GSV TEST SERIES

COMBINED OBJECTIVE TEST (COT)

TARGET NEET (UG) - 2027

Test Booklet Code	Test Pattern
05	NEET (UG)
ENGLISH	01-11-2026

SOLUTION

The next test will be conducted on

15/11/2026 (Sunday)

Syllabus

Physics : Newton's Laws of Motion and its applications, Friction, Work, Energy and Power and related cases.

Chemistry : Some Basic Principles and Techniques (Purification of Organic Compounds, Qualitative Analysis, Quantitative estimation, Chemical Bonding and Molecular Structure, Coordination Compounds

Biology : Molecular Basis of Inheritance, Evolution

FOR REGISTRATION
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COMBINED OBJECTIVE TEST (COT)-04

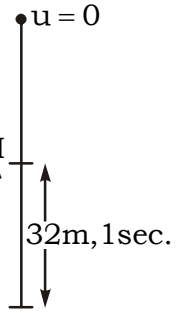
ANSWER KEY

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

PHYSICS

1. (2)

$$h_T = u + \frac{1}{2}g(2T-1)$$
$$32 = 0 + \frac{1}{2}10(2T-1)$$
$$32 = 10T - 5$$
$$10T = 37 \Rightarrow T = 3.7$$
$$H = \frac{1}{2}gT^2 = \frac{1}{2}\times 10\times(3.7)^2$$
$$= 68.45\text{m}$$



2. (2)

$$X = \frac{A\bullet B}{C} = \frac{0.0076\times 485\times 10^{-6}}{6.2\times 10^4}$$
$$X = \frac{7.6\times 10^{-3}\times 4.85\times 10^{-4}}{6.2\times 10^4}$$
After rounding off we get,
$$X = \frac{8\times 10^{-3}\times 5\times 10^{-4}}{6\times 10^4}$$
$$X = \frac{40}{6}\times 10^{-11} \text{ As } \frac{40}{6} > 5 \text{ so}$$
$$\text{Order} = 10\times 10^{-11} = 10^{-10}$$
Order of magnitude = -10

3. (1)

$$v = k\sqrt{x}$$
$$v^2 = k^2 x$$
$$2v\frac{dv}{dx} = k^2 \Rightarrow v\frac{dv}{dx} = \frac{k^2}{2}$$
$$\Rightarrow a = \frac{k^2}{2}$$

4. (1)

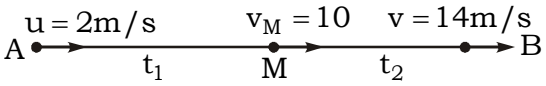
$$\vec{r} = \vec{a} + \vec{b} + \vec{c}$$
$$\vec{r} = 4\hat{i} - \hat{j} - 3\hat{i} + 2\hat{j} - \hat{k} = \hat{i} + \hat{j} - \hat{k}$$
$$\vec{r} = \frac{\vec{r}}{|\vec{r}|} = \frac{\hat{i} + \hat{j} - \hat{k}}{\sqrt{3}}$$

5. (3)

$$\text{With x} - \text{axis } \tan\alpha = \frac{\sqrt{1^2 + \left(\sqrt{2}\right)^2}}{1}$$
$$= \sqrt{3} \Rightarrow \alpha = 60^\circ$$
$$\text{With y} - \text{axis } \tan\beta = \frac{\sqrt{1^2 + \left(\sqrt{2}\right)^2}}{1}$$
$$= \sqrt{3} \Rightarrow \beta = 60^\circ$$
$$\text{With z} - \text{axis } \tan\gamma = \frac{\sqrt{1^2 + 1^2}}{\sqrt{2}}$$
$$= \frac{\sqrt{2}}{\sqrt{2}} = 1 \Rightarrow \gamma = 45^\circ$$

6. (3)

7. (3)

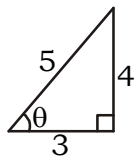


$$v_M = \sqrt{\frac{u^2 + v^2}{2}} = \sqrt{\frac{4 + 196}{2}} = 10$$
$$s_{AM} = s_{MB} \left\{ s = \left(\frac{u+v}{2}\right)t \right.$$
$$\left(\frac{2+10}{2}\right)t_1 = \left(\frac{10+14}{2}\right)t_2$$
$$6t_1 = 12t_2$$
$$\frac{t_2}{t_1} = \frac{6}{12} = \frac{1}{2}$$

8. (4)

9. (2)

$$v = u + gt = 0 + 10\times 4 = 40\text{m/s}$$
Acc. to Prob.
$$u\sin\theta = v$$
$$u\sin\theta = 40.....(1)$$
$$u\frac{4}{5} = 40 \Rightarrow u = 50\text{m/s}$$



$$R = \frac{u^2\sin 2\theta}{g} = \frac{(50)^2\, 2\sin\theta\cos\theta}{10}$$
$$= \frac{2500}{10}\times 2\times\frac{4}{5}\times\frac{3}{5} = 240\text{m}$$

10. (1)

$$g = \frac{4\pi^2 L}{T^2} = 4\pi^2 LT^{-2}$$
$$\frac{dg}{g}\times 100 = \frac{dL}{L}\times 100 + 2\frac{dT}{T}\times 100$$
$$= \pm 1.5 + 2(\pm 3)$$
$$= \pm 7.5\%$$

11. (4)

$$F = A\cos Bx + C\sin Dt$$
$$[A] = [F] = \left[MLT^{-2}\right]$$
$$[Dt] = M^\circ L^\circ T^\circ = 1 \Rightarrow [D] = \left[T^{-1}\right]$$
$$[Bx] = M^\circ L^\circ T^\circ = 1 \Rightarrow [B] = \left[L^{-1}\right]$$
$$\left[\frac{AD}{B}\right] = \left[\frac{MLT^{-2}T^{-1}}{L^{-1}}\right] = \left[ML^2T^{-3}\right]$$

12. (3)

Let slope of given graph is – m i.e. $\frac{dv}{dx} = -m$

(By $y = mx + C$)

$v = -mx + v_0$

$a = v\frac{dv}{dx} = (-mx + v_0)(-m)$

$a = m^2x - mv_0$

$a = \underbrace{m^2}_{\text{Slope +ve}}\ x + \underbrace{(-mv_0)}_{\text{Intercept -ve}}$

13. (2)

$\text{Area} = |\vec{A} \times \vec{B}|$

$$\vec{A} \times \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & 2 & 3 \\ 3 & -2 & 1 \end{vmatrix}$$

$= (2+6)\hat{i} - (1-9)\hat{j} + (-2-6)\hat{k}$

$= 8\hat{i} + 8\hat{j} - 8\hat{k}$

$\text{Area} = |\vec{A} \times \vec{B}| = \sqrt{8^2 + 8^2 + (-8)^2} = 8\sqrt{3}$

14. (2)

Given speed $u = 50\,m/s$ in a direction

$\vec{a} = 7\hat{i} - 24\hat{j}$

$\therefore \vec{u} = u\hat{a} = 50\frac{(7\hat{i} - 24\hat{j})}{\sqrt{7^2 + (24)^2}} = \frac{50(7\hat{i} - 24\hat{j})}{\sqrt{49 + 576}}$

$\vec{u} = \frac{50}{\sqrt{625}}(7\hat{i} - 24\hat{j}) = 14\hat{i} - 48\hat{j}$

Displacement

$\vec{s} = \vec{u}t = (14\hat{i} - 48\hat{j})3 = 42\hat{i} - 144\hat{j}$

$\vec{s} = \vec{r}_f - \vec{r}_i \Rightarrow \vec{r}_f = \vec{s} + \vec{r}_i = 42\hat{i} - 144\hat{j} + 3\hat{i} - 7\hat{j}$

$\vec{r}_r = 45\hat{i} - 151\hat{j}$

15. (2)

$s = ut + \frac{1}{2}at^2$

$s = 0 + \frac{1}{2}g\sin 30°t^2$

$t = \sqrt{\frac{2s}{g\sin 30°}} = \sqrt{\frac{2 \times 9.8}{9.8 \times \frac{1}{2}}} = 2\,sec$

16. (1)

0 to 5s, $x = ut = 10 \times 5 = 50m$

5 to 10s, $x = \left(\frac{u+v}{2}\right)t = \left(\frac{10+0}{2}\right) \times 5$

$x = 25$

$\therefore$ 0 to 10 sec $x = 50 + 25 = 75$

17. (2)

$d = \frac{m}{V} = \frac{m}{\pi r^2 l}$

$d = \frac{2.42}{\pi\left(4.0 \times 10^{-2}\right)^2 \times \left(10.0 \times 10^{-2}\right)}$

According to rules of significant figures

Answer must contain 2 S.F. $\Rightarrow$ (2)

18. (4)

$\vec{a} \cdot \vec{b} = 0 \Rightarrow \vec{a} \perp^r \vec{b}$

$\vec{a} \cdot \vec{c} = 0 \Rightarrow \vec{a} \perp^r \vec{c}$

$\vec{b} \times \vec{c}$ will be $\perp^r$ to $\vec{b}$ & $\vec{c}$

so will be $\parallel$ to $\vec{a}$

19. (2)

$\vec{s} = \vec{r}_f - \vec{r}_i = 5\hat{i} + 4\hat{j} + 5\hat{k}$

$\vec{F} = 3\hat{i} + 2\hat{j} + 4\hat{k}$

$W = \vec{F} \cdot \vec{s} = 15 + 8 + 20 = 43J$

20. (4)

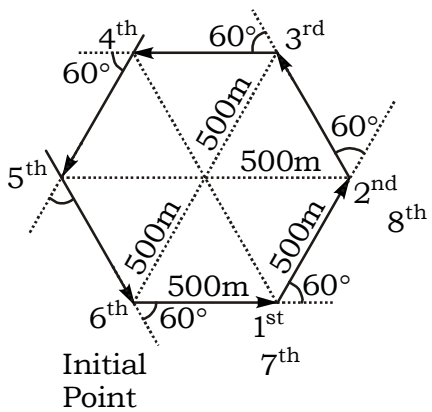
$\vec{\tau} = \vec{r} \times \vec{F}$

$$= \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 1 & -1 & 1 \\ 7 & 3 & -5 \end{vmatrix}$$

$= (5-3)\hat{i} - (-5-7)\hat{j} + (3+7)\hat{k}$

$= 2\hat{i} + 12\hat{j} + 10\hat{k}$

21. (2)



At 3rd turn Displacement = 1000m

At 6th turn Displacement = 0

At 8th turn Displacement

$= \sqrt{500^2 + 500^2 + 2 \times 500 \times 500\cos 60°}$

$= 500\sqrt{3}m$

22. (4)

At $t = T$, $y = 0$

$KT(1-\alpha T) = 0$

$1-\alpha T = 0 \Rightarrow T = \dfrac{1}{\alpha}$

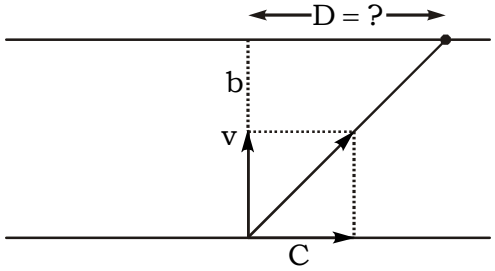
$\therefore t_{up} = \dfrac{T}{2} = \dfrac{T}{2\alpha}$

Now $y = Kt(1-\alpha t)$

If $t = t_{up}$ then $y = y_{max}$

$y_{max} = K\dfrac{1}{2\alpha}\left[1-\alpha\dfrac{1}{2\alpha}\right] = \dfrac{K}{4\alpha}$

23. (3)



$b = 1Km$, $C = 3Km/hr$ $v = 4km/hr$

$t = \dfrac{b}{v} = \dfrac{1}{4}hr$

$D = C \times t$

$= 3 \times \dfrac{1}{4} = \dfrac{3}{4}Km$

24. (3)

$x = 7t + 4t^2$ $\qquad$ $y = 5t$

$v_x = \dfrac{dx}{dt} = 7 + 8t$ $\qquad$ $v_y = 5$

$a_x = 0 + 8 = 8$ $\qquad$ $a_y = 0$

$a = \sqrt{a_x^2 + a_y^2} = \sqrt{8^2 + 0} = 8$

25. (2)

$x = t^3 - 6t^2 + 9t + 5$

$v = \dfrac{dx}{dt} = 3t^2 - 12t + 9$

Put $v = 0 \Rightarrow 3t^2 - 12t + 9 = 0$

1×3

$1t^2 - 4t + 3 = 0$

$-3, -1$

$t = 3 \,\&\, 1 \Rightarrow A - II$

Now $v = -3$

$3t^2 - 12t + 9 = -3$

2×2

$1t^2 - 4t + 4 = 0$

$-2, -2$

$t = 2s \Rightarrow B - I$

$v = 3t^2 - 12t + 9$

$a = \dfrac{dv}{dt} = 6t - 12 = 0 \Rightarrow t = 2 \Rightarrow C - I$

at $t = 2$, $x = 2^3 - 6(2)^2 + (9\times2) + 5$

$= 8 - 24 + 18 + 5$

$= 7m \Rightarrow D - IV$

26. (1)

$R = \dfrac{u^2 \sin 2\theta}{g}$

$R \propto \sin 2\theta \Rightarrow \dfrac{R_2}{R_1} = \dfrac{\sin 2(45°)}{\sin 2(15°)}$

$\dfrac{R_2}{50} = \dfrac{\sin 90°}{\sin 30°} = \dfrac{1}{1/2} = 2 \Rightarrow R_2 = 100m$

27. (1)

28. (3)

$L.C. = \dfrac{P}{n} = \dfrac{0.5}{50} = 0.01mm$

Observed Reading

$= M + (C \times L.C.)$

$= 2.5 + (45 \times 0.01) = 2.95mm$

Correct Reading

= Observed Reading – Zero error

$= 2.95 - (-0.03) = 2.98mm$

29. (2)

$\overrightarrow{OA}$ & $\overrightarrow{OD}$ will cancle each other and $\overrightarrow{OB}$ & $\overrightarrow{OE}$ will cancle each other so magnitude of resultant will be equal to

$= \left|\overrightarrow{OC}\right| = R$

30. (3)

31. (2)

$a = -kv \Rightarrow \dfrac{dv}{dt} = -kv$

$\int_{v_0}^{v_0/2} \dfrac{1}{v} dv = -k\int_0^t dt$

$[\log_e v]_{v_0}^{v_0/2} = -kt$

$\log_e \dfrac{v_0}{2} - \log_e v_0 = -kt$

$\log_e \left(\dfrac{v_0/2}{v_0}\right) = -kt \Rightarrow \log_e 2^{-1} = -kt$

$-\ln 2 = -kt \Rightarrow t = \dfrac{\ln 2}{k}$

32. (3)

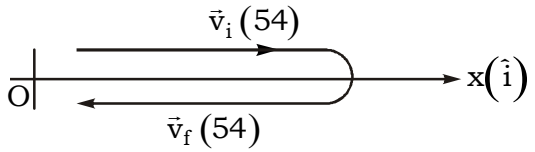
According to problem,

$\vec{R}_1 = \vec{A} + \vec{B} \Rightarrow R_1^2 = A^2 + B^2 + 2AB\cos\theta$

$\vec{R}_2 = \vec{A} - \vec{B} \Rightarrow R_2^2 = A^2 + B^2 - 2AB\cos\theta$

$\overline{R_1^2 + R_2^2 = 2A^2 + 2B^2 = 2\left(A^2 + B^2\right)}$

33. (2)



$$\vec{a} = \frac{\vec{v}_f - \vec{v}_i}{\Delta t} = \frac{\left[54\left(-\hat{i}\right) - 54\left(\hat{i}\right)\right]}{10} \times \frac{5}{18}$$

$$= -\frac{108}{10} \times \frac{5}{18}\hat{i} = -\frac{6\times 5}{10}\hat{i}$$

$\vec{a} = -3\hat{i} \Rightarrow |\vec{a}| = 3\text{m/s}^2$

34. (2)

$\because$ m divisions $\Rightarrow$ 1cm

$\therefore$ 1 division $\Rightarrow \frac{1}{m}\text{cm} = x$

$$\text{L.C.} = \frac{d\bullet x}{n} = \frac{2\left(\frac{1}{m}\right)}{n} = \frac{2}{mn}\text{cm}$$

35. (4)

Velocity of ball w.r.t Elevator

$v_{BE} = v_B - v_E$

$30 = v_B - 10$

$v_B = 40\text{m/s}$

$\therefore$ For Ball $h_{max} = \frac{v_B^2}{2g}$

$$h_{max} = \frac{40\times 40}{2\times 10} = 80\text{m}$$

$\therefore$ Max. height attained by the ball from ground $= 40 + 80 = 120\text{m}$

36. (3)

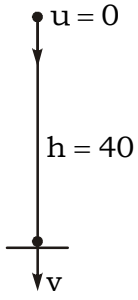
$$v_{av} = \frac{u+v}{2}$$

$$v_{av} = \frac{0+\sqrt{2gh}}{2}$$

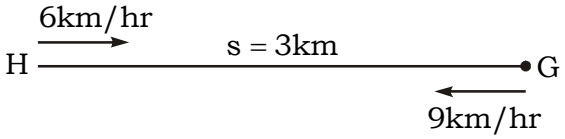
$$= \frac{\sqrt{2\times 10\times 40}}{2}$$

$$= \frac{20\sqrt{2}}{2} = 10\times 1.414$$

$v_{av} = 14.14\text{m/s}$



37. (3)



From H to G $t = \frac{3\text{km}}{6\text{km/hr}} = 0.5\text{hr} = 30\,\text{min}$

Distance travellel in 5 min from G while returning $= 9\times\frac{5}{60} = \frac{3}{4}\text{km}$

$$\therefore v_{av} = \frac{\text{Distance}}{\text{time}} = \frac{\left(3+\frac{3}{4}\right)\text{km}}{\left(\frac{35}{60}\right)\text{hr}}$$

$$= \frac{15}{4}\times\frac{60}{35} = \frac{45}{7}\text{km/hr}$$

38. (4)

$R = \sqrt{3^2 + 2^2 + 2\times 3\times 2\cos\theta}$

$R = \sqrt{9 + 4 + 12\cos\theta}$

$R^2 = 13 + 12\cos\theta \ldots\ldots\ldots(1)$

$2R = \sqrt{6^2 + 2^2 + 2\times 6\times 2\cos\theta}$

$2R = \sqrt{36 + 4 + 24\cos\theta}$

$4R^2 = 40 + 24\cos\theta \ldots\ldots\ldots(2)$

Put value of R^2

$52 + 48\cos\theta = 40 + 24\cos\theta$

$24\cos\theta = -12$

$\cos\theta = -\frac{1}{2} \Rightarrow \theta = 120°$

39. (1)

Velocity of Police w.r.t Thief

$v_{PT} = 10 - 9 = 1$

$\therefore t = \frac{s}{v_{PT}} = \frac{100}{1} = 100\text{s}$

40. (2)

0 to 2s $A_1 = \frac{1}{2}(40+20)\times 2 = 60$

2 to 4s $A_2 = \frac{1}{2}(1+2)\times 20 = 30$

4 to 5s $A_3 = \frac{1}{2}\times 1\times 40 = 20$

Distance $= A_1 + A_2 + A_3$

$= 60 + 30 + 20 = 110$

Displacement $= A_1 + A_2 - A_3$

$= 60 + 30 - 20 = 70$

41. (3)

$$\frac{H_A}{H_B}=\frac{\frac{u^2\sin^2\theta_A}{2g}}{\frac{u^2\sin^2\theta_B}{2g}}=\frac{\sin^2\theta_A}{\sin^2\theta_B}$$

$$\frac{\sin^2\theta_A}{\sin^2\theta_B}=\frac{3}{1}$$

Now speed of A is doubled, then,

$$\frac{H_A^1}{H_B}=\frac{\frac{(2u)^2\sin^2\theta_A}{2g}}{\frac{u^2\sin^2\theta_B}{2g}}=4\times\frac{3}{1}=\frac{12}{1}$$

42. (1)

$$[\text{Density}]=\left[\frac{\text{Mass}}{\text{Volume}}\right]=\left[\frac{M}{L^3}\times\frac{L}{L}\times\frac{T^{-2}}{T^{-2}}\right]$$

$$=\left[\frac{F}{L^4T^{-2}}\right]=\left[FL^{-4}T^2\right]$$

43. (3)

44. (2)

$$A_{max}=\pi R_{max}^2=\pi\left(\frac{v^2}{g}\right)^2=\frac{\pi v^4}{g^2}$$

45. (4)

$$v=\frac{s}{t}=\frac{20}{5}=4$$

$$v=st^{-1}$$

$$\frac{dv}{v}=\frac{ds}{s}+\frac{dt}{t}\Rightarrow\frac{dv}{4}=\frac{1}{20}+\frac{0.5}{5}$$

$$\frac{dv}{4}=\frac{1+2}{20}=\frac{3}{20}\Rightarrow dv=0.6$$

$$\therefore v=(4\pm0.6)\,ms^{-1}$$

CHEMISTRY

46. (1)

$$4Fe(s) + 3O_2(g) \longrightarrow 2Fe_2O_3(g)$$

* Total mass of iron and oxygen in reactants = total mass of iron and oxygen in product therefore it follows **law of conservation of mass.**

47. (4)

Milliequi. of HCl = $0.2 \times 100 = 20$

Milliequi. of $CaCO_3$

$$\frac{1}{100} \times 2 \times 1000 = 20$$

Both have same milliequi., therefore no reactant will remain unreacted.

48. (1)

$$2[\overset{+1}{Ag}(CN)_2]^{-1} + \overset{0}{Zn} \longrightarrow 2\overset{0}{Ag} + [\overset{+2}{Zn}(CN)_4]^{-2}$$

* It is Redox reaction and Ag is displaced by Zn.

49. (1)

* Molar mass(M_1) = $\frac{\text{Mass}}{\text{Moles}} = \frac{8}{0.1} = 80$ g

$A + 2B = 80$.....(i)

* Molar mass(M_2) = $\frac{\text{Mass}}{\text{Moles}} = \frac{10}{0.05} = 200$ g

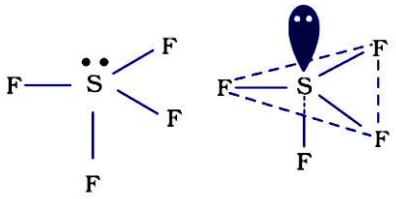
$3A + 2B = 200$.....(ii)

Solving i, ii equation, A = 60, B = 10

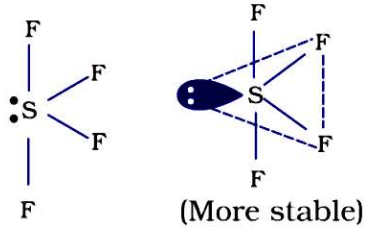
50. (3)

* AB_4E :

* In (a) the lp is present at axial position so there are three lp—bp repulsions at 90°.

(a) 

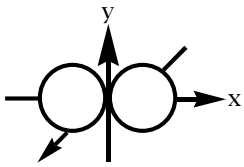
* In(b) the lp is in an equatorial position, and there are two lp—bp repulsions. Hence, arrangement (b) is more stable. The shape shown in (b) is described as a **distorted tetrahedron**, a **folded square** or a **see-saw.**

(b) 

(More stable)

51. (3)

A) The subsidiary quantum number I describes the shape of the orbital occupied by the electron.

B) 

is the boundary surface diagram of the $2p_x$ orbital.

C) The + and – signs in the wave function of the $2p_x$ orbital refer to **sign of wave.**

D) The wave function of $2p_x$ orbital is **zero** everywhere in the **yz plane.**

52. (3)

* Limiting reagent is that reactant which reacts completely in a reaction.

* To find limiting reagent given moles of reactant should be divided by co-efficient of reactant.

$$\text{Limiting reagent} = \frac{\text{Given Moles}}{\text{Co-efficient}}$$

And reactant of less moles will be limiting reagent.

* Number of moles (n) = $\frac{\text{Mass}}{\text{Molar mass}}$

$N_2 + 3H_2 \longrightarrow 2NH_3$

$\frac{56}{28} = 2$ $\quad$ $\frac{10}{2} = 5$

* Limiting reagent is H_2 = 5 mole

53. (2)

$2Ag_2CO_3 \longrightarrow 4Ag(s) + 2CO_2 + O_2$

$$\frac{1}{2} \times \text{moles}(Ag_2CO_3) = \frac{1}{4} \times \text{moles}(Ag)$$

$$\frac{1}{2} \times \frac{2.76}{276} = \frac{1}{4} \times \frac{w_{Ag}}{108}$$

$w_{Ag} = 2.16$ gm

54. (2)

* SF_4 VSEP = 5 = 4 + 1 = sp^3d

(A) BrF_4^- VSEP = 6 = 4 + 2 = sp^3d^2

(B) CH_4 VSEP = 4 = 4 + 0 = sp^3

(C) IF_4^+ VSEP = 5 = 4 + 1 = sp^3d

(D) XeF_4 VSEP = 6 = 4 + 2 = sp^3d^2

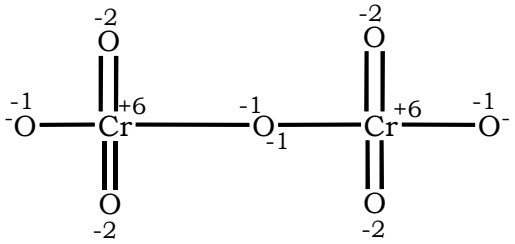
(E) XeO_2F_2 VSEP = 5 = 4 + 1 = sp^3d

55. (2)

$5H_2O_2 + XClO_2 + 2OH^- \longrightarrow XCl^- + YO_2 + 6H_2O$

X = 2, Y = 5

56. (1)



57. (3)

* n = 2, l = 1 ⟶ 2p

* n = 4, l = 0 ⟶ 4s

* n = 5, l = 3 ⟶ 5f

* n = 3, l = 2 ⟶ 3d

58. (4)

$M_2CO_3 + 2HCl \longrightarrow 2MCl + CO_2 + H_2O$

$$\text{Moles}(M_2CO_3) = \text{Moles}(CO_2)$$

$$\frac{1}{M} = 0.01186 \qquad \therefore M = 84.31$$

59. (3)

* [ ] = Molarity or concentration

* Molarity of Na_3PO_4

$$M = \frac{w_1}{M_1} \times \frac{1000}{V(mL)} = \frac{16.4}{164} \times \frac{1000}{250} = 0.40$$

[Ions] = [Salt] x no. of ions

$[Na^+] = [Na_3PO_4] \times 3 = 0.40 \times 3 = 1.20$ M

$[PO_4^{3-}] = [Na_3PO_4] \times 1 = 0.40 \times 1 = 0.40$ M

60. (2)

$$r_n = 0.529 \times \frac{n^2}{Z} \overset{0}{A} = a_0 \times \frac{n^2}{Z} \overset{0}{A}$$

$$\frac{r_2}{r_1} = \frac{n_2^2}{n_1^2} \times \frac{Z_1}{Z_2}$$

$$\frac{r_4}{r_3} = \frac{(4)^2}{(3)^2} \times \frac{1^2}{1^2} = \frac{16}{9}$$

61. (1)

(A) NH_3 VSEP = 4 = 3 + 1 = sp^3
Trigonal Pyramidal

(B) BrF_5 VSEP = 6 = 5 + 1 = sp^3d^2
Square Pyramidal

(C) XeF_4 VSEP = 6 = 4 + 2 = sp^3d^2
Square Planar

(D) SF_6 VSEP = 6 = 6 + 0 = sp^3d^2
Octahedral

62. (4)

Milliequi. of HCl = Milliequi. of Na_2CO_3

$M \times 1 \times 25 = 0.1 \times 2 \times 30 \quad M = 0.24$

Milliequi. of HCl = Milliequi. of NaOH

$0.24 \times 1 \times V = 0.2 \times 1 \times 30$

V = 25 mL

63. (3)

* Since $KMnO_4$ completely neutralises H_2O_2 in acidic medium therefore,

Milliequi. of $KMnO_4$ = Milliequi. of H_2O_2

$1 \times 5 \times 1000 = n \times 2 \times 1000$

n = 2.5

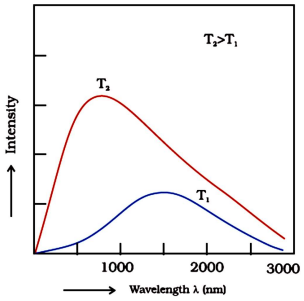
64. (3)

* $\Delta E = Rhc \times Z^2\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right] = Rhc \times Z^2\left[\frac{n_2^2 - n_1^2}{n_1^2 \times n_2^2}\right]$

$$\Delta E = Rhc \times 1^2\left[\frac{1}{2^2} - \frac{1}{3^2}\right] = Rhc \times \frac{5}{36}$$

$$\frac{hc}{\lambda} = Rhc \times \frac{5}{36} \Rightarrow \frac{1}{\lambda} = R_H \times \frac{5}{36}\ cm^{-1}$$

* When the temperature of blackbody increases, the maxima of the curve (intensity of wavelength) shifts to shorter wavelength.



65. (3)

* In C_2H_2 bond lengths are not equal since C-H bond length is not equal to C ≡ C

66. (2)

(A) All the atoms of different element have different properties **including** mass.

(B) Matter consists of **indivisible** atoms.

(C) Compounds are formed when atoms of different element combine in a fixed ratio.

(D) All the atoms of given element have **same** properties including mass.

(E) Chemical reactions involve re-organisation of atoms.

67. (1)

Molar mass = Vapour density × 2

= 35.5 × 2 = 71

$$\frac{\text{Mass}}{\text{Molar mass}} = \frac{V}{22.4}$$

$$\frac{3.55}{71} = \frac{V}{22.4} \qquad \therefore V = 1.12 \text{ litres}$$

68. (3)

* Molarity of $K_2Cr_2O_7$(Molar mass = 294)

$$M = \frac{w_1}{M_1} \times \frac{1000}{V(mL)} = \frac{1.47}{294} \times \frac{1000}{250} = 0.020M$$

69. (4)

(1) The combining atomic orbitals must have nearly same energy.

(2) The combining atomic orbitals must overlap to maximum extent.

(3) Combining atomic orbitals must have same symmetry about the molecular axis.

(4) Sigma Orbitals are **symmetrical (cylindrically symmetric) around the bond axis.** Rotating a sigma orbital around the internuclear axis does not change its shape or sign.

Pi molecular orbitals are **not symmetrical around the bond axis.**

70. (1)

$$\text{Mole of Mg} = \frac{48}{24} = 2$$

$$\text{Mole of } N_2 = \frac{34}{17} = 2$$

* Limiting reagent is that reactant which reacts completely in a reaction.

* To find limiting reagent given moles of reactant should be divided by co-efficient of reactant.

$$\text{Limiting reagent} = \frac{\text{Given Moles}}{\text{Co-efficient}}$$

And reactant of less moles will be limiting reagent.

$3Mg + 2NH_3 \longrightarrow Mg_3N_2 + 3H_2$

* In this limiting reagent is Mg = 2 mole

$$\frac{1}{3} \times \text{mole of Mg} = \text{mole of } Mg_3N_2$$

$$\frac{1}{3} \times 2 = \frac{w}{100} \qquad w = \frac{200}{3}\ g$$

71. (3)

$$M = \frac{w_1}{M_1} \times \frac{1000}{V(mL)}$$

$$M_{NaOH} = \frac{10}{40} \times \frac{1000}{100} = 2.5$$

$$M_{HCl} = \frac{10}{36.5} \times \frac{1000}{100} = 2.74$$

Milliequi. of NaOH = 2.5 × 100 = 250

Milliequi. of HCl = 2.74 × 100 = 274

Since milliequi. of HCl are greater therefore solution is acidic.

72. (1)

* Dipole moment is a vector quantity and by convention it is depicted by a small arrow with tail on the negative centre and head pointing towards the positive centre. **But in chemistry presence of dipole moment is represented by the crossed arrow (⟼) put on Lewis structure of molecule.** The cross is on positive end and arrow head is on negative end.
* The crossed arrow of the dipole moment symbolizes the direction of the shift of charges in the molecules.



73. (4)

* According to Einstein's photoelectric equation, the maximum kinetic energy (K) of an ejected electron is given by:

  $KE = E_T - W_0 \quad \Rightarrow \quad E_T = W_0 + K.E$

  W_0 = Work function
* Assume kinetic energy(KE) of ejected photoelectron to be very high in comparison to work function(W_0) therefore,($KE >>> W_0$)

  $E_T = KE + 0 = KE$
* The relationship between kinetic energy (KE) and momentum (p) is:

$$KE = E_T \Rightarrow KE = \frac{p^2}{2m} = \frac{hc}{\lambda}$$

$$\lambda = \frac{hc \times 2m}{p^2} \qquad \frac{\lambda_1}{\lambda_2} = \frac{p_2^2}{p_1^2}$$

$$\frac{\lambda}{\lambda_2} = \frac{(1.5p)^2}{(p)^2} = \frac{9}{4} \quad \therefore \lambda_2 = \frac{4}{9}\lambda$$

74. (3)

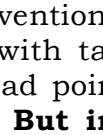
O_2^{-1} (17) = $\sigma 1s^2 < \overset{*}{\sigma} 1s^2 < \sigma 2s^2 < \overset{*}{\sigma} 2s^2 < \sigma 2p_z^2 < \pi 2p_x^2 = \pi 2p_y^2 < \overset{*}{\pi} p_x^2 = \overset{*}{\pi} p_y^1$

During change of O_2 to O_2^- ion, the electron adds on π* orbital.

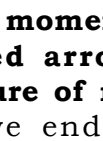
75. (3)

$Cl{-}O^-$ Bond order = 1.0

$O{=}Cl{-}O^-$ Bond order = $\frac{3}{2}$ = 1.5



Bond order = $\frac{5}{2}$ = 2.5



Bond order = $\frac{7}{2}$ = 3.5

$ClO_4^- > ClO_3^- > ClO_2^- > ClO^-$

76. (1)

$2Al + 6HCl \longrightarrow 2Al^{3+} + 6Cl^- + 3H_{2(g)}$

$$\frac{1}{2} \times \text{moles(Al)} = \frac{1}{6} \times \text{moles(HCl)}$$

$$\frac{1}{2} \times \frac{w_{Al}}{27} = \frac{1}{6} \times 1 \quad w_{Al} = 9 \text{ gm}$$

77. (2)

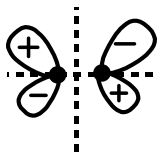
* Intramolecular hydrogen bonds are formed **with in the molecule** of the same compound.

78. (3)

$$\text{Mass(Fe)} = 3.0 \times \frac{18.67}{100} = 0.56 \text{ gm}$$

* No. of atoms = moles × N_A × atomicity
* $$\text{No. of atoms} = \frac{0.56}{56} \times 6.022 \times 10^{23} \times 1$$
* No. of atoms = 6.022×10^{21}

79. (1)



Anti bonding (2 nodal plane)($\pi^{*}2P_x$)

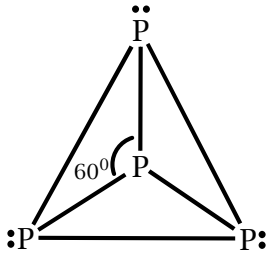
(negative or out of phase overlap)

80. (1)

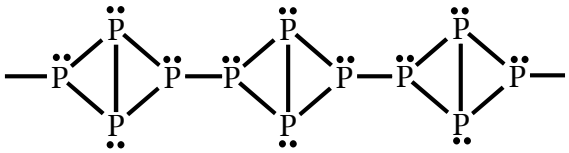
* Electronegativity F > O > N
* The oxidation state of oxygen in OF_2 is +2 and in Na_2O is -2.

81. (4)

* **White phosphorus**



* **Red phosphorus**



* In both P_4 hybridisation of phosphorous is sp^3 therefore percentage of p-character is,

$$\% \text{ of p in } sp^3 = \frac{3}{4} \times 100 = 75\%$$

82. (3)

(1) No. of molecules = $\frac{V(l)}{22.4} \times N_A$

$$= \frac{11.2}{22.4} \times N_A = 0.5N_A$$

(2) No. of molecules = $\frac{\text{Mass}}{\text{Molar mass}} \times N_A$

$$= \frac{8}{32} \times N_A = 0.25N_A$$

(3) No. of molecules = $0.10 \times N_A$

(4) No. of molecules = $\frac{V_{STP}(L)}{22.7} \times N_A$

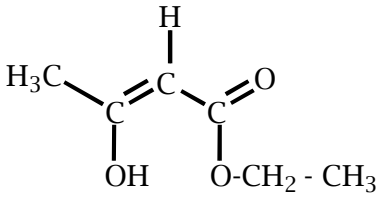
$$= \frac{2.27 \times 10^4 \times 10^{-3}}{22.7} \times N_A = N_A$$

83. (4)

* In reaction, when H_2O_2 gives O_2 then it is reducing agent and if not then it is oxidising agent.

84. (1)

* $C_6H_{10}O_3$



18 sigma bonds and 2 pi-bonds

85. (1)

* Uncertainty in position(Δx) and Uncertainty in momentum(Δp)

$$\Delta p = \Delta x$$

$$\Delta p \times \Delta x = \frac{h}{4\pi} = \Delta p \times \Delta p = (\Delta p)^2 = (m)^2(\Delta v)^2$$

$$(\Delta v)^2 = \frac{1}{m^2} x \frac{h}{4\pi}$$

$$\Delta v = \frac{1}{2m} x \sqrt{\frac{h}{\pi}}$$

86. (2)

* Non spherical or angular or Planar nodes(3d) = l = 2
* Spherical or Radial nodes(3d) = n - l - 1

= 3 - 2 - 1 = 0

87. (2)

* Let the volume of CO is x and CO_2 is y.

$$x + y = 1$$

* CO will not react with C(s) therefore CO will remain same(x).

$$CO(g) + C(s) \longrightarrow \text{No Reaction}$$

x

But CO_2 will be reduced into 2 moles of CO(g)

$$CO_2(g) + C(s) \longrightarrow 2CO(g)$$

y 2y

* In final volume initial CO and formed CO, will be present (x + 2y).

Final volume, x + 2y = 1.4.....(i)

Initial volume, x + y = 1.....(ii)

Solving (i), (ii) equation, y = 0.4, x = 0.6

Therefore CO_2 is 40% and CO is 60%

88. (4)

$$CH_4 + 2O_2 \xrightarrow{\Delta} CO_2 + 2H_2O$$

It is not Disproportionation reaction and Combination reaction but in this Oxidation of carbon, Reduction of oxygen occurs.

89. (3)

* ICl_5 VSEP = 6 = 5 + 1 = sp^3d^2

square pyramidal

* ICl_4^- VSEP = 6 = 4 + 2 = sp^3d^2

square planar.

90. (1)

$$\Delta E = Rhc \times Z^2\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right] = Rhc \times Z^2\left[\frac{n_2^2 - n_1^2}{n_1^2 \times n_2^2}\right]$$

* Third balmer transition means Transition from (n = 5 to 2) for (Z = 2)

$$\Delta E = Rhc \times 2^2\left[\frac{5^2 - 2^2}{2^2 \times 5^2}\right] = Rhc \times \frac{21}{25}$$

$\Delta E = \mathbf{0.84}$ Rhc

(1) First excitation for H–atom means Transition from (n = 1 to 2) for (Z = 1):

$$\Delta E = Rhc \times 1^2\left[\frac{2^2 - 1^2}{1^2 \times 2^2}\right] = Rhc \times \frac{3}{4}$$

$\Delta E = \mathbf{0.75}$ Rhc

(2) Third excitation for Li^{+2} means Transition from (n = 1 to 4) for (Z = 3):

$$\Delta E = Rhc \times 3^2\left[\frac{4^2 - 1^2}{1^2 \times 4^2}\right] = Rhc \times \frac{9 \times 15}{16}$$

$\Delta E = \mathbf{8.44}$ Rhc

(3) Fourth excitation means for H–atom Transition from (n = 1 to 5) for (Z = 1):

$$\Delta E = Rhc \times 1^2\left[\frac{5^2 - 1^2}{1^2 \times 5^2}\right] = Rhc \times \frac{24}{25}$$

$\Delta E = \mathbf{0.96}$ Rhc

(4) Ionisation energy for Be^{+3} means Transition from (n = 1 to ∞) for (Z = 4):

$$\Delta E = Rhc \times 4^2\left[\frac{1}{1^2} - \frac{1}{\infty^2}\right] = Rhc \times 16$$

$\Delta E = \mathbf{16}$ Rhc

BIOLOGY

91. (2) [NCERT XII, P-75]
Down syndrome is caused by an additional copy of chromosome 21.

92. (2) [NCERT XII, NCERT Exemplar]
Pedigree analysis is used to trace the inheritance of traits through generations.

93. (4) [NCERT XI, P-20]
Viruses contain either RNA or DNA as their genetic material.

94. (4) [NCERT XI, NCERT Exemplar]
Hormones (insulin) are another important functional category of proteins.

95. (2) [NCERT XII, P-61]
An individual has only two alleles of the ABO blood group gene, although three common alleles (I^A, I^B and i) exist in the population.

96. (2) [NCERT XII, P-67]
Alfred Sturtevant first used recombination frequencies to map genes on chromosomes.

97. (2) [NCERT XII, P-74]
Haemophilia is an X-linked recessive disorder.

98. (2) [NCERT XII, NCERT Exemplar]
Genes located on the same chromosome form a linkage group.

99. (2) [NCERT XII, P-58]
In a typical test cross, an individual showing the dominant phenotype is crossed with a homozygous recessive individual.

100. (1) [NCERT XI, P-26, 27]
Sexual reproduction in Phaeophyceae may be isogamous, anisogamous or oogamous; it is not exclusively oogamous.

101. (2) [NCERT XII, P-67]
Drosophila melanogaster is suitable for studying the chromosomal theory of inheritance.

102. (2) [NCERT XI, P-96, 97, 98]
Food vacuoles form by engulfing food particles; less active cells generally have fewer mitochondria; the Golgi apparatus packages materials; and S refers to the sedimentation coefficient. Chromoplast carotenoids are fat-soluble, not water-soluble.

103. (2) [NCERT XI, P-13]
Archaebacteria have a different cell wall structure from other bacteria and can withstand extreme conditions.

104. (3) [NCERT XI, P-2]
E. Mayr is known as the Darwin of the 20th century.

105. (3) [NCERT XI, P-21]
Mad cow disease and Creutzfeldt–Jakob disease are caused by abnormally folded proteins called prions.

106. (1) [NCERT XI, P-7, 8]
Gorilla and tiger belong to Class Mammalia. Primata and Carnivora are orders within this class.

107. (1) [NCERT XI, P-25, 27]
Polysiphonia is a red alga.

108. (1) [NCERT XI, P-26]
Carrageen is obtained from Rhodophyceae.

109. (1) [NCERT XI, P-29, 30, 32]
Mosses and ferns grow in moist, shady places because water is required for fertilisation.

110. (4) [NCERT XI, P-25, 26]
Cellulose and algin in the cell wall are characteristic of *Porphyra* (brown algae).

111. (1) [NCERT XI, P-32]
The prothallus is a small, multicellular, free-living and photosynthetic thalloid gametophyte.

112. (1) [NCERT XI, P-32]
Gymnosperm seeds are not enclosed by an ovary wall, and their ovules are not enclosed within an ovary.

113. (1) [NCERT XI, P-30, 32, 33]

114. (3) **[NCERT XI, P-28]**
A–Sporophyte; B–Gametophyte.

115. (3) **[NCERT XII, P-75]**
Closely located genes do not always assort independently. They tend to be linked, so recombination between them is less frequent.

116. (1) **[NCERT XI, P-46]**
Chordates have a single, hollow, dorsal nerve cord and a ventral heart. They are coelomates, not pseudocoelomates.

117. (3) **[NCERT XI, P-49]**
Reptiles have dry, cornified skin with epidermal scales and lack external ears.

118. (1) **[NCERT XI, P-41]**
Metagenesis involves alternation between sexual and asexual phases.

119. (3) **[NCERT XI, P-47, 48]**
The organism *Catla* belongs to freshwater Osteichthyes.

120. (1) **[NCERT XI, P-43]**
Aschelminthes have a complete alimentary canal with a muscular pharynx.

121. (4) **[NCERT XI, P-44, 45]**
Butterfly, *Musca* and *Pila* have an open circulatory system.

122. (3) **[NCERT XI, P-42]**
Ctenophores are generally hermaphroditic; their sexes are not separate. Fertilisation is external.

123. (3) **[NCERT XI, P-47]**
Petromyzon (cyclostomata) has a cartilaginous cranium and vertebral column.

124. (2) **[NCERT XI, P-49, 50]**
Crocodiles, birds and mammals have a four-chambered heart.

125. (1) **[NCERT XII, P-69]**
Height controlled by several genes is a polygenic trait.

126. (2) **[NCERT XI, P-88]**
All organisms are composed of cells and cell products, and new cells arise from pre-existing cells.

127. (4) **[NCERT XI, P-91]**
Ribosomes play an essential role in protein synthesis; therefore, the statement that they have no role in protein synthesis is false.

128. (4) **[NCERT XI, P-91]**
Inclusion bodies are non-membrane-bound structures that store reserve materials; they are not a defining feature of eukaryotic cells.

129. (4) **[NCERT XI, P-90]**
Extra-chromosomal DNA, such as plasmids, carry genes responsible for antibiotic resistance.

130. (2) **[NCERT XI, P-91]**
A polysome consists of several ribosomes attached to a single mRNA molecule.

131. (1) **[NCERT XI, P-102]**
Endoplasmic reticulum play an important role in glycogen.

132. (3) **[NCERT XI, P-91, 97, 98, 100]**
Matrix–Mitochondria, Stroma–Plastids, Hub–Centrosome, Lamellae–Mesosome.

133. (1) **[NCERT XI, P-32]**
Coralloid roots are characteristic of *Cycas*.

134. (2) **[NCERT XI, P-98]**
Chloroplasts contain 70S ribosomes, whereas eukaryotic cytoplasm contains 80S ribosomes.

135. (1) **[NCERT XI, P-96]**

136. (2) **[NCERT XI, P-106]**
Cysteine and methionine are sulphur-containing amino acids.

137. (2) **[NCERT XI, P-106]**
Fatty acid–Palmitic acid, Phospholipid–Lecithin, Aromatic amino acid–Tryptophan, Acidic amino acid–Glutamic acid.

138. (1) **[NCERT XI, P-109, 110, 112]**
Collagen is the most abundant protein in the animal world, whereas RuBisCO is the most abundant protein in the biosphere.

139. (4) [NCERT XI, P-111, 112, 118, 119]
Almost all enzymes are proteins. Biomacromolecules have a hierarchy of structures.

140. (1) [NCERT XI, P-117, 118]
Holoenzyme = Apoenzyme + Coenzyme.

141. (4) [NCERT XI, P-107]
The given compound is a monosaccharide. (Ribose)

142. (2) [NCERT XI, P-109, 110]
Glycogen (carbohydrate) contains glycosidic bonds, while collagen (protein) contains peptide bonds.

143. (3) [NCERT XI, P-106]
Palmitic acid has 16 carbons and arachidonic acid has 20 carbons. Lecithin is a phospholipid, and trihydroxypropane is glycerol.

144. (3) [NCERT XII, P-73]
Colour blindness is an X-linked recessive disorder, not an autosomal recessive disorder.

145. (1) [NCERT XI, NCERT Exemplar]
Dissolving CO_2 in water is a physical process and is not an enzyme-mediated reaction in atmosphere.

146. (2) [NCERT XI, P-121]
During the S phase, DNA content doubles, but the chromosome number remains unchanged.

147. (4) [NCERT XI, P-106, 111]
Pyrimidine–Thymine, Purine–Nitrogen bases, Uridine–Nucleoside, Uridylic acid–Nucleotide.

148. (4) [NCERT XI, P-125]
DNA replication occurs during the S phase before meiosis I, not during the S phase of meiosis II.

149. (2) [NCERT XII, P-76]
C–Down syndrome, A–Klinefelter syndrome, B–Turner syndrome.

150. (2) [NCERT XI, P-121]
DNA does not replicate during the G_1 phase.

151. (2) [NCERT XI, P-120, 121]
Continuous cell growth is associated with an increase in cytoplasmic content.

152. (2) [NCERT XI, P-125]
Mitosis is an equational division because the chromosome number remains the same in the daughter cells.

153. (3) [NCERT XI, P-126]
A bivalent consists of four chromatids and two centromeres.

154. (4) [NCERT XI, P-125, 128]
Meiosis produces gametes, reduces the chromosome number by half and introduces variation.

155. (4) [NCERT XI, P-127]
Figure B represents the metaphase stage in which chromosomes align at the equator.

156. (2) [NCERT XI, P-123, 126]
During anaphase, centromeres split. Tetrad formation occurs during zygotene, terminalisation occurs during diakinesis, and crossing over occurs between non-sister chromatids of homologous chromosomes.

157. (2) [NCERT XI, P-126]
Crossing over occurs during pachytene of prophase I.

158. (1) [NCERT XII, P-76]
Klinefelter syndrome is associated with masculine development, gynaecomastia and sterility.

159. (4) [NCERT XI, P-125]
Meiosis involves one round of DNA replication followed by two successive cell divisions.

160. (1) [NCERT XII, P-67]
Thomas Morgan experimentally verified the chromosomal theory of inheritance.

161. (1) [NCERT XI, P-122]
During prophase, chromatin condenses into chromosomes, the nucleolus and several cell structures disappear, and asters may form. The nuclear envelope breaks down rather than assembling around chromosomes.

162. (2) [NCERT XII, Conceptual]

In sexual reproduction, each parent contributes half of the offspring's nuclear genes.

163. (4) [NCERT XII, P-69, 70, 71]

Grasshopper–XX-XO, *Struthio* (bird)–ZZ-ZW, *Macaca* (mammal) –XX-XY, *Apis*–(honey bee) Haplodiploidy.

164. (1) [NCERT XII, P-53]

Inheritance is the transmission of traits from parents to offspring. Variation refers to differences between offspring and their parents.

165. (4) [NCERT XII, P-63]

The genotypes RrYY, RRYy, rrYy and Rryy occur in the ratio 1:1:1:1.

166. (2) [NCERT XII, P-61]

ABO blood groups demonstrate dominance, codominance and multiple allelism.

167. (3) [NCERT XII, P-73]

X^CY	XX	
	X	X
X^C	X^CX	X^CX
Y	XY	XY

A colour-blind father (X^CY) and a homozygous normal mother (XX) cannot have a colour-blind son.

168. (4) [NCERT XI, P-125, 126]

Bivalents form during zygotene, while DNA replication occurs during the S phase before prophase I.

169. (4) [NCERT XII, P-61]

I^Ai	I^Bi	
	I^B	i
I^A	$\frac{I^AI^B}{AB}$	$\frac{I^Ai}{A}$
i	$\frac{I^Bi}{B}$	$\frac{ii}{O}$

The cross $I^Ai \times I^Bi$ can produce four genotypes: I^AI^B, I^Ai, I^Bi and ii. These correspond to blood groups (phenotypes) AB, A, B and O.

170. (2) [NCERT XI, P-17]

A dikaryon is formed when two haploid cells do not fuse immediately, so their nuclei remain separate in the same cell.

171. (3) [NCERT XI, P-12, 16, 19]

Chlorella–Protista, Venus flytrap–Plantae, Toadstools–Fungi, Holozoic–Animalia.

172. (4) [NCERT XI, P-19, 20]

HIV does not belong to any of the kingdoms because viruses are acellular.

173. (2) [NCERT XI, P-5, 6]

Statement I: Systematics studies the diversity of organisms as well as their relationships.

Statement II: Systema is a Latin word.

174. (4) [NCERT XII, P-75]

A furrowed tongue is a characteristic symptom of Down's syndrome.

175. (3) [NCERT XI, P-47]

Gnathostomata division includes vertebrates with jaws.

176. (3) [NCERT XI, P-17]

Plasmogamy → Karyogamy → Meiosis.

177. (3) [NCERT XI, P-7, 8]

Family–Canidae, Order–Carnivora, Class–Mammalia, Phylum–Chordata.

178. (1) [NCERT XI, P-8]

The number of common characteristics decreases as we move from species to kingdom.

179. (3) [NCERT XI, P-15, 16]

Both organisms belong to the same kingdom.

180. (4) [NCERT XI, P-15, 16]

Flagellate–*Trypanosoma*, *Sporozoan*–*Plasmodium*, Ciliated–*Paramoecium*, Amoeboid–*Entamoeba*.

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