

NEW STANDARD ACADEMY

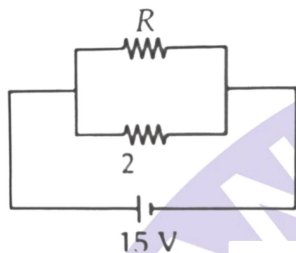
Date : 20-07-2026

CLASS : 10TH

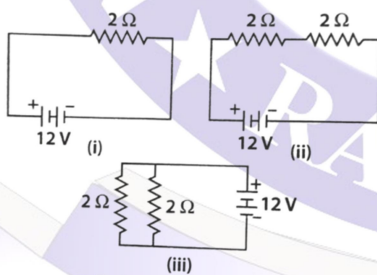
Marks: 60
Time: 2 hours

PHYSICS

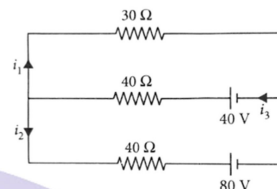
1. If in the circuit, power dissipation is 150 W, then R is



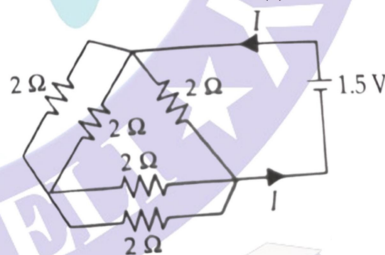
- (a) 2 Ω (b) 6 Ω
(c) 5 Ω (d) 4 Ω
2. If R_1 and R_2 are the resistances of filaments of a 400 W and a 200 W lamp, designed to operate on the same voltage, then
- (a) $R_1 = 2R_2$ (b) $R_2 = 2R_1$
(c) $R_2 = 4R_1$ (d) $R_1 = R_2$
3. The amount of heat energy produced in 5 minutes by an electric heater rated at 1000 W is
- (a) 2×10^5 J (c) 4×10^5 J
(b) 3×10^5 J (d) 300 J
4. In the following circuits, heat produced in the resistor or combination of resistors connected to a 12 V battery will be



- (a) same in all the cases
(b) minimum in case (i)
(c) maximum in case (ii)
(d) maximum in case (iii)
5. In the given circuit the current i_1 is

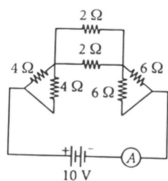


- (a) 0.4 A (b) 0.4 A
(c) 0.8 A (d) -0.8 A
6. For ensuring dissipation of same energy in all three resistors (R_1 , R_2 , R_3) connected as shown in figure, their value must be related as
-
- (a) $R_1 = R_2 = R_3$
(b) $R_2 = R_3$ and $R_1 = 4R_2$
(c) $R_2 = R_3$ and $R_1 = 1/4 R_2$
(d) $R_1 = R_2 + R_3$
7. If a wire of resistance R is melted and recast to be
- (a) $R/4$ (b) $R/2$
(c) R (d) $2R$
8. What is the current (I) in the circuit?



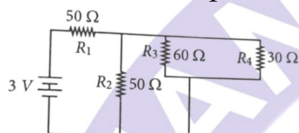
- (a) 1.5 A (b) 2.5 A
(c) 3.5 A (d) 4.5 A
9. Six equal resistance of 1 Ω each are connected to form the sides of a hexagon ABCDEF. Calculate the resistance offered by the combination if the current enters at A and leaves at D.
- (a) 1 Ω (b) 1.5 Ω
(c) 2 Ω (d) 2.5 Ω
10. In the circuit shown, the ammeter reading is

CHEMISTRY



- (A) $\frac{2}{5} A$ (b) $\frac{5}{3} A$
 (c) $\frac{3}{7} A$ (d) $\frac{4}{5} A$

11. In the circuit shown, the resistance are given in ohms and the battery is assumed ideal with emf equal to 3.0 volts. The resistor that dissipates the most power is

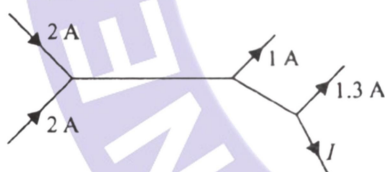


- (a) R_1 (b) R_2
 (c) R_3 (d) R_4

12. A wire of resistance R is cut into seven equal pieces. These pieces are connected in parallel and the equivalent resistance of the combination is R' . Then the ratio R/R' is

- (a) $1/7$ (b) 7
 (c) $1/49$ (d) 49

13. Figure shows currents in a part of an electric circuit, then current I is

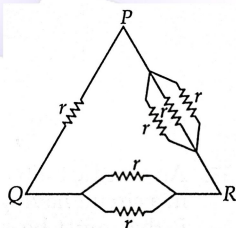


- (a) $1.7 A$ (b) $3.7 A$
 (c) $1.3 A$ (d) $1 A$

14. Masses of three wires of copper are in the ratio 1:3:5 and their lengths are in the ratio of 5:3:1. The ratio of their electrical resistances are

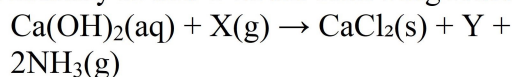
- (a) 1:3:5 (b) 5:3:1
 (c) 1:15:125 (d) 125:15:1

15. Six equal resistances are connected between points P, Q and R as shown in the figure. Then the net resistance will be maximum between



- (a) P and Q (b) Q and R
 (c) P and R (d) any two points

16. Identify X and Y in the following reaction:



- (1) $\text{X} = \text{NH}_4\text{OH}$ $\text{Y} = \text{O}_2$
 (2) $\text{X} = \text{NH}_4\text{Cl}$ $\text{Y} = \text{O}_2$
 (3) $\text{X} = (\text{NH}_4)_2\text{SO}_4$ $\text{Y} = \text{SO}_2$
 (4) $\text{X} = \text{NH}_4\text{Cl}$ $\text{Y} = \text{H}_2\text{O}$

17. Identify the correct representation of the reaction occurring during the chloralkali process.

- (1) $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$
 (2) $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{aq}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{l}) + \text{H}_2(\text{aq})$
 (3) $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{aq}) + \text{H}_2(\text{aq})$
 (d) $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{aq}) + \text{H}_2(\text{aq})$

18. Which of the following gives the correct increasing order of acidic strength?

- (a) Water < Acetic acid < Hydrochloric acid
 (b) Water < Hydrochloric acid < Acetic acid
 (c) Acetic acid < Water < Hydrochloric acid
 (d) Hydrochloric acid < Water < Acetic acid

19. A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue?

- (a) Lemon juice (b) Vinegar
 (c) Common salt (d) An antacid

20. Identify the wrong statement.

- (a) Higher the hydronium ion concentration, lower is the pH value
 (b) Universal indicator is used to judge how strong a given acid or base is
 (c) As the pH value increases from 7 to 14, it represents an increase in H^+ ion concentration in the solution
 (d) Values less than 7 on the pH scale represent an acidic solution

21. A milkman added a small pinch of baking soda to fresh milk, which had a pH close to 6. As a result, the pH of the medium (1) became close to 2

- (2) became close to 4
 (3) did not change at all
 (4) became close to 8.

22. A compound (y) is formed by reacting a calcium compound (x) with water. On boiling (y) with NH_4Cl a gas (z) is obtained. x, y and z, respectively, are
 (1) CaCO_3 , CaO , and NH_3
 (2) CaCO_3 , CaO , and Cl_2
 (3) CaO , CaCl_2 , and Cl_2
 (4) CaO , $\text{Ca}(\text{OH})_2$ and NH_3

23. Matrix Match Type Questions

Column I		Column II	
(i)	Citric acid	(A)	Vinegar
(ii)	Acetic acid	(B)	Tamarind
(iii)	Nitric acid	(C)	Mineral acid
(iv)	Tartaric acid	(D)	Lemon

- (a) (i)-B, (ii)-D, (iii)-A, (iv)-C
 (b) (i)-C, (ii)-B, (iii)-D, (iv)-A
 (c) (i)-D, (ii)-A, (iii)-C, (iv)-B
 (d) (i)-D, (ii)-C, (iii)-A, (iv)-B

24. Match the following with correct response.

Column I		Column II	
(i)	Metal oxides	(A)	Hydroxyl ions
(ii)	Non-metal oxides	(B)	Acidic
(iii)	Salts	(C)	Basic
(iv)	Bases	(D)	Neutral

- (a) (i)-C, (ii)-D, (iii)-A, (iv)-B
 (b) (i)-D, (ii)-A, (iii)-C, (iv)-B
 (c) (i)-A, (ii)-C, (iii)-B, (iv)-D
 (d) (i)-C, (ii)-B, (iii)-D, (iv)-A

25. Match the following with correct response.

Column I		Column II	
(i)	Slightly acidic solution	(A)	pH = 8
(ii)	Basic solution	(B)	pH = 1
(iii)	Neutral solution	(C)	pH = 7
(iv)	Highly acidic solution	(D)	pH = 5

- (a) (i)-B, (ii)-C, (iii)-A, (iv)-D
 (b) (i)-D, (ii)-C, (iii)-B, (iv)-A
 (c) (i)-D, (ii)-A, (iii)-C, (iv)-B
 (d) (i)-C, (ii)-B, (iii)-D, (iv)-A

26. Match the following with correct response.

Column I		Column II	
(i)	Sodium carbonate	(A)	Fire extinguishers
(ii)	Plaster of Paris	(B)	For ornamental casting
(iii)	Calcium oxychloride	(C)	For water softening
(iv)	Sodium bicarbonate	(D)	For bleaching wool

- (a) (i)-D, (ii)-A, (iii)-C, (iv)-B

- (b) (i)-A, (ii)-C, (iii)-B, (iv)-D
 (c) (i)-B, (ii)-D, (iii)-A, (iv)-C
 (d) (i)-C, (ii)-B, (iii)-D, (iv)-A

27. The white powder (X) is used by the doctors to support the fractured bones in the right position. (X) is obtained by heating (Y) at temperature (Z) K. On mixing with water, (X) changes to (Y), (X) is also called (M). (X), (Y), (Z) and (M) are, respectively

- (a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$, H_2O , 373 K, Calcium sulphate dihydrate 1 2
 (b) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, 373 K, Anhydrous calcium sulphate
 (c) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, 373 K, Calcium sulphate hemihydrate
 (d) $2\text{CaSO}_2 \cdot \text{H}_2\text{O}$, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, 273 K, Calcium sulphate hemihydrate.

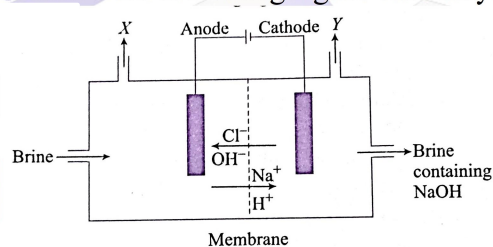
28. Nidhi took slaked lime, lemon juice, vinegar and caustic soda and put a drop of each on a watch glass one by one and tested with a drop of few indicators and tabulated her observations in the following table:

Ex. No.	Sample solution	Blue litmus solution	Phenolphthalein Indicator	Methyl orange indicator	Red cabbage Leaves extract
I.	Slaked lime	No change	Pink	Yellow	Green
II.	Lemon juice	Red	Colourless	Yellow	Red
III.	Vinegar	Red	Colourless	Red	Red
IV.	Caustic soda	No change	Colourless	Red	Green

The correct observation(s) is/are

- (a) I and III only (b) II and IV only
 (c) I, II and IV only (d) III only

29. Observe the following figure carefully.



Which of the following are incorrect statements?

- I. The given experimental set-up shows the formation of baking soda through chlor-alkali process.
 II. The gas X liberated at anode is H_2 , while the gas Y liberated at cathode is Cl_2 .

III. In the given process, electricity is passed through an aqueous solution of sodium chloride.

IV. Sodium hydroxide solution is formed near the anode.

Choose the correct answer from the options given below:

- (a) I and II only (b) II and IV only
(c) I, II and IV only
(d) II, III and IV only

30. Which of the following statements is correct?

- (a) When CaSO_4 is dissolved in water, it gives a solution with $\text{pH} > 7$
(b) Aqueous solution of K_2CO_3 has $\text{pH} = 7$
(c) Aqueous solution of CH_3COOK will have $\text{pH} > 7$
(d) Aqueous solution of CH_3COONa will have $\text{pH} < 7$

BIOLOGY

31. In Mendel's pea plant experiments, the 'P' generation refers to:

- (a) The first generation of offspring
(b) The second generation of offspring
(c) The parental generation
(d) The final generation of offspring

32. If a pea plant with the genotype 'Tt' (heterozygous) for height is crossed with another 'Tt' plant, what is the probability of their offspring being tall (having the 'T' allele)?

- (a) 25% (b) 50%
(c) 75% (d) 100%

33. A cross between two pea plants, one with yellow seeds (YY) and the other with green seeds (yy), result offspring with all yellow seeds (Yy). This is an example of which type of cross?

- (a) Monohybrid cross
(b) Dihybrid cross
(c) Test cross
(d) Incomplete dominance

34. In a dihybrid cross involving two heterozygous pea plants ($\text{RrYy} \times \text{RrYy}$), what is the phenotypic ratio of the offspring for the traits being studied?

- (a) 9:3:3:1 (b) 1:2:1
(c) 3:1 (d) 1:1:1:1

35. Factors that determine traits are called

- (a) Autosomes (b) Genes
(c) Chromosomes (d) Loci

36. The term 'heterozygous' refers to an individual with

- (a) Two identical alleles for a particular trait
(b) Two different alleles for a particular trait
(c) Only one allele for a particular trait
(d) No alleles for a particular trait

37. After the death of Mendel, which of the following scientists recognised his work?

- (a) Hugo de Vries (b) Carl Correns
(c) Erich Von Tschermak
(d) All of these

38. The observable characters of an individual is called

- (a) Genotype (b) Phenotype
(c) Homozygous (d) Heterozygous

39. Our environment consists of

- (a) Biotic components
(b) Abiotic components
(c) Resources and regulatory factors
(d) All of the above

40. Ecology is the study of relationships between

- (a) Members of a family
(b) Man and environment
(c) Organisms and environment
(d) Soil and water

41. Ecosystem may be defined as

- (a) A species along with its environment
(b) Plants found in water
(c) Plants found on land
(d) All plants and animal species along with their environment

42. Organisms which synthesise carbohydrates from inorganic compounds using radiant energy are called

- (a) Decomposers (b) Producers
(c) Herbivores (d) Carnivores

43. Secondary consumers are

- (a) Green plants (b) Herbivores
(c) Carnivores (d) All the above

44. The pyramid of number in a tree ecosystem is

- (a) Inverted
(b) Upright
(c) Both (a) and (b)
(d) None of the above

45. Which one of the following pyramid is always upright?

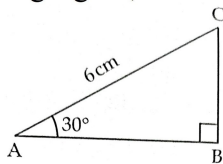
- (a) Pyramid of number
(b) Pyramid of energy

(c) Pyramid of biomass

(d) All of the above

MATHS

46. In the adjoining figure, the length of BC is



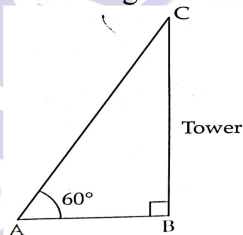
(a) $2\sqrt{3}$ cm

(b) $3\sqrt{3}$ cm

(c) $4\sqrt{3}$ cm

(d) 3 cm

47. In the adjoining figure, if the angle of elevation is 60° and the distance AB = $10\sqrt{3}$ m, then the height of the tower is



(a) $20\sqrt{3}$ cm

(b) 10 m

(c) 30 m

(d) $30\sqrt{3}$ m

48. If a kite is flying at a height of $40\sqrt{3}$ metres from the level ground, attached to a string inclined at 60° to the horizontal, then the length of the string is

(a) 80 m

(b) $60\sqrt{3}$ m

(c) $80\sqrt{3}$ m

(d) 120 m

49. If the angle of depression of an object from a 75 m high tower is 30° , then the distance of the object from the tower is

(a) $25\sqrt{3}$ m

(b) $50\sqrt{3}$ m

(c) $75\sqrt{3}$ m

(d) 150 m

50. If a pole 6 m high casts shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is

(a) 60°

(b) 45°

(c) 30°

(d) 90°

51. In $\triangle ABC$ $\angle A = 30^\circ$ and $\angle B = 90^\circ$. If cm, then its area is $AC = 8$

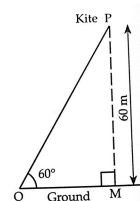
(a) $\sqrt{3}$ cm²

(b) 16 cm²

(c) $8\sqrt{3}$ cm²

(d) $6\sqrt{3}$ cm²

52. A kite is flying at a height of 60 metres from the level ground, attached to a string inclined at 60° to the horizontal. Find the length of the string



(a) 40

(b) 45

(c) $40\sqrt{3}$

(d) 120

53. The length of the shadow of a tower from a point on the plane ground is $\sqrt{3}$ times the height of the tower. Find the angle of elevation of the sun

(a) 30

(b) 45

(c) 60

(d) 15

54. An observer 1.5 metres tall is 20.5 metres away from a tower 22 metres high. Determine the angle of elevation of the top of the tower from the eye of the observer.

(a) 30

(b) 0°

(c) 45°

(d) 60°

55. From a point on the ground, the angles of elevation of the bottom and the top of a tower fixed at the top of a 20m high building are 45° and 60° respectively. Find the height of the tower. Use $\sqrt{3} = 1.732$.

(a) 13.54

(b) 14.54

(c) 64.5

(d) 14.64

56. If $\tan \theta = \frac{x \sin \phi}{1 - x \cos \phi}$ and $\tan \theta = \frac{y \sin \theta}{1 - y \cos \theta}$ then $\frac{x}{y} =$

(a) $\sin \phi / \sin \theta$

(b) $\sin \theta / \sin \phi$

(c) $\sin \theta / 1 - \cos \theta$

(d) $\sin \theta / 1 - \cos \phi$

57. If $\tan + \frac{1}{\tan \theta} = 2$ then the value of $\cot^2 \theta + \frac{1}{\cot^2 \theta}$ is

(a) 2

(c) 1

(b) 0

(d) 3

58. If $b \tan \theta = a$ then the value of

$\frac{a \sin \theta - b \cos \theta}{a \sin \theta + b \cos \theta}$ is equal to

(a) $\frac{a-b}{a^2+b^2}$

(b) $\frac{a+b}{a^2+b^2}$

(c) $\frac{a^2+b^2}{a^2-b^2}$

(d) $\frac{a^2-b^2}{a^2+b^2}$

59. $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ is equal to

(a) 1

(b) 0

(c) cannot be determined

(d) none of these

60. If $\tan x = \sin 45^\circ \cos 45^\circ + \sin 30^\circ$, then x is equal to

(a) 30°

(b) 45°

(c) 60°

(d) 15°