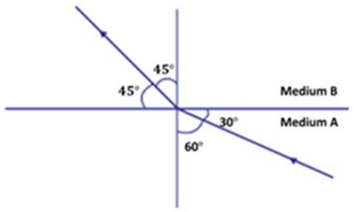
NEW STANDARD ACADEMY

Marks: 120

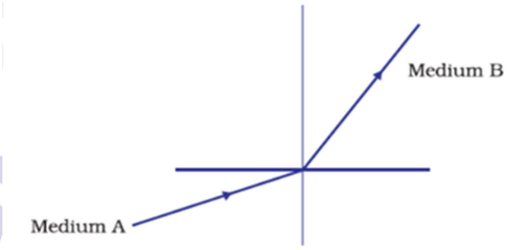
Date : 28-04-25 **CLASS : 10TH** **Time: 2 hours**

PHYSICS

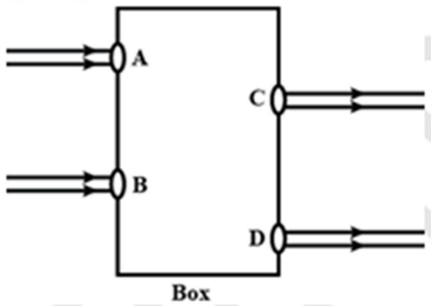
1. Which of the following can make a parallel beam of light when light from appoint source is incident on it?
   (a) Concave mirror as well as convex lens
   (b) Convex mirror as well as concave lens
   (c) Two plane mirrors placed at $90o$ to each other
   (d) Concave mirror as well as concave lens
2. A 10 mm long awl pin is placed vertically in front of a concave mirror. A 5 mm long image of the awl pin is formed at 30 cm in front of the mirror. The focal length of this mirror is
   (a) $-30\ cm$ (b) $-20\ cm$
   (c) $-40\ cm$ (d) $-60\ cm$
3. Under which of the following conditions, a concave mirror can form an image larger than the actual object?
   (a) When the object is kept at a distance equal to its radius of curvature.
   (b) When object is kept at a distance less than its focal length.
   (c) When object is placed between the focus and center of curvature.
   (d) When object is kept at a distance greater than its radius of curvature.
4. Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is



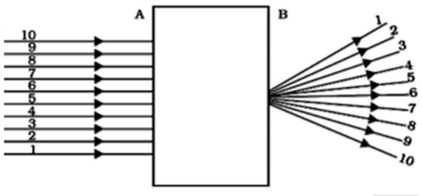
   (a) $\sqrt{3}/2$ (b) $\sqrt{2}/\sqrt{3}$
   (c) $1/\sqrt{2}$ (d) $\sqrt{2}$
5. A light ray enters from medium A to medium B as shown in the figure. The refractive index of medium B relative to A will be



   (a) Greater than unity
   (b) Less than unity
   (c) Equal to unity
   (d) Zero
6. Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in the figure. Which of the following could be inside the box?



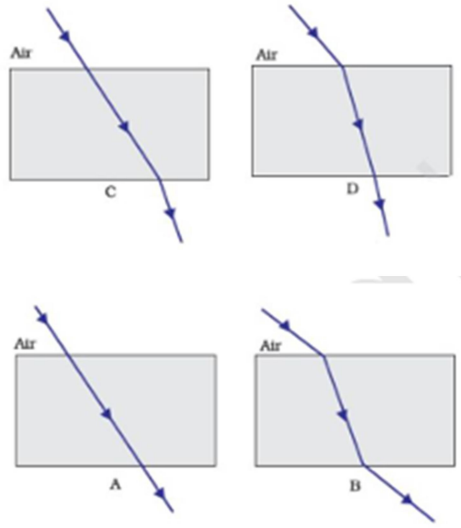
   (a) A rectangle glass slab
   (b) A convex lens
   (c) A concave lens
   (d) A prism
7. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as shown in the figure. Which of the following could be inside the box?



   (a) Concave lens
   (b) Rectangular glass slab
   (c) Prism

(d) Convex lens

8. Which of the following statements is true?
   (a) A convex lens has 4 diopter power having a focal length $\mathbf{0.25\ m}$
   (b) A convex lens has 4 diopter power having a focal length $\mathbf{-0.25\ m}$
   (c) A concave lens has 4 diopter power having a focal length $\mathbf{0.25\ m}$
   (d) A concave lens has 4 diopter power having a focal length $\mathbf{-0.25}$
9. Magnification produced by a rear-view mirror fitted in vehicles
   (a) Is less than one
   (b) Is more than one
   (c) Is equal to one
   (d) Can be more than or less than one depending upon the position of the object in front of it.
10. Rays from sun converge at a point 15 cm in front of a concave mirror. Where should an object be placed so that size of its image is equal to the size of the object?
   (a) 15 cm in front of the mirror.
   (b) 30 cm in front of the mirror.
   (c) Between 15 cm and 30 cm in front of the mirror.
   (d) More than 30 cm in front of the mirror.
11. A full-length image of a distant tall building can definitely by seen by using
   (a) A concave mirror
   (b) A convex mirror
   (c) A plane mirror
   (d) Both concave as well as plane mirror
12. In torches, search lights and headlights of vehicles, the bulb is placed
   (a) Between the pole and the focus of the reflector.
   (b) Very near to the focus of the reflector.
   (c) Between the focus and center of curvature of the reflector.
   (d) At the center of curvature of the reflector.
13. The laws of reflection hold good for
   (a) Plane mirror only
   (b) Concave mirror only
   (c) Convex mirror only
   (d) All mirror irrespective of their shape
14. The path of a ray light coming from air passing through rectangular glass slab traced by four students as shown as A, B, C and D in the figure. Which one of them is correct?



   (a) A (b) B
   (c) C (d) D
15. You are given water, mustard oil, glycerin and kerosene. In which of these media, a ray of light incident obliquely at same angle would bend the most?
   (a) Kerosene (b) Water
   (c) Mustard oil (d) Glycerin

CHEMISTRY

16. Fe_2O_3+2Al⟶ Al_2O_3+ 2Fe
   The above reaction is an example of a:
   (a) Combination reaction
   (b) double displacement reaction
   (c)decomposition reaction
   (d) displacement reactio
17. Calcium oxide reacts vigorously with water to produce slaked lime.
   $CaO(s) + H_2O(l) \longrightarrow Ca(OH)_2(aq)$
   This reaction can be classified as :
   (a) Combination reaction
   (b) Exothermic reaction
   (c) Endothermic reaction
   (d) Oxidation reaction
18. A metal ribbon X burns is oxygen with a dazzling white flame forming a white ash Y. The correct description of X,Y and the type of reaction is
   (a) X=Ca;Y = CaO Type of reaction = Decomposition
   (b) X = Mg ; Y = MgO Type of reaction = Combination
   (c) X=Al ; Y=Al_2O Type of reaction = Thermal decomposition
   (d) X = Zn ; Y=ZnO Type of reaction = Endothermic
19. The balanced chemical equation showing reaction between qu quicklime and water is :
   (a) 2CaO +H_2O⟶ $2CaOH$ +H_2+Heat

(b) $CaO + H_2O \longrightarrow Ca(OH)_2 + H_2 + Heat$
(c) $CaO + H_2O \longrightarrow Ca(OH)_2 + Heat$
(d) $2CaO + 3H_2O \longrightarrow {}_2Ca(OH)_2 + O_2 + Heat$

20. $MnO_2 + xHCl \longrightarrow MnCl_2 + yH_2O + zCl_2$
In order to balance the above chemical equation the values of x.y and z repectively are:
(a) 6,2,2 (b) 4,1,2
(c) 4,2,1 (d) 2,2,1

21. To balance the following chemical equation , The values of x,y and z respectively be:
$2NaOH + xAL_2O_3 \longrightarrow yNaAlO_2 + H_2O$
(a) 1,4 (b) 1,2
(c) 2,4 (d) 2,3

22. Which of the following are combination reaction ?
(i) $2H_2 + O_2 \longrightarrow 2H_2O$
(ii) $CaCO_3 \longrightarrow Cao + CO_2$
(iii) $CuO + H_2 \longrightarrow Cu + H_2O$
(iv) $Cao + H_2O \longrightarrow Ca(OH)_2$
(a) (i) and (iv) (b) (ii) and (iii)
(c) (ii) and (iv) (d) (i), (ii) and (iv)

23. Which of the following are displacement reactions?
(i) $CuSO_4 + Zn \longrightarrow ZnSO_4 + Cu$
(ii) $PbO + C \longrightarrow Pb + CO$
(iii) $N_2 + 3H_2 \longrightarrow 2NH_3$
(iv) $N_2 + O_2 \longrightarrow 2NO$
(a) (i) and (iii) (b) (i) and (ii)
(c) (iii) and (iv) (d) (ii) and (iii)

24. Which of the following on heating gives two colourless gases?
(a) Lead nitrate
(b) Calcium Carbonate
(c) Ferrous sulphate
(d) Lead nitrate or Calcium carbonate

25. False Statement is ?
(a) Electrolysis of water is decomposition and endothermic reaction
(b) Reaction between Zn and dilute H_2SO_4 proceeds with evolution of heat and hydrogen gas
(c) Formation of slaked lime from quick lime and water is combination and exothermic reaction
(d) Heating of potassium chlorate is double displacement and endothermic reaction

26. Identify the product X obtained in the following chemical reaction:
$CaCO_3 \xrightarrow{\Delta}$ 'X' $+ CO_2$
(a) Quick lime (b) Gypsum
(c) Lime stone (d) Plaster of Paris

27. Consider the following chemical equation I and II.
(I) $Mg + 2HCl \longrightarrow MgCl_2 + H_2$
(II) $NaOH + HCl \; NaCl + H_2O$
The correct statement about these equations is
(a) (I) as a displacement reaction and (II) is a decomposition reaction.
(b) (I)is a displacement reaction and (II) is double displacement reaction
(c) Both (1) and (II) are displacement reactions.
(d) Both (1) and (II) are double-displacement reactions.

Directions: The questions given below consists of an "Assertion" (A) and the "Reason" (R). Use the following key to choose the appropriate answer.
(a) If both assertion (A) and reason (R) are True and reason (R) is the correct expianation of assertion (A).
(b) If both assertion (A) and reason (R) are True, but reason (R) is not the correct explanation of assertion (A).
(c) If assertion (A) is True, but reason (R) is False.
(d) If assertion (A) is False, but reason (R) is True.

28. **Assertion (A):** $CaO + H_2O \rightarrow Ca(OH)_2$
This is an exothermic reaction.
Reason (R): Quick lime (CaO) reacts with water and heat is released.

29. **Assertion(A):** Lead nitrate decomposes to give nitrogen dioxide.
Reason(R): Nitrogen dioxide is brown.

30. **Assertion(A):** The reaction $N_2 + O_2 \rightarrow 2NO$ is exothermic reaction
Reason(R): It is an example of combination reaction

BIOLOGY

31. Respiration is the process in which
(a) Energy is stored in the form of ADP
(b) Energy is released and stored in the form of ATP
(c) Energy is not released at all
(d) Energy is used up

32. Expiration involves
(a) Relaxation of diaphragm and intercostal muscles.
(b) Contraction of diaphragm and intercostal muscles.
(c) Contraction of diaphragm muscles.
(d) Contraction of intercostal muscles.

33. Haemoglobin, the respiratory pigment is found in
(a) WBC (b) RBC
(c) Platelets (d) Plasma

34. Respiration in yeast
(a) Takes place in the presence of oxygen
(b) Yields lactic acid and carbon dioxide
(c) Is anaerobic and produces carbon dioxide
(d) Takes place only in darkness

35. Leaves respire with the help of
(a) Lenticels (b) Stomata
(c) Plasmodesmata (d) Cuticle
36. Which molecule is the starting substrate for glycolysis?
(a) Pyruvate (b) Acetyl CoA
(c) Glucose (d) ATP
37. In which part of the respiratory system, gaseous exchange takes place?
(a)Alveoli (b) Pharynx
(c) Larynx (d) Trachea
38. In man, the respiratory organs are
(a) Nostrils (b) Lungs
(c) Bronchioles (d) Alveoli
39. Which is the site of krebs' cycle?
(a) chloroplast (b) Golgi body
(c) mitochondria (d) Endoplasmic reticulum
40. Respiration can be categorized as which type of process?
(a) Catabolic (b) Metabolic
(c) Anabolic (d) None of the above
41. During respiration, which molecule is broken down to release energy?
(a) Glucose (b) Oxygen
(c) Carbon dioxide (d) Water
42. The net gain of ATP molecules produced during glycolysis is
(a) 2 ATP (b) 4 ATP
(c) 6 ATP (d) 8 ATP
43. Which of the following organisms primarily undergo anaerobic respiration?
(a) Plants (b) Humans
(c) Bacteria (d) Fish
44. The common immediate source of energy for cellular activity is
(a) NAD (b) ATP
(c) DNA (d) RNA
45. During vigorous activity, muscle cells accumulate a high concentration of
(a) Lactic acid (b) Pyruvic
(c) Alcohol (c) Cholest

MATH

46. On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}$,and $\frac{c_1}{c_2}$,1, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident.
9x +3y+12 = 0

18x+6y+24 =0

(a) $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$ (b) $3, \frac{1}{2}, \frac{1}{3}$

(c) $\frac{1}{2}, 5, \frac{1}{2}$ (d) $\frac{1}{2}, 7\ \frac{7}{2}$

47. For all real values of c, the pair of equations x - 2y = 8 and 5x - 10y = c have a unique solution. Justify whether it is true or false.

(a) $\frac{1}{5}$ (b) $\frac{1}{8}$

(c) $\frac{1}{6}$ (d) $\frac{1}{-5}$

48. A chemist has one solution which is 50% acid and a second which is 25% acid. How much of each should be mixed to make 10 litres of a 40% acid solution?
(a) x= 6, y =4 (b) x= 6, y = 3
(c) x= 2, y =4 (d) x= - 6, y = - 4
49. Find the values of p for which the following pairs of linear equations have a unique
4x + py + 8 = 0 2x+2y+2=0

(a) p = 4 (b) p≠ 5

(c) p= 5 (d) p≠ 4

50. For the pair of equations λx + 3y = -7 and 2x + 6y = 14 to have infinitely many solutions, the value of should be 1. Is this statement true? Give reasons
(a) $\lambda = 2$ (b) $\lambda = -1$

(c) $\lambda = 1$ (d) $\lambda = -2$

51. Find the value (s) of k for which the pairs of linear equations have no solution:kx+3y =k-2, 12x + ky = k
(a) ∓7 (b) ∓8
(c) ∓6 (d) ∓ 9
52. Find the value (s) of k for which the pairs of linear equations have a infinite solution
10x+5y-(k-5)=0
20x+10y-k =0
(a) 20 (b) 10
(c) 30 (d) 40
53. The sum of the numerator and denominator of a fraction is 4 more than twice the numerator. If the numerator and denominator each are increased by 3, they are in the ratio 2: 3. Determine, the fraction.
(a) $-\frac{5}{9}$ (b) $\frac{5}{9}$
(c) $\frac{1}{2}$ (d) $-\frac{1}{2}$
54. For which values of p and q, will the following pair of linear equations have infinitely many solutions? 4x + 5y = 2 and (2p +7q)x + (p + 8q) y = 2q-p+1
(a) -1,3 (b) 1,2
(c) -1,2 (d) -1,5
55. The sum of two natural numbers is 240 and their ratio is 3:5. Then the greater number is

(a) 180 (b) 160
(c) 150 (d) 90

56. The sum of the digits of a two digit number is 12. If the number is decreased by 18, its digits get reversed. The number is
(a) 48 (b) 84
(c) 57 (d) 75
57. The age of two friends, Ani and Biju differ by 3 years. Ani's father Dharam is twice as old as Ani and Biju is twice as old as his sister Cathy. The ages of Cathy and Dharam differ by 30 years. Find the age of Ani and Biju.
(a) 19,16 (b) 18,16
(c) 19,17 (d) 19,19
58. If $\alpha \; and \; \beta$ are zeroes of the polynomial $2x^2$-2x+3p and $\alpha + \beta = \alpha\beta$, then p is
(a) $-\frac{2}{3}$ (b) $\frac{2}{3}$
59. Students of a class are made to stand in (complete) rows. If 4 students are extra in a row, there would be two rows less. If four students are less in a row, there would be four more rows. Find the number of students in the class.
(a) 36 (b) 69
(c) 96 (d) 86
60. A man lent a part of money at 10% p.a. and the rest at 15% p.a. His annual income is ₹1900. If he had interchanged the rate of interest on two sums, he would have earned 200 more. Find the amount lent in each case.
(a) 1100,1000 (b) 500,1000
(c) 700, 900 (d) 1000,900