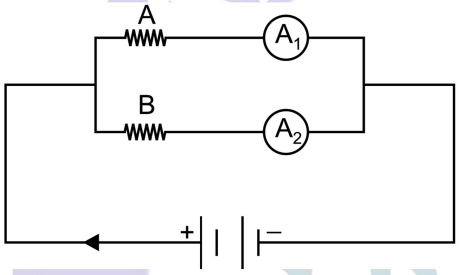
NEW STANDARD ACADEMY

Exam : MOCK- **NEET - JEE** **Marks: 60**
Date : 21-08-23 **CLASS : 10TH (M)** **Time: 2HRS**

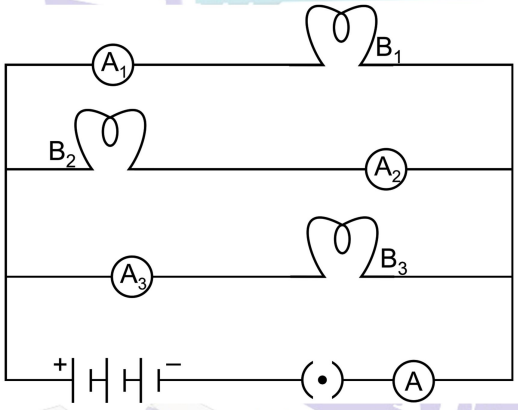
PHYSICS

1. Mention two special features of the material to be used as element of an electric iron.
2. Find the resistance of bulb rated as 100W-250 V.
3. B_1, B_2 and B_3 are three identical bulbs connected as shown in the figure. When all the three bulbs glow, a current of 3 A is recorded by the ammeter A.

(*i*) What happens to the glow of the other two bulbs when the bulb B_1 gets fused?



(*ii*) What happens to the reading of A_1, A_2, A_3 and A when the bulb B_1 gets fused?



4. A bulb is rated at 5.0 V, 100 mA. Calculate its (*i*) power and (*ii*) resistance.
5. An electric bulb draws a current of 0.2 A when the voltage is 220 volts. Calculate the amount of charge flowing through it in one hour.
6. Show how would youjoin three resistors, each of resistance 9Ω so that the equivalent resistance of the combination is (*i*) 13.5Ω (ii) 6Ω?

OR

(a) Write Joule's law of heating.

(*b*) Two bulbs, one rated $100W;220V$, and the other 60 $W;220V$ are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line if the supply voltage is 220 V.

7. V-I graphs for two wires A and B are shown in the figure. If both the wires are made of the same material and are of equal thickness, which of the two is of more length? Give justification for your answer.

CHEMISTRY

1. (a) What is a chemical equation? Explain with the help of an example.
   (b) Giving examples, state the difference between balanced and unbalanced chemical equations.
   (c) Balance the following chemical equations:
   (i) $NH_3 \rightarrow N_2 + H_2$
   (ii) $C + CO_2 \rightarrow CO$
2. Complete and balance the following chemical equations:

   $Zn(s) + HCl(aq) \rightarrow$

   $Na_2CO_3(s) + HCl(aq) \rightarrow$

   $NaHCO_3(s) + HCl(aq) \rightarrow$

   $NaOH(aq) + HCl(aq) \rightarrow$

   $CuO(s) + HCl(aq) \rightarrow$
3. What colour will universal indicator show if you add it to the following substances?
   (a) potassium hydroxide, pH = 12
   (b) soda water, pH = 5
   (c) sulphuric acid, pH = 2
4. Name the non-metal which is used:
   (a) to convert vegetable oil into vegetable ghee (solid fat).
   (b) as a rocket fuel (in liquid form).
   (c) to make electrodes of dry cells.
   (d) to preserve food materials.
   (e) in the vulcanisation of rubber.
5. Fill in the following blanks with suitable words:
   (a) Magnesium liberates gas on reacting with hot boiling water.

(b) The white powder formed when magnesium ribbon burns in oxygen is of
(c) Ordinary aluminium strips are not attacked by water because of the presence of a layer of on the surface of aluminium.
(d) A metal having low melting point is but a non-metal having very high melting point is
(e) Calcium is a reactive metal than sodium.

6. (a) With the help of examples, describe how metal oxides differ from non-metal oxides.
(b) Which of the following elements would yield: (i) an acidic oxide, (ii) a basic oxide, and (iii) a neutral oxide?Na, S, C, K, H

BIOLOGY

1. Name the respective pattern of inheritance where F_1 phenotype
   (a) does not resemble either of the two parents and is in between the two.
   (b) resembles only one of the two parents.

2. Write the percentage of the pea plants that would be heterozygous tall in F_2 generation when tall heterozygous F_1 pea plants areselfed.

3. When a tall plant was self-pollinated, one-fourth of the progeny were dwarf. Give the genotype of the parent and dwarf progenies.

4. State and explain the law of segregation as proposed by Mendel in a monohybrid cross?

5. A woman with blood group O married a man with AB group. Show the possible blood groups of the progeny. List the alleles involved in this inheritance.

6. During a monohybrid cross involving a tall pea plant with a dwarf pea plant, the offspring populations were tall and dwarf in equal ratio. Work out a cross to show how it is possible.

7. (a)A couple with blood groups 'A' and 'B' respectively have a child with blood group 'O'. Work out a cross to show how it is possible and the probable blood groups that can be expected in their other off-springs.
(b) Explain the genetic basis of blood groups in human population.

MATHS

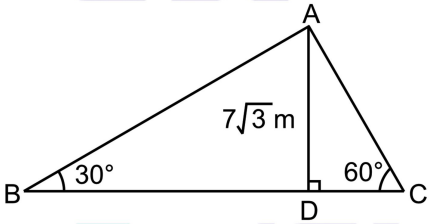
1. Aladder, leaning against a wall, makes an angle of 60^o with the horizontal. If the foot of the ladder is $2.5m$ away from the wall, find the length of the ladder.

2. An observer $1.7m$ tall is $20\sqrt{3}m$ away from a tower. The angle of elevation from the eye of observer to the top of tower is 30. Find the height of the tower.

3. A pole casts a shadow of length $2\sqrt{3}m$ on the ground, when the Sun's elevation is 60, find the height of the pole.

4. The tops of two towers of height x and y, standing on level ground, subtend angles of 30^o and 60^o respectively at the centre of the linejoining their feet, then find $x:y$.

5. In the given figure, if $AD = 7\sqrt{3}m$, thenfind the value of BC.

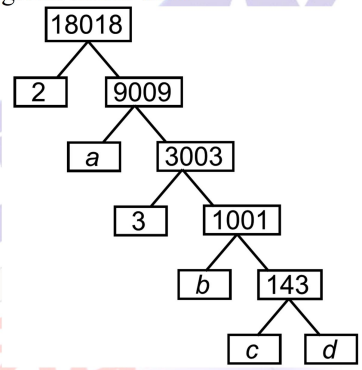


6. The angle of elevation of the top of a building from the foot of the tower is $30^o$and the angle of elevation of the top of the tower from the foot of the building is 45^o . If the tower is 30 m hight, find the height of the building.

7. The HCF of 45 and 105 is 15. Find the LCM .

8. Write whether $\dfrac{2\sqrt{45}+3\sqrt{20}}{2\sqrt{3}}$ on simplification gives a rational number or irrational number.

9. Find the missing numbers a, b, c and d in the given factor tree.



10. Prove that $\sqrt{3}$ is irrational.