## NEET ANSWER KEY & SOLUTION

**PAPER CODE :- PART TEST-1**
**CLASS-XI**

## ANSWER KEY

### PHYSICS

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.** | (D) | **2.** | (D) | **3.** | (A) | **4.** | (A) | **5.** | (D) | **6.** | (C) | **7.** | (B) |
| **8.** | (B) | **9.** | (B) | **10.** | (A) | **11.** | (D) | **12.** | (A) | **13.** | (B) | **14.** | (D) |
| **15.** | (D) | **16.** | (B) | **17.** | (A) | **18.** | (A) | **19.** | (A) | **20.** | (A) | **21.** | (C) |
| **22.** | (D) | **23.** | (C) | **24.** | (D) | **25.** | (B) | **26.** | (D) | **27.** | (D) | **28.** | (C) |
| **29.** | (A) | **30.** | (C) | **31.** | (D) | **32.** | (B) | **33.** | (D) | **34.** | (A) | **35.** | (B) |
| **36.** | (C) | **37.** | (A) | **38.** | (D) | **39.** | (B) | **40.** | (B) | **41.** | (D) | **42.** | (B) |
| **43.** | (B) | **44.** | (C) | **45.** | (A) | **46.** | (C) | **47.** | (C) | **48.** | (C) | **49.** | (D) |
| **50.** | (D) | | | | | | | | | | | | |

### CHEMISTRY

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **51.** | (C) | **52.** | (B) | **53.** | (C) | **54.** | (C) | **55.** | (A) | **56.** | (D) | **57.** | (C) |
| **58.** | (C) | **59.** | (B) | **60.** | (A) | **61.** | (D) | **62.** | (C) | **63.** | (A) | **64.** | (A) |
| **65.** | (B) | **66.** | (A) | **67.** | (B) | **68.** | (A) | **69.** | (C) | **70.** | (A) | **71.** | (C) |
| **72.** | (A) | **73.** | (A) | **74.** | (B) | **75.** | (C) | **76.** | (C) | **77.** | (B) | **78.** | (B) |
| **79.** | (A) | **80.** | (A) | **81.** | (A) | **82.** | (D) | **83.** | (A) | **84.** | (D) | **85.** | (C) |
| **86.** | (B) | **87.** | (A) | **88.** | (A) | **89.** | (A) | **90.** | (C) | **91.** | (A) | **92.** | (D) |
| **93.** | (A) | **94.** | (D) | **95.** | (D) | **96.** | (A) | **97.** | (D) | **98.** | (B) | **99.** | (B) |
| **100.** | (A) | | | | | | | | | | | | |

### BIOLOGY

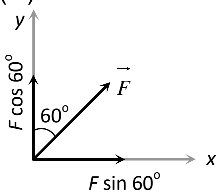
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **101.** | (B) | **102.** | (D) | **103.** | (A) | **104.** | (A) | **105.** | (D) | **106.** | (C) | **107.** | (D) |
| **108.** | (C) | **109.** | (A) | **110.** | (D) | **111.** | (B) | **112.** | (D) | **113.** | (B) | **114.** | (C) |
| **115.** | (B) | **116.** | (D) | **117.** | (B) | **118.** | (B) | **119.** | (C) | **120.** | (A) | **121.** | (C) |
| **122.** | (D) | **123.** | (C) | **124.** | (B) | **125.** | (D) | **126.** | (A) | **127.** | (C) | **128.** | (A) |
| **129.** | (B) | **130.** | (D) | **131.** | (D) | **132.** | (B) | **133.** | (B) | **134.** | (C) | **135.** | (D) |
| **136.** | (C) | **137.** | (B) | **138.** | (D) | **139.** | (B) | **140.** | (B) | **141.** | (B) | **142.** | (D) |
| **143.** | (D) | **144.** | (B) | **145.** | (D) | **146.** | (A) | **147.** | (D) | **148.** | (D) | **149.** | (C) |
| **150.** | (B) | **151.** | (C) | **152.** | (D) | **153.** | (B) | **154.** | (C) | **155.** | (D) | **156.** | (B) |
| **157.** | (A) | **158.** | (A) | **159.** | (D) | **160.** | (B) | **161.** | (D) | **162.** | (C) | **163.** | (D) |
| **164.** | (D) | **165.** | (C) | **166.** | (D) | **167.** | (D) | **168.** | (C) | **169.** | (D) | **170.** | (D) |
| **171.** | (D) | **172.** | (B) | **173.** | (B) | **174.** | (C) | **175.** | (B) | **176.** | (D) | **177.** | (D) |
| **178.** | (B) | **179.** | (D) | **180.** | (D) | **181.** | (B) | **182.** | (D) | **183.** | (C) | **184.** | (C) |
| **185.** | (B) | **186.** | (C) | **187.** | (C) | **188.** | (D) | **189.** | (D) | **190.** | (C) | **191.** | (D) |
| **192.** | (B) | **193.** | (C) | **194.** | (A) | **195.** | (D) | **196.** | (B) | **197.** | (D) | **198.** | (D) |
| **199.** | (C) | **200.** | (A) | | | | | | | | | | |

## SOLUTIONS

## PHYSICS

**1.** (D)

**Sol.** (D)




The component of force in vertical direction

$= F\cos\theta = F\cos 60° = 5 \times \frac{1}{2} = 2.5\ N$

**2.** (D)

**Sol.** (D) $|B| = \sqrt{7^2 + (24)^2} = \sqrt{625} = 25$

Unit vector in the direction of *A* will be $\hat{A} = \frac{3\hat{i} + 4\hat{j}}{5}$

So required vector = $25\left(\frac{3\hat{i}+4\hat{j}}{5}\right) = 15\hat{i} + 20\hat{j}$

**3.** (A)

**Sol.** (A) If the angle between all forces which are equal and lying in one plane are equal then resultant force will be zero.

**4.** (A)

**5.** (D)

**Sol.** (D) $[G] = [M^{-1}L^3T^{-2}]; [h] = [ML^2T^{-1}]$

Power = $\frac{1}{\text{focal length}} = [L^{-1}]$

All quantities have dimensions

**6.** (C)

**Sol.** (C) Mean time period *T* = 2.00 *sec*

& Mean absolute error $= \Delta T$ = 0.05 *sec.*

To express maximum estimate of error, the time period should be written as $(2.00 \pm 0.05)$ *sec*

**7.** (B)

**Sol.** (B) Observed reading of cylinder diameter = 3.1 cm + (4) (0.01 cm). V= 3.14 cm

**8.** (B)

**Sol.** (B) $H = I^2Rt$

$\therefore \frac{\Delta H}{H} \times 100 = \left(\frac{2\Delta I}{I} + \frac{\Delta R}{R} + \frac{\Delta t}{t}\right) \times 100$

$= (2 \times 3 + 4 + 6)\% = 16\%$

**9.** (B)

**Sol.** (B) Average value

$= \frac{2.63 + 2.56 + 2.42 + 2.71 + 2.80}{5}$

$= 2.62$ sec

Now $|\Delta T_1| = 2.63 - 2.62 = 0.01$

$|\Delta T_2| = 2.62 - 2.56 = 0.06$

$|\Delta T_3| = 2.62 - 2.42 = 0.20$

$|\Delta T_4| = 2.71 - 2.62 = 0.09$

$|\Delta T_5| = 2.80 - 2.62 = 0.18$

Mean absolute error

$\Delta T = \frac{|\Delta T_1| + |\Delta T_2| + |\Delta T_3| + |\Delta T_4| + |\Delta T_5|}{5}$

$= \frac{0.54}{5} = 0.108 = 0.11\,sec$

**10.** (A)

**Sol.** (A) Percentage error in *X* $= a\alpha + b\beta + c\gamma$

**11.** (D)

**Sol.** (D) $f = \frac{1}{2\pi\sqrt{LC}}$ $\therefore \left(\frac{C}{L}\right)$ does not represent the dimension of frequency

**12.** (A)

**Sol.** (A) As the distance of star increases, the parallax angle decreases, and great degree of accuracy is required for its measurement. Keeping in view the practical limitation in measuring the parallax angle, the maximum distance of a star we can measure is limited to 100 light year.

**13.** (B)

**Sol.** (B) Total time of motion is 2 *min* 20 *sec* = 140 *sec*.

As time period of circular motion is 40 *sec* so in 140 *sec*. athlete will complete 3.5 revolution *i.e.,* He will be at diametrically opposite point *i.e.,* Displacement = 2*R*.

**14.** (D)

**Sol.** (D) Average speed $= \frac{\text{Total distance}}{\text{Total time}} = \frac{x}{t_1 + t_2}$

$= \frac{x}{\frac{x/3}{v_1} + \frac{2x/3}{v_2}} = \frac{1}{\frac{1}{3\times 20} + \frac{2}{3 \times 60}} = 36\ km/hr$

**15.** (D)

**Sol.** (D)

**16.** (B)

**Sol.** (B) $\frac{|\text{ Average velocity }|}{|\text{ Average speed }|} = \frac{|\text{ displacement }|}{|\text{ distance }|} \le 1$

because displacement will either be equal or less than distance. It can never be greater than distance.

**17.** (A)

**Sol.** (A) When the body is projected vertically upward then at the highest point its velocity is zero but acceleration is not equal to zero $(g = 9.8 m/s^2)$.

**18.** (A)

**Sol.** (A) From $S = ut + \frac{1}{2} a t^2$

$S_1 = \frac{1}{2} a(P-1)^2$ and $S_2 = \frac{1}{2} a P^2$ $[As\ u = 0]$

From $S_n = u + \frac{a}{2}(2n-1)$

$S_{(P^2-P+1)^{th}} = \frac{a}{2}\left[2(P^2 - P + 1) - 1\right]$

$= \frac{a}{2}\left[2P^2 - 2P + 1\right]$

It is clear that $S_{(P^2-P+1)^{th}} = S_1 + S_2$

**19.** (A)

**Sol.** (A) $S = kt^3$ $\therefore$ $a = \frac{d^2S}{dt^2} = 6kt$ *i.e.* $a \propto t$

**20.** (A)

**Sol.** (A) $S_n = u + \frac{a}{2}(2n-1) = \frac{a}{2}(2n-1)$ because $u = 0$

Hence $\frac{S_4}{S_3} = \frac{7}{5}$

**21.** (C)

**Sol.** (C)

$\frac{dx}{dt} = 2at - 3bt^2 \Rightarrow \frac{d^2x}{dt^2} = 2a - 6bt = 0 \Rightarrow t = \frac{a}{3b}$

**22.** (D)

**Sol.** (D) $u = 72\ kmph = 20 m/s,\ \ v = 0$

By using $v^2 = u^2 - 2as$ $\Rightarrow$ $a = \frac{u^2}{2s}$

$= \frac{(20)^2}{2 \times 200} = 1\ m/s^2$

**23.** (C)

**Sol.** (C) Because acceleration is a vector quantity

**24.** (D)

**Sol.** (D) $s = 3t^3 + 7t^2 + 14t + 8\ m$

$a = \frac{d^2s}{dt^2} = 18t + 14$ at $t = 1 \sec \Rightarrow a = 32 m/s^2$

**25.** (B)

**Sol.** (B)

$v = u + at = u + \left(\frac{F}{m}\right)t = 20 + \left(\frac{100}{5}\right) \times 10 = 220\ \ m/s$

**26.** (D)

**Sol.** (D) $x = ae^{-\alpha t} + be^{\beta t}$

Velocity $v = \frac{dx}{dt} = \frac{d}{dt}(ae^{-\alpha t} + be^{\beta t})$

$= a.e^{-\alpha t}(-\alpha) + be^{\beta t}.\beta) \ = -a\alpha e^{-\alpha t} + b\beta e^{\beta t}$

Acceleration $= -a\alpha e^{-\alpha t}(-\alpha) + b\beta e^{bt}.\beta$

$= a\alpha^2 e^{-\alpha t} + b\beta^2 e^{\beta t}$

Acceleration is positive so velocity goes on increasing with time.

**27.** (D)

**Sol.** (D) Relative velocity

$= 10 + 5 = 15\ m/sec$

$\therefore\ t = \frac{150}{15} = 10\ sec$

**28.** (C)

**Sol.** (C) $h = \frac{1}{2} gt^2 \Rightarrow t = \sqrt{2h/g}$

$t_a = \sqrt{\frac{2a}{g}}$ and $t_b = \sqrt{\frac{2b}{g}} \Rightarrow \frac{t_a}{t_b} = \sqrt{\frac{a}{b}}$

**29.** (A)

**Sol.** (A) $h = \frac{1}{2} gt^2 = \frac{1}{2} \times 10 \times (4)^2 = 80\ m$

**30.** (C)

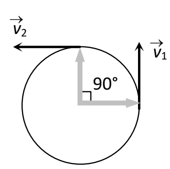
**Sol.** (C) Speed of the object at reaching the ground $v = \sqrt{2gh}$

If heights are equal then velocity will also be equal.

**31.** (D)

**Sol.** (D) In 15 second's hand rotate through 90°.

Change in velocity $|\overrightarrow{\Delta v}| = 2v\sin(\theta/2)$




$= 2(r\omega)\sin(90°/2) = 2 \times 1 \times \frac{2\pi}{T} \times \frac{1}{\sqrt{2}}$

$= \frac{4\pi}{60\sqrt{2}} = \frac{\pi\sqrt{2}}{30} \frac{cm}{\sec}$ [As *T* = 60 sec]

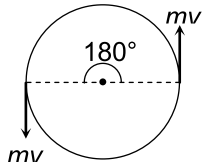
**32.** (B)

**Sol.** (B) Centripetal force

$= mr\omega^2 = 5 \times 1 \times (2)^2 = 20\ N$

**33.** (D)

**Sol.** (D) As momentum is vector quantity




$\therefore$ change in momentum

$\Delta P = 2mv\sin(\theta/2)$

$= 2mv\sin(90) = 2mv$

But kinetic energy remains always constant so change in kinetic energy is zero.

**34.** (A)

**Sol.** (A) $2\pi r = 34.3 \Rightarrow r = \frac{34.3}{2\pi}$ and $v = \frac{2\pi r}{T} = \frac{2\pi r}{\sqrt{22}}$

Angle of binding $\theta = \tan^{-1}\left(\frac{v^2}{rg}\right) = 45°$

**35.** (B)

**Sol.** (B) Net acceleration in nonuniform circular motion,

$a = \sqrt{a_t^2 + a_c^2} = \sqrt{(2)^2 + \left(\frac{900}{500}\right)^2} = 2.7\ m/s^2$

$a_t =$ tangential acceleration

$a_c =$ centripetal acceleration $= \frac{v^2}{r}$

**36.** (C)

**Sol.** (C) Particle attains velocity $v_0$ after nth round

$\therefore \quad \omega = \frac{v_o}{r} \qquad \omega^2 = \omega_o^2 + 2\alpha\theta$

($\omega_o = 0$, $\because$ particle initially at rest)

$\left(\frac{v_o}{r}\right)^2 = 2\alpha(2\pi n) \qquad \alpha = \frac{v_o^2}{4\pi n r^2}$

**37.** (A)

**Sol.** (A) Range $= \frac{u^2 \sin 2\theta}{g}$; when $\theta = 90°$, $R = 0$

*i.e.* the body will fall at the point of projection after completing one dimensional motion under gravity.

**38.** (D)

**Sol.** (D) The normal reaction is not least at topmost point, hence statement 1 is false.

**39.** (B)

**Sol.** (B) $u = 100\ m/s, v = 0, s = 0.06\ m$

Retardation $= a = \frac{u^2}{2s} = \frac{(100)^2}{2 \times 0.06} = \frac{1 \times 10^6}{12}$

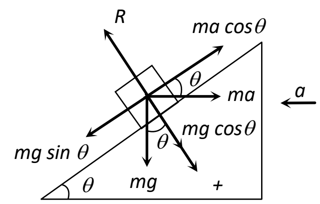
$\therefore$ Force

$= ma = \frac{5 \times 10^{-3} \times 1 \times 10^6}{12} = \frac{5000}{12} = 417\ N$

**40.** (B)

**41.** (D)

**Sol.** (D)




When the whole system is accelerated towards left then pseudo force (*ma*) works on a block towards right.

For the condition of equilibrium

$mg\sin\theta = ma\cos\theta \Rightarrow a = \frac{g\sin\theta}{\cos\theta}$

$\therefore$ Force exerted by the wedge on the block

$R = mg\cos\theta + ma\sin\theta$ R

$= mg\cos\theta + m\left(\frac{g\sin\theta}{\cos\theta}\right)\sin\theta = \frac{mg(\cos^2\theta + \sin^2\theta)}{\cos\theta}$

$R = \frac{mg}{\cos\theta}$

**42.** (B)

**Sol.** (B) Since downward force along the inclined plane $= mg\sin\theta = 5 \times 10 \times \sin 30° = 25 N$

**43.** (B)

**Sol.** (B) Force exerted by the ball on hands of the player $= \frac{mdv}{dt} = \frac{0.15 \times 20}{0.1} = 30\ N$

**44.** (C)

**Sol.** (C) According to principle of conservation of linear momentum $1000 \times 50 = 1250 \times v \Rightarrow$ $v = 40\,km/hr$

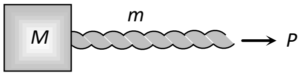
**45.** (A)

**Sol.** (A) $F_{net}^2 = F_1^2 + F_2^2 + 2F_1F_2\cos\theta$

$\Rightarrow \left(\frac{F}{3}\right)^2 = F^2 + F^2 + 2F^2\cos\theta$

$\Rightarrow \cos\theta = \left(-\frac{17}{18}\right)$

**46.** (C)

**Sol.** (C) 


Acceleration of the system $= \frac{P}{m+M}$

The force exerted by rope on the mass $= \frac{MP}{m+M}$

**47.** (C)

**Sol.** (C) $a = \frac{m_2 - m_1}{m_1 + m_2} g = \frac{10-5}{10+5} g = \frac{g}{3}$

**48.** (C)

**Sol.** (C) If monkey move downward with acceleration *a* then its apparent weight decreases. In that condition

Tension in string $= m(g-a)$

This should not be exceed over breaking strength of the rope *i.e.* $360 \geq m(g-a) \Rightarrow$ $360 \geq 60(10-a)$

$\Rightarrow a \geq 4\ m/s^2$

**49.** (D)

**Sol.** (D) $K = \frac{F}{x}$ and increment in length is proportional the original length *i.e.* $x \propto l$ $\therefore$ $K \propto \frac{1}{l}$

**50.** (D)

**Sol.** (D) According to third law of motion it is impossible to have a single force out of mutual interaction between two bodies, whether they are moving or at rest. While, Newton's third law is applicable for all types of forces.

## CHEMISTRY

**51.** (C)

**52.** (B)

**Sol.** (B) 1 mole of $CH_4$ contains 4 mole of hydrogen atom *i.e.* 4*g* atom of hydrogen.

**53.** (C)

**Sol.** (C) 0.1*M* $AgNO_3$ will react with 0.1*M NaCl* to form $0.1M\ NaNO_3$ . But as the volume doubled, conc. of $NO_3^- = \frac{0.1}{2} = 0.05M$ .

**54.** (C)

**Sol.** (C) wt. of metallic chloride $= 74.5$

wt. of chlorine = 35.5

$\therefore$ wt. of metal $= 74.5 - 35.5 = 39$

Equivalent weight of metal

$= \frac{\text{weight of metal}}{\text{weight of chlorine}} \times 35.5 = \frac{39}{35.5} \times 35.5 = 39$

**55.** (A)

**Sol.** (A) 14 *gm* $N^{3-}$ ions have $= 8N_A$ valence electrons 4.2*gm* of $N^{3-}$ ions have $= \frac{8N_A \times 4.2}{14} = 2.4N_A$

**56.** (D)

**Sol.** (D) Molecular weight of $(CHCOO)_2Fe = 170$

*Fe* present in 100*mg* of $(CHCOO)_2Fe$

$= \frac{56}{170} \times 100mg = 32.9mg$

This is present in 400*mg* of capsule

% of *Fe* in capsule $= \frac{32.9}{400} \times 100 = 8.2$ .≅8%

**57.** (C)

**Sol.** (C) According to definition of molar solution $\rightarrow$ A molar solution is one that contains one mole of a solute in one litre of the solution.

**58.** (C)

**Sol.** (C) $Ca_3P_2 + 6H_2O \rightarrow 2PH_3 + 3Ca(OH)_2$

**59.** (B)

**Sol.** (B) $\because$ 2*gm* of hydrogen $= 6.02 \times 10^{23}$ molecules

$\therefore$ 1*gm* of hydrogen

$= \frac{6.02 \times 10^{23}}{2} = 3.01 \times 10^{23}$ molecule.

**60.** (A)

**Sol.** (A) $\because$ 0.0835 mole of compound contains 1*gm* of hydrogen

$\therefore$ 1*gm* mole of compound contain = $\frac{1}{0.0835} = 11.97$

=12*gm* of hydrogen.

12 *gm* of $H_2$ is present in $C_2H_{12}O_6$

**61.** (D)

**Sol.** (D) $H_3PO_4$ is tribasic so $N = 3M = 3 \times 1 = 3$ .

**62.** (C)

**Sol.** (C) $\because$ 100*gm Hb* contain = 0.33*gm Fe*

$\therefore$ 67200*gm Hb* = $\frac{67200 \times 0.33}{100} gm\ Fe$

*gm* atom of *Fe* = $\frac{672 \times 0.33}{56} = 4$ .

**63.** (A)

**Sol.** (A) For Dibasic acid $E = \frac{M}{2} = \frac{200}{2} = 100$

$$N = \frac{W \times 1000}{E \times V(\text{in } ml)}$$

$$\frac{1}{10} = \frac{W \times 1000}{100 \times 100} = W = 1gm \text{ .}$$

**64.** (A)

**65.** (B)

**Sol.** (B) (I) Phenopthalein indicate partial neutralisation of $Na_2CO_3 \rightarrow NaHCO_3$

Meq. of $Na_2CO_3$ + Meq. of *NaOH* = Meq. of *HCl*

$$\frac{W}{E} \times 1000 + \frac{W}{E} \times 1000 = NV$$

(Suppose $Na_2CO_3 = a\,gm$, *NaOH* = *b gm*)

$$\frac{a}{106} \times 1000 + \frac{b}{40} \times 1000 = 300 \times 0.1 \text{.....(1)}$$

(II) Methyl orange indicate complete neutralisation

*HCl HCl*

$N_1V_1 = N_2V_2$ , $25 \times 0.2 = 0.1 \times V_2$ so $V_2 = 50ml$

excess

$$\therefore \frac{a}{53} \times 1000 + \frac{b}{40} \times 1000 = 350 \times 0.1 \text{.....(2)}$$

From (1) and (2) *b* =1*gm.*

**66.** (A)

**Sol.** (A) $\underset{1\text{mole}}{Mg} + \underset{0.5\text{mole}}{\frac{1}{2}O_2} \rightarrow MgO$

0.5 mole of oxygen react with 1 mole of *Mg*

1.5 mole of oxygen react with $\frac{1.5}{0.5} = 3$ mole

$24 \times 3 = 72\,gm$ .

**67.** (B)

**Sol.** (B) $\because$ 8*gm* sulphur is present in 100*gm* of substance

$\therefore$ 32*gm* sulphur will present = $\frac{100}{8} \times 32 = 400$ .

**68.** (A)

**Sol.** (A) 200*mg* of $CO_2$ = $200 \times 10^{-3} = 0.2gm$

44*gm* of $CO_2$ = $6 \times 10^{23}$ molecules

0.2*gm* of $CO_2$ = $\frac{6 \times 10^{23}}{44} \times 0.2 = 0.0272 \times 10^{23}$

$= 2.72 \times 10^{21}$ molecule

Now $10^{21}$ molecule are removed.

So remaining molecules $= 2.72 \times 10^{21} - 10^{21}$

$= 10^{21}(2.72 - 1)$ = $1.72 \times 10^{21}$ molecules

Now, $6.023 \times 10^{23}$ molecules = 1mole

$1.72 \times 10^{21}$ molecules

$$= \frac{1 \times 1.72 \times 10^{21}}{6.023 \times 10^{23}} = 0.285 \times 10^{-2}$$

$$= 2.85 \times 10^{-3} \text{ .}$$

**69.** (C)

**Sol.** (C)

$$\underset{+12/\text{two atom}}{K_2Cr_2O_7} + 4H_2SO_4 \rightarrow K_2SO_4 + \underset{+6/\text{two atom}}{Cr_2(SO_4)_3} + 4H_2O + 3[O]$$

Change by 6

$$\text{Eq. wt.} = \frac{\text{Mol. wt.}}{6}$$

**70.** (A)

**Sol.** (A) $\%C = \frac{12}{44} \times \frac{W_{CO_2}}{W} \times 100$

$$= \frac{12}{44} \times \frac{2.63}{0.858} \times 100 = 83.6\%$$

$$\%H = \frac{2}{18} \times \frac{W_{H_2O}}{W} \times 100$$

$$= \frac{2}{18} \times \frac{1.28}{.858} \times 100 = 16.4\%$$

| | %(A) | At.wt.(B) | a/b | Ratio | |
|---|---|---|---|---|---|
| *C* | 83.6 | 12 | 6.96 | 1 | × 3 |
| *H* | 16.4 | 1 | 16.4 | 2.3 | 7 |

$C_3H_7 = 12 \times 3 + 7 = 43\,gm$ .

**71.** (C)

**Sol.** (C) According to Dalton's atomic theory atoms can neither be created nor destroyed and according to berzelius hypothesis, under similar condition of temperature and pressure equal volumes of all gases contain equal no. of atom. Therefore assertion is true but reason is false.

**72.** (A)

**Sol.** (A) For universally accepted atomic mass unit in 1961, *C*-12 was selected as standard. However the new symbol used is '*v*' (unified mass) in place of *amu.*

**73.** (A)

**Sol.** (A) Both assertion and reason are true and reason is the correct explanation of assertion.

**74.** (B)

**Sol.** (B) No. of atoms present in a molecules of a gaseous element is called atomicity.
For example, $O_2$ has two atoms and hence its atomicity is 2.

**75.** (C)

**Sol.** (C)

$$\overset{0}{P_4} + 3NaOH + 3H_2O \rightarrow \underset{\text{Sodium hypophosphite}}{3NaH_2PO_2} + \overset{-3}{PH_3}.$$

It shows oxidation and reduction (Redox) properties.

**76.** (C)

**77.** (B)

**Sol.** (B) Any substance which is capable of oxidising other substances and is capable of accepting/gaining electron during oxidation is called oxidising agent or oxidant.

**78.** (B)

**Sol.** (B) The metallic iron is oxidised to $Fe^{+3}$.

**79.** (A)

**Sol.** (A)

$$\overset{+6}{Cr_2}O_7^{2-} + 14H^+ + 6I^- \rightarrow 2Cr^{3+} + 3H_2O + 3I_2$$

**80.** (A)

**Sol.** (A) In this reaction $H_2O_2$ acts as a oxidizing agent.

**81.** (A)

**Sol.** (A) In this reaction $H_2O$ acts as oxidising agent.

**82.** (D)

**Sol.** (D) $I^-$ act as a more reducing agent than other ions.

**83.** (A)

**Sol.** (A)

Reduction (oxidisingagent)

$$Ag_2O + H_2O_2 \longrightarrow 2Ag + H_2O + O_2$$

Oxidation (reducing agent)

**84.** (D)

**Sol.** (D) $H_2\overset{*}{S}O_4$

$2 + x - 2\times 4 = 0$, $x = 8 - 2 = +6$.

**85.** (C)

**Sol.** (C) $Sn^{2+} \rightarrow Sn^{4+} + 2e^-$

**86.** (B)

**Sol.** (B) In complex $[Pt(C_2H_4)Cl_3]^-$ $Pt$ have + 2 oxidation state.

**87.** (A)

**88.** (A)

**Sol.** (A) Hydrogen have oxidation no. + 1 and – 1.

**89.** (A)

**Sol.** (A) $MnO_4^- \rightarrow Mn^{2+} + 5e^-$.

**90.** (C)

**Sol.** (C)

Reduction

$$K_2\overset{+6}{Cr_2}O_7 + 3SO_2 + H_2SO_4 \rightarrow K_2SO_4 + \overset{+3}{Cr_2}(SO_4)_3 + H_2O$$

**91.** (A)

**Sol.** (A)

$$MnO_4^- + 8H^+ + 5e^- \rightarrow Mn^{2+} + 4H_2O \times 2$$

$$C_2O_4^{2-} \rightarrow 2CO_2 + 2e^- \times 5$$

$$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 2Mn^{2+} + 10CO_2 + 8H_2O$$

Thus the coefficient of $MnO_4^-$, $C_2O_4^{2-}$ and $H^+$ in the above balanced equation respectively are 2, 5, 16.

**92.** (D)

**Sol.** (D)

$$\overset{0}{Zn} + 2\overset{+1}{Ag}CN \rightarrow 2\overset{0}{Ag} + \overset{+2}{Zn}(CN)_2.$$

Reduction

Oxidation

**93.** (A)

**Sol.** (A) $IO_3^- + aI^- + bH^+ \rightarrow cH_2O + dI_2$

**Step 1 :** $I^{-1} \rightarrow I_2$ (oxidation)

$IO_3^- \rightarrow I_2$ (reduction)

**Step 2 :** $2IO_3^- + 12H^+ \rightarrow I_2 + 6H_2O$

**Step 3 :** $2IO_3^- + 12H^+ + 10e \rightarrow I_2 + 6H_2O$

$2I^- \rightarrow I_2 + 2e$

**Step 4 :** $2IO_3^- + 12H^+ + 10e^- \rightarrow I_2 + 6H_2O$

$[2I^- \rightarrow I_2 + 2e]5$

**Step 5 :** $2IO_3^- + 10I^- + 12H^+ \rightarrow 6I_2 + 6H_2O$

$IO_3^- + 5I^- + 6H^+ \rightarrow 3I_2 + 3H_2O$

On comparing, $a = 5$, $b = 6$, $c = 3$, $d = 3$

**94.** (D)

**Sol.** (D) *In alkaline medium*

$2KMnO_4 + KI + H_2O \rightarrow 2MnO_2 + 2KOH + KIO_3$.

**95.** (D)

**Sol.** (D) $2AgNO_3 \xrightarrow{\Delta} 2Ag + 2NO_2 + O_2$.

**96.** (A)

**Sol.** (A)

$6MnO_4^- + I^- + 6OH^- \longrightarrow 6MnO_4^{2-} + IO_3^- + 3H_2O$

**97.** (D)

**Sol.** (D) Here, assertion is false, because stannous chloiride is a strong reducing agent not strong oxidising agent. Stannous chlorides gives Grey precipitate with mercuric chloride. Hence, reason is true.

**98.** (B)

**Sol.** (B) Both assertion and reason are true but reason is not the correct explanation of assertion. Greater the number of negative atoms present in the oxy-acid make the acid stronger. In general, the strengths of acids that have general formula $(HO)_m ZO_n$ can be related to the value of $n$. As the value of $n$ increases, acidic character also increases. The negative atoms draw electrons away from the Z-atom and make it more positive. The Z-atom, therefore, becomes more effective in with drawing electron density away from the oxygen atom that bonded to hydrogen. in turn, the electrons of $H-O$ bond are drawn more strongly away from the $H$-atom. The net effect makes it easier from the proton release and increases the acid strength.

**99.** (B)

**Sol.** (B) Both assertion and reason are true but reason is not the correct explanation of assertion.

Oxidation number can be calculated using some rules. $H$ is assigned +1 oxidation state and 0 has oxidation number –2

$\therefore$ O. No. of $C$ in $CH_2O$:

O. no. of $C + 2(+1) + (-2) = 0$

$\therefore$ O. No. of $C = 0$

**100.** (A)

**Sol.** (A) Both assertion and reason are true and reason is the correct explanation of assertion.

Maximum oxidation state of $S$ is +6, it cannot exceed it. Therefore it can't be further oxidised as $S^{-2}$ can't be reduced further.