NEW STANDARD ACADEMY
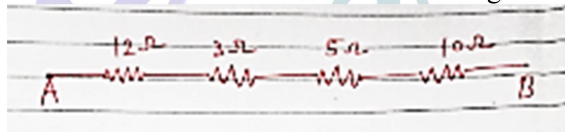
PHYSICS

1. Define electric potential difference & its SI unit.
2. Find the work –done if 2C of charge is moved from -5v to -20v.
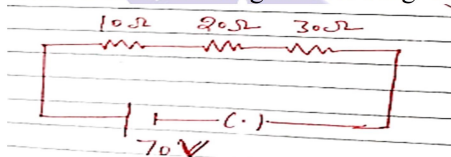3. Find the relation between V_A, V_B, V_c & V_D.
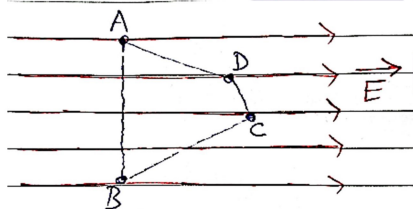
4. Calculate the potential if bringing $20\mu C$ of chanrge requires 50 J of work.
5. What is equipotential surface ? Find work done on these surfaces.
6. Find the resultant resistance in Following case

7. What is the potential drop in Following branch CD
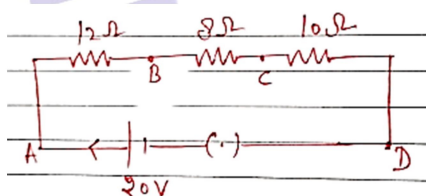
8. Find Current flowing in following Circuit

9. How does voltage (p.difference) depend upon the flow of current in conductor explan
10. Some work is done to move a charge Q from infin-ity to a point A in space. The potential of point A is given as V volt. What is the work done to move this charge from infinity to A in terms of Q and V

CHEMISTRY

1. E is an element amongst copper, zinc, aluminium and iron. It shows following properties:
(i) One of its ores is rich in E_2O_3
(ii) E_2O_3 is not attacked by water,
(iii) It forms two chlorides ECl_2, and $EC1_3$.
2. To compare the reactivity of magnesium and aluminium two friends carried out the following tests.
Shardul reacted the metals with hydrochloric acid.
Ashwin reacted the metals with boiling water. Whose test will differentiate between the two metals based on their reactivity? Explain why.
3. 1.2mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.
4. Give the formula of the stable binary compounds that would be formed by the combination of following pairs of elements.
(a) Mg and N_2 (b) Li and O_2
(c) Al and Cl_2
5. Metal 'A' is used in the thermit process as a reducing agent. When 'A' is heated with oxygen it gives an oxide 'B' which is amphoteric in nature. Identify A and B. Illustrate with the help of chemical equations, the reaction of B with HCl and NaOH respectively.
6. (i) Write the electron-dot structures for sodium, oxygen and magnesium.
(ii) Show the formation of Na_2O and MgO by the transfer of electrons.
(iii) What are the ions present in these compounds?
7. Explain the following:
(a) Reactivity of Al decreases if it is dipped in HNO_3,
(b) Carbon cannot reduce the oxides of Na or Mg
8. Explain the NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as well as in molten state

9. List in tabular form three chemical properties on the basis of which we can differentiate between a metal and

10. Give reasons:
(a) Why do ionic compounds in the solid state not conduct electricity?
(b) What happens at the cathode when electricity is passed through an aqueous solution of sodium chloride?

BIOLOGY

1. Write a proper definition of Mendel's laws of independent assortment.
2. Explain sex determination in human beings.
3. Define the following terms
(a)Alleles   (b) Back cross
4. Why X and Y chromosomes are called sex chromosomes?
5. A man with blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits blood group A or O is dominant? Why or why not?
6. Justify the statement 'Sex of the children will be determined by what they inherit from their father.
7. What is variation? List two main reasons that may lead to variation in a population.
8. How do Mendel's experiments show that
(a) Traits may be dominant or recessive?
(b) Inheritance of two traits is independent of each other?
9. A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plants bearing white flowers. What will be the result in F_1, progeny?
10. Why is the F_1 progeny always of tall plants when a tall plant is crossed with a short pea plant?

MATHS

1. A man standing on the ground observes the top of a tower at an angle of elevation of 30° . If the tower is 20 m high, find the distance of the man from the tower.
2. The angle of elevation of the top of a building from a point on the ground is 45°. If the building is 40 m high, find the distance of the point from the foot of the building.
3. From the top of a tower 50 m high, the angle of depression of the top of a pole is30° and that of the foot of the pole is60°. Find the height of the pole.
4. The angle of elevation of the top of a tower from a point 36 m away from the foot of the tower is 30° . Find the height of the tower.
5. The angle of elevation of the top of a tower from a point on the ground is 60° . If the point is at a distance of 10 m from the foot of the tower, find the height of the tower.
6. A person standing 40 m away from a tower observes the top of the tower at an angle of elevation of 30°. Find the height of the tower.
7. The angle of elevation of the top of a building from a point on the ground is 45° . If the point is at a distance of 50 m from the building, find the height of the building.
8. From the top of a building 60 m high, the angle of depression of the foot of a tree is 60° and the angle of depression of the top of the tree is 45° . Find the height of the tree.
9. The angle of elevation of the top of a tower from a point on the ground is 30° . On moving 20 m nearer, the angle of elevation becomes 60° . Find the height of the tower.
10. A man standing on the deck of a ship, 16 m above sea level, observes the angle of elevation of the top of a lighthouse as 30° and the angle of depression of its base as 60°. Find the height of the lighthouse.