

# NEW STANDARD ACADEMY

Marks: 120

Date : 15-04-25

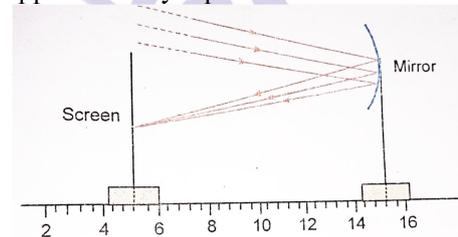
CLASS : 10<sup>TH</sup>

Time: 2 hours

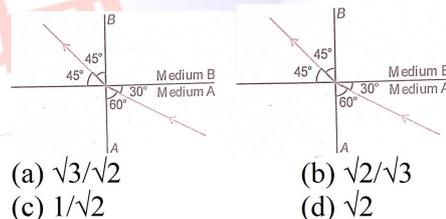
## PHYSICS

- A ray of light falls on a plane mirror forming an angle of  $20^\circ$  with the mirror. The deviation of the ray on reflection is  
(A)  $70^\circ$  (B)  $110^\circ$   
(C)  $140^\circ$  (D) None of these.
- For a given incident ray, a plane mirror is turned through  $20^\circ$ . Then, the reflected ray turns through an angle of  
(A)  $20^\circ$  (B)  $40^\circ$   
(C)  $70^\circ$  (D)  $90^\circ$ .
- The incident beam of light on a plane mirror forming a real image on reflection is :  
(A) parallel (B) convergent  
(C) divergent (D) not certain.
- If a mirror forms a virtual, erect image of the same size as the object, then  
(A) it should be a convex mirror  
(B) it should be a spherical mirror  
(C) it should be a plane mirror.  
(D) it should be a combination of plane and spherical mirror
- A light ray incident normally on a plane mirror suffers deviation of :  
(A)  $0^\circ$  (B)  $90^\circ$   
(C)  $180^\circ$  (D)  $360^\circ$ .
- Which statement is true for the reflection of light?  
(A) The angle of incidence and reflection are equal  
(B) The reflected light is less bright than the incident light  
(C) The sum of angle of incidence and reflection is always greater than  $90^\circ$   
(D) The beams of incident light after reflection diverge at unequal angles.
- In sign convention to be followed, the mirror is kept with its reflecting face  
(A) towards light (B) away from light  
(C) upwards (D) downwards
- In which of the following mirrors, image of an object is always virtual, erect and smaller in size than the object ?  
(A) convex (B) concave  
(C) plane (D) all of these.
- The position of the object when its image formed by a concave mirror is real, inverted And of the same size as that of the object is

- (A) at F (B) at C  
(C) between C and F (D) beyond C.
- A convex mirror always has a positive magnification, because  
(A) image formed is real  
(B) image formed is always erect and virtual  
(C) aperture of convex mirror is small  
(D) image formed is always smaller.
  - The focal length of the concave mirror in the experimental set up, shown below approximately equals



- (A) 12cm (B) 10 cm  
(C) 13cm (D) 8cm
- Speed of light  
(a) in water is less than that in air  
(b) in glass is more than that in air  
(c) is  $2 \times 10^8 \text{ m s}^{-1}$   
(d) is not known.
  - For a rectangular glass slab, angle of incidence  $i$  and angle of emergence  $e$  are related as:  
(a)  $e = i$  (b)  $e > i$   
(c)  $e < i$  (d)  $i \neq e$
  - The factor on which the refractive index of a medium depends is  
(a) the nature of the medium  
(b) frequency  
(c) intensity of light used  
(d) amplitude of light.
  - The given 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



### CHEMISTRY

16.  $\text{MnO}_2 + x\text{HCl} \rightarrow \text{MnCl}_2 + y\text{H}_2\text{O} + z\text{Cl}_2$  In order to balance the above chemical equation, the values of x, y and z respectively are:  
(a) 6,2,2 (b) 4, 1, 2  
(c) 4,2,1 (d) 2,2,1
17. The chemical reaction between quicklime and water is characterized by  
(a) Evolution of hydrogen gas  
(b) Formation of slaked lime precipitate  
(c) Change in temperature of mixture  
(d) Change in colour of the product.
18. Which of the following is not an endothermic reaction?  
(a)  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ ,  
(b)  $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$   
(c)  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$   
(d)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
19. Which of the following is an exothermic reaction?  
(a) Electrolysis of water  
(b) Conversion of limestone into quicklime  
(c) Process of respiration  
(d) Process of photosynthesis
20. Which of the following is a decomposition reaction?  
(a)  $\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$   
(b)  $\text{NH}_4\text{CNO} \rightarrow \text{H}_2\text{NCONH}_2$   
(c)  $2\text{KClO}_3 \xrightarrow{\Delta} 2\text{KCl} + 3\text{O}_2$   
(d)  $\text{H}_2 + \text{I}_2 \rightarrow 2\text{HI}$
21. Lead nitrate on heating gives  
(a) Lead oxide (b) Nitrogen dioxide  
(c) Oxygen (d) All of these
22.  $\text{Pb}(\text{NO}_3)_2 + \text{Fe}_2(\text{SO}_4)_3 \rightarrow \text{Fe}(\text{NO}_3)_3 + \text{PbSO}_4$   
Coefficients of lead sulphate and ferric nitrate in the balanced equation of the above reaction are  
(a) 3 and 4 (b) 3 and 3  
(c) 3 and 2 (d) 2 and 3
23. Ozone is \_\_\_\_\_ to oxygen in sunlight.  
(a) reduced (b) oxidized  
(c) corroded (d) synthesized
24. The displacement reaction from the following is  
(a)  $\text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{l}) \rightarrow \text{Ca}(\text{OH})_2(\text{aq})$   
(b)  $\text{Pb}(\text{s}) + \text{CuCl}_2(\text{aq}) \rightarrow \text{PbCl}_2(\text{aq}) + \text{Cu}(\text{s})$   
(c)  $\text{MnO}_2(\text{s}) + 4\text{HCl}(\text{l}) \rightarrow \text{MnCl}_2(\text{s}) + 2\text{H}_2\text{O}(\text{l}) + \text{Cl}_2(\text{g})$   
(d)  $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
25. When copper is treated with a certain concentration of nitric acid, nitric oxide and nitrogen dioxide are liberated in equal volumes according to the equation  
 $x\text{Cu} + y\text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{NO} + \text{NO}_2 + \text{H}_2\text{O}$

The coefficient x and y are

- (a) 2 and 3 (b) 2 and 6  
(c) 1 and 3 (d) 3 and 8
26. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a  
(a) combination reaction  
(b) displacement reaction  
(c) decomposition reaction  
(d) double displacement reaction.
27. The oxidation number of phosphorus in  $\text{PO}_4^{3-}$  is  
(a) +5 (b) +3  
(c) -3 (d) +2
28.  $\text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl}$  reaction is an example of  
(a) Synthetic (b) Analytical  
(c) Displacement (d) Neutralization
29.  $\text{H}_2\text{S}(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g}) + \text{S}(\text{s})$   
The reaction is interpreted as  
(a)  $\text{H}_2\text{S}$  is getting oxidized and  $\text{Cl}_2$  is getting reduced  
(b)  $\text{H}_2\text{S}$  is getting reduced and  $\text{Cl}_2$  is getting oxidized  
(c) Only  $\text{H}_2\text{S}$  is oxidized  
(d) Both  $\text{H}_2\text{S}$  and  $\text{Cl}_2$  are reduced
30. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is  
(a) 1:1 (b) 2:1  
(c) 4:1 (d) 1:2

### BIOLOGY

31. The proximal part of stomach in which oesophagus opens is called-  
(a) Cardiac (b) Pyloric  
(c) Fundus (d) None
32. Which of the following is not the part of stomach  
(a) Caecum (b) Pyloric  
(c) Fundus (d) Cœliac
33. Small intestine is distinguishable into 3 parts. A 'U' shaped \_\_\_\_\_ a long coiled middle portion \_\_\_\_\_ and a highly coiled, \_\_\_\_\_  
(a) leum, jejunum, duodenum  
(b) duodenum, Jejunum, um  
(c) duodenum, jejunum, ileam  
(d) caecum, duodenum leum
34. The opening of stomach into duodenum is guarded by  
(a) Cardiac sphincter  
(b) Sphincter of Boyden  
(c) Sphincter of Oddi by-

(d) Pyloric sphincter

35. Ileum is-

- (a) First part of small intestine
- (b) Middle part of small intestine
- (c) Last part of small intestine
- (d) First part of large intestine

36. Which of the following parts of small intestine opens into large intestine?

- (a) Duodenum
- (b) Ileum
- (c) Jejunum
- (d) Colon

37. All of the following is the part of large intestine except

- (a) Ileum
- (b) Caecum
- (c) Colon
- (d) Rectum

38. Caecum is small blind sac which hosts some symbiotic micro-organisms. From it a small finger like vestigial organ arises. This organ is called

- (a) Parotid gland
- (b) Vermis
- (c) Vermiform appendix
- (d) Lactesis

39. Caecum opens into-

- (a) Rectum
- (b) Duodenum
- (c) Colon
- (d) Jejunum

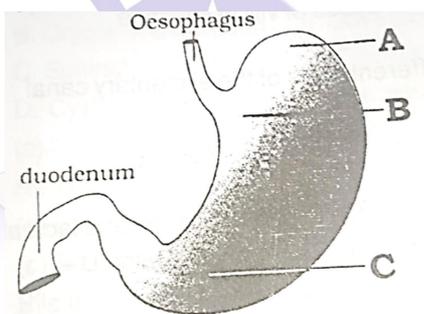
40. Which of the following organs has 3 parts (ascending, transverse and descending parts)-

- (a) Colon
- (b) Caecum
- (c) Small intestine
- (d) Large intestine

41. Which of the following sequence is correct?

- (a) Descending part of colon  
Rectum → Rectum → Anus
- (b) Stomach → Jejunum → Duodenum
- (c) Ileum → Colon → Caecum
- (d) Colon → Anus → Rectum

42.



Anatomical regions of human stomach are-

- (a) A-Fundus, B-Pyloric C-Cardiac
- (c) A-Fundus, B-Cardiac: C-Pyloric
- (b) A-Cardiac: B-Fundus, C-Pyloric
- (d) A-Pyloric: B-Fundus; C-Cardiac

43. The function of liver, formation of-

- (a) Bile
- (b) Insulin
- (c) trypsin
- (d) Pepsin

44. Digestion of protein starts from -

- (a) Mouth
- (b) Stomach
- (c) Small intestine
- (d) Duodenum

45. Pepsinogen is activated by -

- (a) Trypsin
- (b) Chymotrypsin
- (c) HCl
- (d) Na<sup>+</sup>

### MATH

46. If the zeroes of the polynomial  $p(x) = x^3 - 9x^2 + 23x - 15$  are  $a-d, a, a+d$ . Find the values of  $a$  and  $d$ . Also find all the zeroes of the polynomial  $p(x)$

- (a)  $a=3, d=\pm 5, x=1, 3, 5$
- (b)  $a=3, d=\pm 2, x=1, 3, 5$
- (c)  $a=3, d=\pm 7, x=1, 3, 5$
- (d)  $a=3, d=\pm 1, x=1, 3, 5$

47. If the zeroes of the quadratic polynomial  $x^2 + (a+1)x + b$  are 2 and -3, then

- (a)  $a = -7, b = -1$
- (b)  $a = 5, b = -1$
- (c)  $a = 2, b = -6$
- (d)  $a = 0, b = -6$

48. If the polynomial  $x^4 - 2x^3 - 8x^2 + mx - 5$  is exactly divisible by  $x+3$ , then  $m$  is equal to

- (a)  $-\frac{50}{3}$
- (b)  $\frac{50}{3}$
- (c)  $\frac{58}{3}$
- (d)  $-\frac{58}{3}$

49. If  $\alpha$  and  $\beta$  are zeroes of polynomial  $2x^2 - 5x - 7$ , then find a polynomial whose zeroes are  $2\alpha + 3\beta$  and  $3\alpha + 2\beta$ .

- (a)  $2x^2 - 25x - 82$
- (b)  $2x^2 + 25x - 82$
- (c)  $2x^2 + 25x + 82$
- (d)  $2x^2 - 25x + 82$

50. If one zeroes of the polynomial  $3x^2 - 8x - (2k+1)$  is seven times the other find both the zeroes of the polynomial and value of  $k$ .

- (a)  $-\frac{5}{2}$
- (b)  $\frac{5}{3}$
- (c)  $-\frac{5}{3}$
- (d)  $\frac{5}{2}$

51. If one zero of the quadratic polynomial  $2x^2 - 3x + p$  is 3, find its other zero. Also find the value of  $p$

- (a) -9
- (b) 9
- (c) -19
- (d) 19

52. Find the value (s) of  $k$  for which the pairs of linear equations have no solution:  $kx + 3y = k - 2$ ,  $12x + ky = k$

- (a)  $\mp 7$
- (b)  $\mp 8$
- (c)  $\mp 6$
- (d)  $\mp 9$

53. Find the value (s) of  $k$  for which the pairs of linear equations have a unique solution  $kx + 2y = 3, 3x + 6y = 10$

- (a) All real value except 1
- (b) All real value except 2
- (c) All real value except 3
- (d) All real value except 4

54. Find the value (s) of  $k$  for which the pairs of linear equations have a infinite solution  $10x + 5y - (k-5) = 0$

- (a) 20
- (b) 10

- (c) 30 (d) 40
55. The pair of linear equations  $x + 2y - 5 = 0$  and  $2x - 4y + 6 = 0$  is
- (a) inconsistent
  - (b) consistent with many solutions
  - (c) consistent with a unique solution
  - (d) consistent with two solutions
56. The pair of linear equations  $\frac{3x}{2} + \frac{5y}{3} = 7$  and  $9x + 10y = 14$  is
- (a) consistent
  - (b) inconsistent
  - (c) consistent with one solution
  - (d) consistent with many solutions
57. The pair of linear equations  $2x - 5y + 6 = 0$  and  $15y = 6x + 18$  represents two lines which are
- a) intersecting
  - (b) parallel
  - (c) coincident
  - (d) either intersecting or parallel
58. If the pair of equations  $3x - y + 8 = 0$  and  $6x - ry + 16 = 0$  represent coincident lines, then the value of 'r' is
- (a)  $-\frac{1}{2}$
  - (b)  $\frac{1}{2}$
  - (c) -2
  - (d) 2
59. The value (s) of k for which the pair of linear equation  $3x - 2y - 7 = 0$  and  $6x + ky + 11 = 0$  have a unique solution is (are)
- (a) 4
  - (b) all real numbers except 4
  - (c) -4
  - (d) all real numbers except -4
60. If the system of equations  $3x + y = 1$  and  $(2k - 1)x + (k - 1)y = 2k + 1$  is inconsistent, then k =
- (a) -1
  - (b) 0
  - (c) 1
  - (d) 2

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