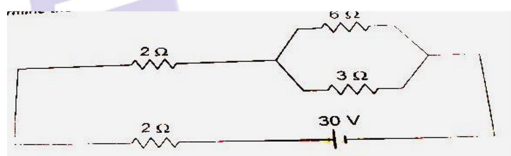# NEW STANDARD ACADEMY

Marks: 60
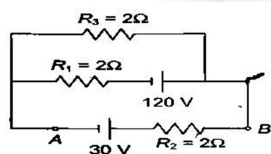
Date : 19-05-25   CLASS : 12TH NEET   Time: 3 hours.

PHYSICS

1. The current in a conductor is 5 A when the voltage between the ends of the conductor is 12 V. What is the resistence (in MΩ) of the conductor?

2. Three resistors of values 4 ohm, 6 ohm and 7 ohm are in series and a potential difference of 34 V is applied across the grouping. Find the potential drop across each resistor.

3. Two resistances 3 ohm and 2 ohm are in parallel connection and a potential difference of 12 V is applied across them.Find
   a. The circuit current and
   b. The branch currents.
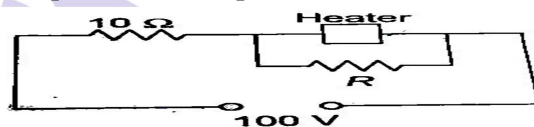
4. Determine the current taken from the 30 V supply.

5. How would you arrange 20 cells each of emf 2 V and internal resistance 1 ohm to give the maximum current through an external resistance of 5 ohm? Also find this current.

6. In the circuit shown find the potential difference (V$_B$-V$_A$) and the rate of production of heat across R$_1$.
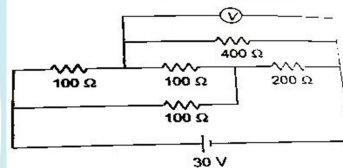

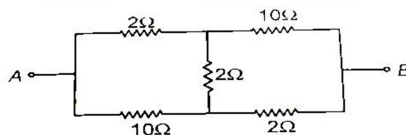7. A heater is designed to operate with a power of 1000 W in a 100 V line. It is connected in combination with a resistance of 10 ohm and a resistance R to a 100 volt mains as shown in the circuit. What should be the value of R so that the heater operates with a power of 62.5 watt ?

8. An electrical circuit is as shown in the figure Calculate the potential difference across the resistor of 400 ohm, as will be measured by the voltmeter V of resistance 400 ohm, either by applying Kirchhoff`s rules or otherwise.

9. Find the effective resistance between the points A and B of the following network.
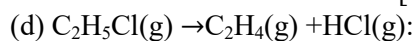

10. A 600pF capacitor is charged by a 200V supply . It is then disconnected from the supply and is connected to

CHEMISTRY

1. For the reaction R→ P ,the concentration of a reactant changes from 0.03 M to 0.02 M in 25 minutes .Calculate the average rate of reaction using units of time both in minutes and seconds.

2. From the rate expression for the following reactions determine their order of reaction and the dimensions of ther rate constants:
   (a) $3NO(g) \rightarrow N_2O(g) + NO_2$;Rate= k$[NO]^2$
   (b) $H_2O_2(aq.) + 3I^-(aq.) + 2H^+ \rightarrow 2H_2O(l) + I_3^-$;
                        Rate $= k[H_2O_2][I^-]$
   (c) $CH_3CHO(g) \rightarrow CH_4(g) + CO(g)$;

$$Rate = k[CH_3CHO]^{3/2}$$

(d) $C_2H_5Cl(g) \rightarrow C_2H_4(g) + HCl(g)$:

$$Rate = k[C_2H_5Cl]$$

3. For the reaction $2A+B \rightarrow A_2B$, rate = $k[A][B]^2$ with $K = 2.0 \times 10^{-6} mol^{-2}L^2S^{-1}$. Calculate the initial rate of the reaction when $[A] = 0.1$ mol L^{-1} and $[B] = 0.2$ mol L^{-1}. Calculate the rate of reaction after $[A]$ is reduced to 0.006 molL^{-1}.

4. A reaction is second order with respect to a reactant. How is the rate of reaction affected if the Concentration of the reactant is : (a) doubled, (b) reduced to half?

5. Consider the reaction $A + 2B \rightarrow$ Product
   (a) If the concentration of A is doubled and that of B is halved, the rate of reaction is doubled.
   (b) If concentration of A is halved and that of B is doubled, the rate is halved.
   What is rate law ?

6. Define rate of reaction.

7. What is the unit of rate of reaction ?

8. For the reaction, $mA+nB \rightarrow xC + yD$ write the equivalence between different rate expressions.

9. $2SO_2 + O_2 \rightarrow 2SO_3$, the concentration of SO_2 decreases by 16×10^{-3} moles after 8 minutes of the start of the reaction. What is the rate of disappearance O_2

10. What is the effect of temperature and catalyst on rate constant k of a chemical reaction?

BIOLOGY

1. Mention the advantages of selecting pea plant for experiment by mendel.

2. Differentiate between the following :
   (a) Dominance and Recessive
   (b) Homozygous and Hetrozygous
   (c) Monohybrid and Dihybrid.

3. Define and design a test –cross.

4. When a cross is made between tall plant with yellow seeds (TtYy) and tall plant with green seed (Ttyy) , what proportions of phenotype in the offspring could be expected to be:
   (a) tall and green
   (b) Dwarf and green

5. Explain the following terms with exmaple:
   (a)Palygonic inheritance.
   (b) Incomplete domainance

6. A garden pea plant produced round green seeds. Another of the same species produced wrinkled yellow seeds. Identify the dominant traits.

7. Why in a test cross did mendel cross a tall pea pant with a dwarf pea plant only?

8. 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.

9. State the principle of independent assortment.

10. What is co-dominance? State one example in human.