performed an experiment to study dihybrid for round/wrinkled and yellow/green cross coloured seeds. He obtained 2432 seeds in total. What will be the number of seeds which are round and yellow?
10. What do you mean by an ozone hole?

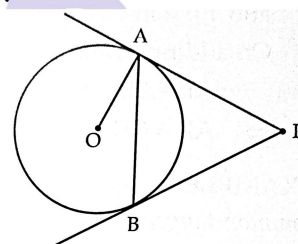
MATHS

1. A spherical balloon of radius r subtends an angle of 60° at the eye of an observer. If the angle of elevation of its centre is 45° , then prove that the height of the centre of the balloon is $\sqrt{2}$ times its radius.
2. A bird is sitting on the top of a 80 m high tree. From a point on the ground, the angle of elevation of the bird is 45° . The bird flew away horizontally in such a way that it remained at a constant height from the ground. After 2 seconds, the angle of elevation of the bird from the same point is 30° . Find the speed of flying of the bird. (Take $\sqrt{3} = 1.732$)

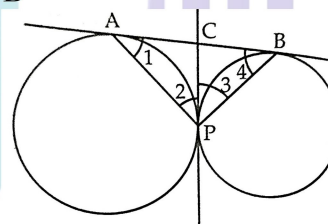
3. In the adjoining figure, O is the centre of the circle. Determine $\angle ACB$, if PA and PB are tangents and $\angle APB = 50^\circ$.



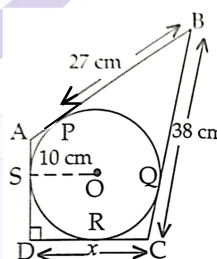
4. In the adjoining figure, PA and PB are tangents drawn from an external point P to a circle with centre O. Prove that $\angle APB = 2 \angle OAB$.



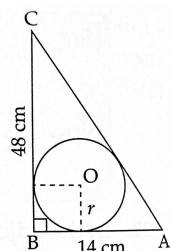
5. Two circles touch each other externally at P. AB is a common tangent to the circles touching them at A and B. Find the value of $\angle APB$



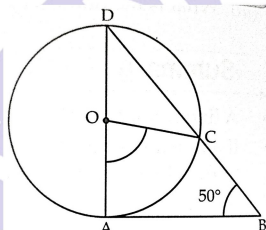
6. In the adjoining figure, quadrilateral ABCD is a circumscribed. If the radius of incircle (centre O) is 10 cm and $AD \perp DC$ find the value of x .



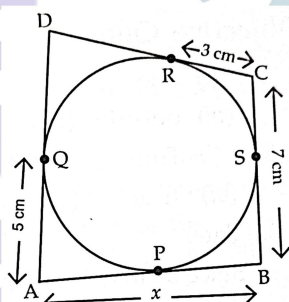
7. In the adjoining figure, ABC is a triangle in which $\angle B = 90^\circ$, $BC = 48$ cm and $AB = 14$ cm. A circle is inscribed in the triangle whose centre is O. Find the radius of the incircle.



8. In the adjoining figure, AD is a diameter of a circle with centre O and AB is tangent at A. C is a point on the circle such that DC produced intersects the tangent at B. If $\angle ABC = 50^\circ$ find $\angle AOC$



9. In the adjoining figure, quadrilateral ABCD is circumscribed. Find the value of x.



10. In the adjoining figure, a triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D, are of lengths 6 cm and 8 cm respectively. If the area of $\triangle ABC$ is 84 cm^2 , then find the lengths of AB and AC.

