



## MOCK TEST - 1

TARGET : PRE-MEDICAL 2023

Test Type : MOCK

Test Pattern : NEET (UG)

### ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A.	2	2	2	4	4	2	1	1	2	1	1	3	3	3	1	3	1	3	3	1	4	1	2	3	3	2	2	4	2	3
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	4	2	2	4	2	4	4	1	1	1	2	2	1	4	2	3	1	1	4	2	2	3	1	3	3	2	2	3	3	
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A.	4	3	3	3	3	4	1	2	2	3	4	2	2	4	2	1	1	1	3	3	1	1	2	2	3	4	4	3	2	4
Q.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	4	4	2	4	1	4	4	1	3	1	1	3	3	2	1	3	2	1	4	2	2	2	1	3	3	2	3	1	2	3
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
A.	4	2	3	1	3	2	2	2	3	2	4	4	4	4	2	2	1	4	4	4	3	2	1	4	2	4	1	3	3	
Q.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	4	2	3	3	2	3	3	1	3	1	1	3	4	2	2	3	3	3	2	2	3	2	3	2	1	1	3	2	2	3
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	1	2	2	1	1	2	2	3	3	3	1	1	4	2	3	1	3	1	2	2										

### HINT – SHEET

#### SUBJECT : PHYSICS

##### SECTION-A

1. **Ans (2)**

$$\lambda = \frac{h}{\sqrt{3mkT}} \therefore \frac{\lambda_{H_2}}{\lambda_{He}} = \sqrt{\frac{m_{He}}{m_{H_2}} \times \frac{T_{He}}{T_{H_2}}} \\ = \sqrt{\frac{4}{2} \times \frac{127 + 273}{27 + 273}} = \sqrt{\frac{4 \times 400}{2 \times 300}} = \sqrt{\frac{8}{3}}$$

2. **Ans (2)**

$$M = IA$$

$$M = I \times \pi R^2$$

$$B = \frac{\mu_0 I}{2R} \Rightarrow I = \frac{2BR}{\mu_0}$$

$$\text{So, } M = \frac{2BR}{\mu_0} \times \pi R^2$$

3. **Ans (2)**

$$|e| = L(\Delta I / \Delta t) \Rightarrow 8 = \\ L \times \frac{2}{0.05} \Rightarrow L = \frac{1}{5} = 0.2H$$

4. **Ans (4)**

$$E = B \times C = 2 \times 10^{-7} \times 3 \times 10^8 = 60 \text{ V/m}$$

$$\vec{C} \perp \vec{E}, \vec{B}$$

$$\text{So, } \vec{E}_y = 60 \sin(0.5 \times 10^3 x - 1.5 \times 10^6 t) \text{ V/m}$$

5. **Ans (4)**

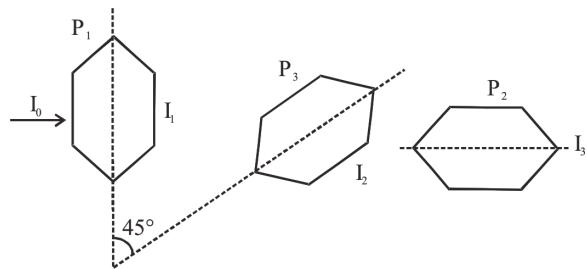
Transistor as an amplifier

$$V_{out} = \beta \frac{R_L}{R_i} \times V_{in}$$

$$2 = 100 \times \frac{2 \times 10^3}{1 \times 10^3} \times V_{in}$$

$$V_{in} = 10 \text{ mV}$$

6. Ans (2)



$$I_1 = \frac{I_0}{2}$$

$$I_2 = \frac{I_0}{2} \cos^2 45^\circ = \frac{I_0}{4}$$

$$I_3 = \frac{I_0}{4} \cos^2 45^\circ = \frac{I_0}{8}$$

7. Ans (1)

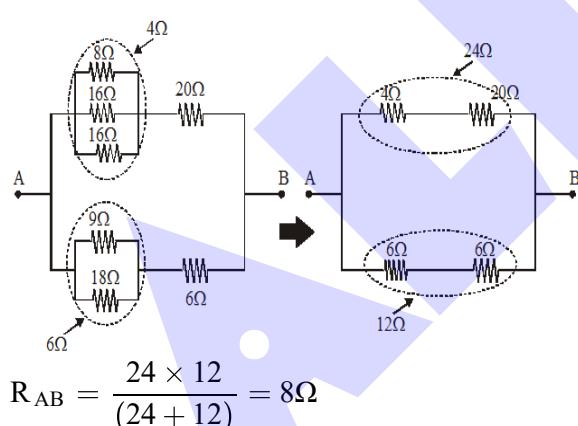
$$\begin{aligned} S_1 : S_2 : S_3 : S_4 \\ = 1 : 3 : 5 : 7 \end{aligned}$$

8. Ans (1)

Power of combination

$$\begin{aligned} P_{eq} &= P_1 + P_2 \\ &= \frac{100}{40} + \frac{100}{-25} \\ &= 2.5 - 4 \\ &= -1.5 \text{ D} \end{aligned}$$

9. Ans (2)



$$R_{AB} = \frac{24 \times 12}{(24 + 12)} = 8\Omega$$

10. Ans (1)

Due to high viscosity lubricant can move in stream line at high speed as its critical speed becomes high.

11. Ans (1)

$$E \propto \frac{z^2}{n^2}$$

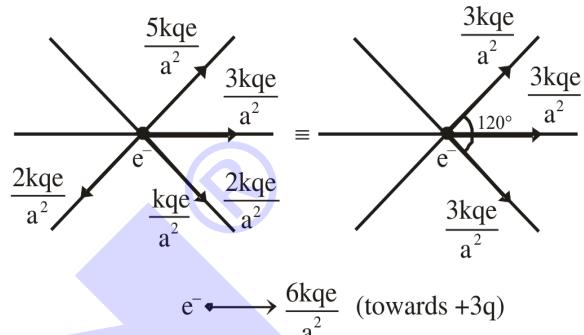
12. Ans (3)

We know that at mean position ( $x = 0$ ) KE will be maximum and TE is always  $\frac{1}{2} \frac{1}{2} \frac{1}{2} kA^2$ .

13. Ans (3)

Action reaction forces are applied by different objects on each other.

14. Ans (3)



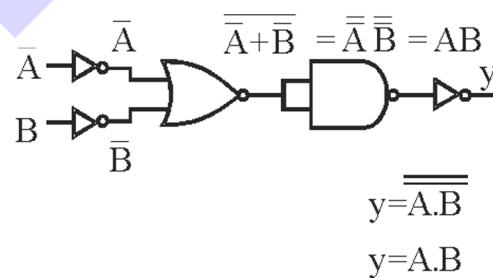
15. Ans (1)

$$\frac{1}{2} mv^2 - \frac{1}{2} \frac{mv^2}{4} = \frac{1}{2} kx^2$$

$$\frac{3}{4} mv^2 = kx^2$$

$$\frac{3}{4} \frac{mv^2}{x^2} = k$$

16. Ans (3)



AND Gate

17. Ans (1)

For a good conductor, the graph between voltage and current does not obey exactly ohm's law, it shows some deviation from straight line.

18. Ans (3)

Orange → 3, yellow → 4, green → 5

19. Ans (3)

$$\text{Magnetic potential energy} = \frac{1}{2} LI^2$$

$$\Rightarrow 25 = \frac{1}{2} L(5)^2 \Rightarrow L = 2 \text{ H}$$

20. **Ans (1)**

$$[V - b] = L^3 \Rightarrow [b] = [V] = L^3$$

22. **Ans (1)**

$\lambda_r > \lambda_y > \lambda_g$ . Here threshold wavelength  $> \lambda_y$ .

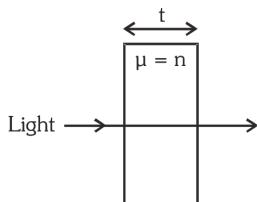
23. **Ans (2)**

$$LC = \frac{\text{Pitch}}{\text{No. of division}}$$

$$5 \times 10^{-6} = \frac{10^{-3}}{N}$$

$$N = 200$$

24. **Ans (3)**



$$\mu = \frac{c}{v_m} \Rightarrow v_m = \frac{c}{\mu} \quad \dots(1)$$

$$\because \frac{\text{displacement}}{\text{time}} = \frac{t}{\text{time}} = v_m \quad \dots(2)$$

$$(1) = (2)$$

$$\frac{c}{n} = \frac{t}{\text{time}} \Rightarrow \text{time} = \frac{nt}{c}$$

26. **Ans (2)**

$PV^x = \text{constant}$  (Polytropic process)

Heat capacity in polytropic process is given by

$$\left[ C = C_V + \frac{R}{1-x} \right]$$

Given that  $PV^3 = \text{constant}$

$$\Rightarrow x = 3 \quad \dots(1)$$

$$\text{also gas is monoatomic so } C_V = \frac{3}{2}R \quad \dots(2)$$

by formula

$$C = \frac{3}{2}R + \frac{R}{1-3} = \frac{3}{2}R - \frac{R}{2} = R$$

27. **Ans (2)**

$$(I) A_1 V_1 = A_2 V_2$$

$$(10)(V_1) = (20)(2)$$

$$V_1 = 4 \text{ m/s}$$

$$(II) P_1 + \frac{1}{2}\rho V_1^2 = P_2 + \frac{1}{2}\rho V_2^2$$

$$P_1 + \frac{1}{2}(600)(4)^2 = 6000 + \frac{1}{2}(600)(2)^2$$

$$P_1 = 2400 \text{ Pa}$$

28. **Ans (4)**

Here the activity of the radioactive sample reduces to half in 140 days. Therefore, the half life of the sample is 140 days. 280 days is its two half lives. So before two half lives its activity was  $(2^2 \times \text{present activity})$ .

$$\therefore \text{Initial activity} = 2^2 \times 6000 = 24000 \text{ dps.}$$

29. **Ans (2)**

$$K_1 + K_2 = 2400 \Rightarrow P_1 = P_2$$

$$\therefore \sqrt{2K_1 m_2} = \sqrt{2K_2 m_2}$$

$$\text{or } \frac{K_1}{K_2} = \frac{m_2}{m_1} = \frac{3}{1}$$

Solving these two equations we get  $K_1 =$   
Kinetic energy of smaller part = 1800 :-

30. **Ans (3)**

Potential at  $r < R$  is same as that on surface.

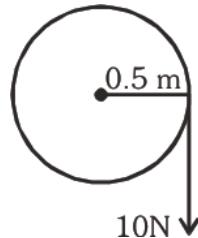
32. **Ans (2)**

$$\frac{2}{5}m_1 R^2 = \frac{1}{2}m_2 R^2$$

$$\frac{m_1}{m_2} = \frac{5}{4}$$

33. **Ans (2)**

So, torque =  $10 \times 0.5 = 5 \text{ N-m}$



34. **Ans (4)**

If we assume the earth as a sphere of uniform density, then it can be treated as point mass placed at its centre. In this case acceleration due to gravity  $g = 0$ , at the centre. It is not so, if the earth is considered as a sphere of non-uniform density, in that case value of  $g$  will be different at different points and cannot be zero at any point.

**SECTION-B**

**36. Ans (4)**

$$\text{Active fraction at instant } t_2, \frac{1}{2^{t_2/T_{1/2}}} = \frac{1}{3}$$

$$\text{Active fraction at instant } t_1, \frac{1}{2^{t_1/T_{1/2}}} = \frac{2}{3}$$

$$\Rightarrow \frac{2^{t_2/T_{1/2}}}{2^{t_1/T_{1/2}}} = 2 \Rightarrow 2^{\frac{t_2-t_1}{T_{1/2}}} = 2^1$$

$$\Rightarrow t_2 - t_1 = T_{1/2} = 50 \text{ days}$$

**37. Ans (4)**

$$\frac{8 \times 4}{12} = \frac{8}{3} \quad \frac{8}{3} \parallel 4 \Rightarrow \frac{8+12}{3}$$

$$12 \leftrightarrow \frac{20}{3} \leftrightarrow 16 = \frac{240}{71}$$

**38. Ans (4)**

$$B_x = \frac{\mu_0 N I R^2}{2(r^2 + R^2)^{3/2}}$$

If  $r \gg R$  then  $\frac{R^2}{r^2} \ll 1$  (negligible)

$$B_x \simeq \frac{\mu_0 N I R^2}{2(r^2)^{3/2}} \simeq \frac{\mu_0 N I R^2}{2r^3} \Rightarrow B_x \propto \frac{1}{r^3}$$

**39. Ans (1)**

First diode is in reverse biasing it acts on open circuit hence no current flows.

**40. Ans (1)**

Suppose distance of closest approach is  $r$ , and according to energy conservation applied for elementary charge.

Energy at the time of projection = Energy at the distance of closest approach

$$= \frac{1}{2} m v^2 = \frac{1}{4\pi\epsilon_0} \cdot \frac{(Ze) \cdot e}{r} \Rightarrow r = \frac{Ze^2}{2\pi\epsilon_0 m v^2}$$

**41. Ans (1)**

Object is at rest so  $x$  does not change.

**42. Ans (2)**

$$\frac{V_{rms_2}}{V_{rms_1}} = \sqrt{\frac{480}{120}} \Rightarrow V_{rms_2} = 2(V_{rms_1})$$

**43. Ans (2)**

On liquid force due to surface tension =  $(2\pi R)$

$$T \cos \theta_C$$

In equilibrium : force due to S.T = weight of rise liquid

$$(2\pi R) T \cos \theta_C = W$$

$$\frac{W_2}{W_1} = \frac{4\pi(2R)^2 T}{4\pi R^2 T} = 4 \quad \therefore W_2 = 4W_1 = 4W$$

**45. Ans (4)**

$$V = f\lambda \Rightarrow 3 \times 10^8 = 9 \times 10^{14} \lambda$$

$$\Rightarrow \lambda = \frac{1}{3} \times 10^{-6} \text{ Hz}$$

$$\beta = \frac{\lambda D}{d} \Rightarrow 1 \times 10^{-3} = \frac{1}{3} \times 10^{-6} \times \frac{2}{d}$$

$$\Rightarrow d = \frac{2}{3} \times 10^{-3} \text{ m}$$

**46. Ans (2)**

$$P = V_{rms} I_{rms} \cos \phi$$

$$\cos \phi = \cos \frac{\pi}{3} = \frac{1}{2}$$

$$= \frac{100}{\sqrt{2}} \times \frac{100}{\sqrt{2}} \times 10^{-3} \times \frac{1}{2} = 2.5 \text{ W}$$

**47. Ans (3)**

$$\frac{x}{6} = \frac{40}{60} \Rightarrow x = 4\Omega$$

$$I = \frac{V}{R_{eq}} = \frac{5}{5} = 1 \text{ amp.}$$

**49. Ans (1)**

$$\begin{aligned} \text{For } x = 5, y &= 4 \sin \left( \frac{5\pi}{15} \right) \cos(96\pi t) \\ &= 2\sqrt{3} \cos(96\pi t) \end{aligned}$$

So,  $y$  will be maximum when  $\cos(96\pi t) = \max$

$$= 1$$

$$y_{\max} = 2\sqrt{3} \text{ cm at } x = 5$$

**50. Ans (4)**

$$T = 2\pi\sqrt{\ell/g} \Rightarrow g \propto \ell T^{-2}$$

$$\Rightarrow \frac{\Delta g}{g} = \frac{\Delta \ell}{\ell} + 2 \frac{\Delta T}{T}$$

$$= 1 + 2(2) = 5\%$$

**SUBJECT : CHEMISTRY**

**SECTION-A**

**51. Ans ( 2 )**

- NH<sub>3</sub> → e<sup>-</sup> rich hydride
- B<sub>2</sub>H<sub>6</sub> → e<sup>-</sup> deficient hydride
- NaH → Saline hydride
- SiH<sub>4</sub> → e<sup>-</sup> precise hydride

**52. Ans ( 2 )**

- NH<sub>3</sub> ⇒ Intermolecular H-bond.

**53. Ans ( 3 )**

- 108 ⇒ Unniloctium

**54. Ans ( 1 )**

- Red P ⇒ exist in polymeric form
- ⇒ Very less reactive so does not glow in dark
- ⇒ Insoluble in both CS<sub>2</sub> and H<sub>2</sub>O
- White P ⇒ exist in discrete P<sub>4</sub> unit
- ⇒ More reactive and glows in dark
- ⇒ Soluble in CS<sub>2</sub> but insoluble in water

**55. Ans ( 3 )**

- BeH<sub>2</sub>(s), Be<sub>2</sub>H<sub>4</sub>, B<sub>2</sub>H<sub>6</sub> ⇒ 3C – 2e bond present
- BeCl<sub>2</sub>(s) ⇒ 3C – 4e bond present

**56. Ans ( 3 )**

- B<sub>2</sub> BO = 1      B.....π.....B
- H<sub>2</sub><sup>+</sup>, total e<sup>-</sup> = 1 ⇒ B.O = 0.5
- N<sub>2</sub><sup>-2</sup> ⇒ 16 e<sup>-</sup> ⇒ unpaired e<sup>-</sup> = 2 ⇒ paramagnetic
- Be<sub>2</sub> ⇒ total e = 8, BO = 0 ⇒ so does not exist

**57. Ans ( 2 )**

- Statement is incorrect as oxo salt of alkali metals such carbonates, sulphates etc are highly stable.

**58. Ans ( 2 )**

- Yb (Z = 70) → 4f<sup>14</sup> 5d<sup>0</sup> 6s<sup>2</sup>
- Gd ⇒ (Z = 64) 4f<sup>7</sup> 5d<sup>1</sup> 6s<sup>2</sup>
- Pm ⇒ (Z = 61) 4f<sup>5</sup> 5d<sup>0</sup> 6s<sup>2</sup>
- Pa ⇒ (Z = 91) 5f<sup>2</sup> 6d<sup>1</sup> 7s<sup>2</sup>

**59. Ans ( 3 )**

- Mg ⇒ used flash powder and bulbs
- Ca ⇒ removing air from vacuum tubes
- Be ⇒ Used in manufacture of alloys
- Ra ⇒ treatment of cancer

**60. Ans ( 3 )**

$$\Delta_0 \propto \frac{1}{\lambda_{\text{abs}}}$$

As CN<sup>-</sup> > NH<sub>3</sub> > H<sub>2</sub>O ( $\Delta_0$ )

Therefore CN<sup>-</sup> < NH<sub>3</sub> < H<sub>2</sub>O ( $\lambda_{\text{absorbed}}$ )

**62. Ans ( 3 )**

$$M = \frac{n_{\text{solute}}}{\text{Volume of solution (ml)}} \times 1000$$

$$2 = \frac{1}{V_{(\text{ml})}} \times 1000 \Rightarrow [V = 500 \text{ ml}]$$

**63. Ans ( 3 )**



$$E^\circ_{\text{Cell}} = E^\circ_{D|D^{+3}} - E^\circ_{A|A^{+2}} = -2 - (0.28) \\ = -2.28 \text{ V}$$

Reaction doesn't proceed

**64. Ans ( 3 )**

Volume remains constant.

**65. Ans ( 3 )**

$$\text{Moles of MgCO}_3 \text{ req.} = \frac{n_{\text{HCl}}}{2} = \frac{1M \times 0.1L}{2} \\ = 0.05 \text{ mol}$$

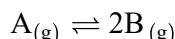
$$w_{\text{MgCO}_3} (\text{pure}) = 0.05 \times 84 \text{ g} = 4.2 \text{ g}$$

$$\% \text{ purity} = \frac{4.2 \text{ g}}{6 \text{ g}} \times 100 = 70\%$$

**66. Ans ( 4 )**

$$\log K = \log A - \left( \frac{E_a}{2.303R} \right) \frac{1}{T}$$

**68. Ans ( 2 )**



$$1-x \quad 2x$$

$$\text{Total moles of equilibrium} = 1+x$$

$$K_p = \frac{\left( \frac{2x}{1+x} P \right)^2}{\left( \frac{1-x}{1+x} P \right)} = 0.25 \Rightarrow \boxed{x = \frac{1}{3}}$$

$$\text{So \% dissociation} = 33.33\%$$

69. **Ans (2)**

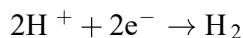
at constant pressure

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

$$\frac{1000}{500} = \frac{V_2}{300} \Rightarrow V_2 = 600\text{ml}$$

70. **Ans (3)**

Reduction potential of Hydrogen



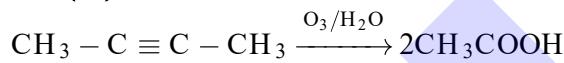
$$\begin{aligned} E_{RP} &= E_{RP}^\circ - \frac{0.059}{2} \log \frac{1}{[\text{H}^+]^2} \\ &= 0 - \frac{0.059}{2} \log \frac{1}{10^{-2}} = -0.059\text{V} \end{aligned}$$

71. **Ans (4)**

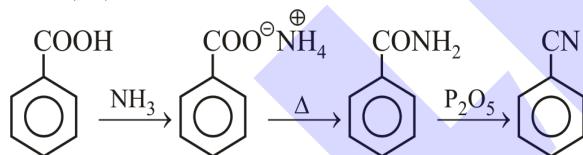
$$\begin{aligned} r_H &= 0.529 \times \frac{n^2}{Z} \text{\AA} \\ &= 0.529 \times \frac{1^2}{1} = 0.529 \text{\AA} = 2r \end{aligned}$$

$$r_{\text{Li}^{+2}} = 0.529 \times \frac{1^2}{3} \text{\AA} = \frac{0.529}{3} \text{\AA} = \frac{2r}{3}$$

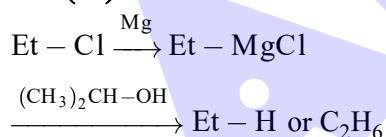
78. **Ans (1)**



79. **Ans (3)**



80. **Ans (3)**



### SECTION-B

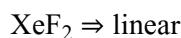
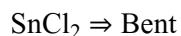
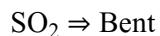
86. **Ans (4)**

[Co(NH<sub>3</sub>)<sub>6</sub>] [Co(ONO)<sub>6</sub>]  
Hexaammine cobalt (III) hexanitrito-O cobaltate (III)

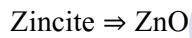
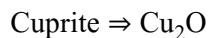
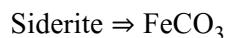
87. **Ans (4)**

F<sub>2</sub> has lower bond dissociation energy due to larger *lp* – *lp* repulsion due to small size of fluorine

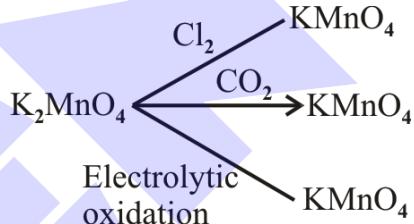
88. **Ans (3)**



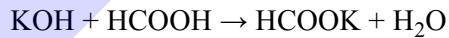
89. **Ans (2)**



90. **Ans (4)**



93. **Ans (2)**

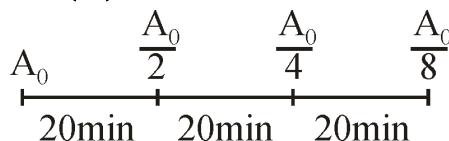


$$[\text{HCOOK}] = \frac{0.01 \text{ mol}}{1\text{L}} = 0.01 \text{ M}$$

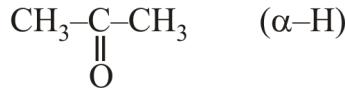
HCOOK → salt of wA & SB

$$\text{pH} = \frac{1}{2} (\text{p}K_w + \text{p}K_a + \log C)$$

95. **Ans (1)**



96. **Ans (4)**



97. **Ans (4)**

Addition polymer

99. **Ans (3)**

Oxymercuration reaction

**SUBJECT : BOTANY**

**SECTION-A**

107. **Ans ( 2 )**  
NCERT XII Pg.#102
108. **Ans ( 1 )**  
NCERT XII Pg.#115
109. **Ans ( 4 )**  
NCERT XII Pg.#118
116. **Ans ( 2 )**  
NCERT XI<sup>th</sup> Pg.#247
117. **Ans ( 3 )**  
NCERT XI<sup>th</sup> Pg.#252
118. **Ans ( 1 )**  
NCERT XI<sup>th</sup> Pg.#243
121. **Ans ( 4 )**  
NCERT-XI<sup>th</sup> Pg # 216, 220
124. **Ans ( 1 )**  
NCERT XI Pg. # 19
126. **Ans ( 2 )**  
NCERT XI Pg.#35
127. **Ans ( 2 )**  
NCERT XI Pg.#67,68,69,70
128. **Ans ( 2 )**  
NCERT XI Pg.#72
129. **Ans ( 3 )**  
NCERT XI Pg.#73,74,75
133. **Ans ( 4 )**  
NCERT XI Pg # 24 (E); 25(H)

**135. Ans ( 2 )**

NCERT XI Pg. No # 6

**SECTION-B**

138. **Ans ( 4 )**  
NCERT XII Pg.# 99
139. **Ans ( 4 )**  
NCERT XI, Pg. # 216, 220
145. **Ans ( 2 )**  
NCERT XII Pg.#26,27
150. **Ans ( 4 )**  
NCERT XII Pg. No # 30-31

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**SECTION-A**

151. **Ans ( 4 )**  
NCERT Pg. No.288
152. **Ans ( 2 )**  
NCERT Pg. No.275
153. **Ans ( 3 )**  
NCERT Pg. No.275
171. **Ans ( 3 )**  
NCERT Pg.#105
172. **Ans ( 2 )**  
NCERT Pg.#107
173. **Ans ( 3 )**  
NCERT Pg.#97

**SECTION-B**

186. **Ans ( 2 )**  
NCERT Pg. No.303, 304, 305