NARAYANA IIT-JEE/NEET/FOUNDATION | JAIPUR CENTER

46 YEARS OF EXCELLENCE

SAMPLE PAPER - 8

NEET (UG) | 2025

Duration : 3 Hrs. | Maximum Marks : 720

ANSWER KEY

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

SOLUTION

PART – I : PHYSICS

1. 1

Sol. $F=\dfrac{\alpha}{\beta+\sqrt{d}}$

$MLT^{-2}=\dfrac{\alpha}{\left[ML^3\right]^{1/2}}$

$\alpha=M^{\frac{3}{2}}L^{-\frac{1}{2}}T^{-2}$

2. 3

Sol. $w=2\times10^2(2)=400J$

3. 3

Sol. KE of molecule $=\dfrac{3}{2}KT$

Debroglie wavelength

$\lambda=\dfrac{h}{p}=\dfrac{h}{\sqrt{2mE}}=\dfrac{h}{\sqrt{2m\left(\frac{3KT}{2}\right)}}=\dfrac{h}{\sqrt{3mKT}}$

5. 2

Sol. $\dfrac{1}{K}=\dfrac{-\Delta P}{\frac{\Delta V}{V}}\quad\left(\therefore\dfrac{\Delta V}{V}=-\dfrac{\Delta\rho}{\rho}\right)$

$\dfrac{10^5}{50\times10^{-6}}=\dfrac{\rho gh\times100}{1};\quad h=2km$

6. 1

Sol. $L.C=\dfrac{\text{pitch}}{\text{No.of division or cir scale}}$

$=\dfrac{0.5}{50}=0.01mm$

diameter of ball

$=(2\times0.5)+(25-5)$

$(0.01)=1.2mm.$

7. 3

Sol. Apparent speed w.r.t to surface $=V_B\times\dfrac{4}{3}$

relative speed of bird w.r.t fish

$=\dfrac{4V_B}{3}+3=19$

$\dfrac{4V_B}{3}=16\Rightarrow V_B=12cm/s$

8. 3

Sol. $B=\dfrac{\mu_0}{4\pi}\dfrac{i}{r}\times2\pi=\dfrac{\mu_0}{4\pi}\dfrac{qn}{r}\times2\pi$

$(\because i=qn)$

$=\dfrac{2\pi qn}{r}\times10^{-7}$

9. 4

Sol. $T+m_1g=T_2=m_2g\Rightarrow T=(m_2-m_1)g$

10. 3

Sol. $R_1=\tan\theta;\quad R_2=\cot\theta$

$\tan\theta=R\propto T_1;\quad \cot\theta=R\propto T_2$

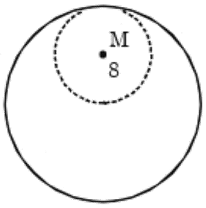
$\dfrac{\cos\theta}{\sin\theta}=\dfrac{\sin\theta}{\cos\theta}$

$\dfrac{\cos^2\theta-\sin^2\theta}{\cos\theta\sin\theta}=K(T_1-T_2)$

$\dfrac{2\cos2\theta}{\sin2\theta}=K(T_1-T_2)\Rightarrow(T_1-T_2)\propto\cot2\theta$

11. 2

Sol.



Acceleration due to gravitation

$=\dfrac{GM}{R^2}-\dfrac{GM/8}{R^2/4}=\dfrac{GM}{2R^2}$

12. 3

Sol. Frequnecy is $\dfrac{1}{8}Hz$

$\therefore$ Time period, $T=8\ sec$

$\lambda=24m$

$v=f\lambda=3m/s$

Time taken by particle to travel 9 m is

$=\dfrac{9}{3}=3sec$

As the wave starts to move up from equilibrium, time taken by particle to reach lower extreme first time is

$$\frac{3T}{4}=\frac{3}{4}\times 8=6\sec\ldots$$

$\therefore$ Total time taken $=3\sec+6\sec=9\sec$

13. 4

Sol. velocity = slope

$$\frac{v_1}{v_2}=\frac{\tan\theta_1}{\tan\theta_2}=\frac{1/\sqrt{3}}{1}=\frac{1}{\sqrt{3}}$$

14. 4

Sol. $\vec{R}=4\sin(2\pi t)\hat{i}+4\cos(2\pi t)\hat{j}$

$$V=\frac{dR}{dt}=8\pi\cos 2\pi t\hat{i}-8\pi\sin 2\pi t\hat{j}$$

$|V|=8\pi\sqrt{2}\,m/sec;$ V is not equal to $8\,m/sec.$

15. 3

Sol. g effective will increase due to attraction from the plate

16. 3

Sol. Orbital velocity of satellite

$$V=\sqrt{\frac{GM}{r}}$$

$$\frac{V}{V^1}=\sqrt{\frac{\frac{3R}{2}}{R}}\Rightarrow V^1=\sqrt{\frac{2}{3}}V$$

17. 3

Sol. $$I=\frac{E+\frac{E}{n}+\frac{E}{n^2}+\frac{E}{n^3}\ldots\ldots}{\left(r+\frac{r}{n}+\frac{r}{n^2}+\frac{r}{n^3}+\ldots\right)+\frac{nr}{n+1}}$$

$$=\frac{E\left[\frac{1}{1-\frac{1}{n}}\right]}{r\left[\frac{1}{1-\frac{1}{n}}\right]+\frac{nr}{n+1}}$$

$$I=\frac{\frac{nE}{(n-1)}}{\frac{rn}{n-1}+\frac{nr}{n+1}}=\frac{\frac{E}{n-1}}{\left(\frac{n+1+n-1}{(n-1)(n+1)}\right)r}=\frac{(n+1)E}{2nr}$$

18. 3

Sol. $$R=\frac{R_1R_2}{R_2-R_1}=\frac{2(3)}{3-2}=6\,mm$$

19. 4

Sol. $$\frac{20}{60}=K(70-30)$$

$$\frac{10}{t}=K(55-30)\Rightarrow\frac{20}{60\times 10}t=\frac{40}{25}$$

$$\Rightarrow t=\frac{8\times 6\times 10}{10}=48\sec$$

20. 4

Sol. Potential at centre = Potential at surface Potential at centre is potential due to charge 'q' and induced charges.

$$V_c=V_{+q}+V_{ind}=V_{+q}=\frac{1}{4\pi\varepsilon_0}\frac{q}{(d+R)}$$

At the point B on the surface, potential is the same of potential due to charge 'q' and induced charges.

$$V_B=V_{+q}+V_{ind}=\frac{1}{4\pi\varepsilon_0}\frac{q}{(d+R)}$$

$$V_{ind}=V_B-V_{+q}=\frac{Kq}{(R+d)}-\frac{Kq}{d}$$

$$=\frac{-qR}{4\pi\varepsilon_0(d+R)d}$$

21. 4

Sol. Emf

$$=\frac{-d\phi}{dt}=-[5-20t]=-\left[5-20\times\frac{1}{4}\right]=0$$

Induced correct = 0

22. 3

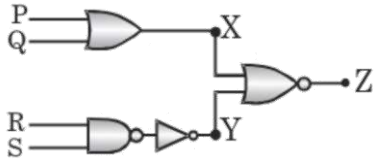
Sol. $$P=\frac{3t^2}{2}\Rightarrow mv\frac{dv}{dt}=\frac{3t^2}{2}$$

$$\frac{V^2}{2}=\frac{3t^3}{3\times 4}\Rightarrow\frac{V^2}{2}=\frac{t^3}{4}$$

At $t=2;\quad V=2\,m/s$

23. 3

Sol.



$x=P+G;\quad y=R\times S$

$z=\overline{x+y}$

$P=Q=0,\quad R=S=1$

$X=0, Y=1, Z=\overline{0+1}=0$

24. 2

Sol. $\Delta E = 13.6z^2\left(\frac{1}{n_1^2}-\frac{1}{n_2^2}\right)eV$

$\therefore \Delta E = 13.6(3)^2\left(\frac{1}{1^2}-\frac{1}{3^2}\right)=108.8eV$

25. 2

Sol. Initially capacitor behave as a short circuit.

So current will be maximum.

Charge on capacitor will be zero.

Potential difference across capacitor will be zero.

26. 4

Sol. $V=\sqrt{u^2+2gh}=10$

$V_1=\sqrt{2gh}=8 \quad e=\frac{V_1}{V}$

27. 4

Sol. dU is independent to path (it is a state function)

28. 1

Sol. $m=\frac{1}{n}=\frac{f}{f-u}\Rightarrow nf=f-u$

$-u=(n-1)f \Rightarrow |u|=(n-1)f$

29. 2

Sol. Angular fringe width $\theta=\frac{\lambda}{d}$

$\frac{0.2^o}{\theta}=\frac{\lambda}{\frac{\lambda}{m}}\Rightarrow\theta=\frac{0.2}{\mu}=\frac{0.2}{4}\times3=0.15^\circ$

30. 2

Sol. $100\times\frac{10}{100}=\frac{Nhc}{\lambda}$

$N=\frac{10\lambda}{hc}=\frac{10\times663\times10^{-9}}{6.6\times10^{-34}\times3\times10^8}=3.3\times10^{19}$

31. 1

Sol. For eyepiece $m_e=1+\frac{D}{f_e}=1+\frac{25}{5}=6$

$m=m_0\,m_e\Rightarrow30=m_0\times6 \quad \Rightarrow m_0=5$

$\frac{1}{f_0}=\frac{1}{v_0}-\frac{1}{u_0};m_0=\frac{v_0}{u_0}=5$

$m_e=\frac{D}{u_e}\Rightarrow u_e=\frac{D}{m_e}=\frac{25}{6}$

$=4.17\,cm$ Distance between lenses $=v_0+|u_e|$

32. 3

Sol. $\lambda_m\cdot T=b\Rightarrow\lambda_m=\frac{b}{T}=\frac{2.9\times10^{-3}}{2.7}=1.1mm$

This is wavelength corresponds to the microwaves.

33. 3

Sol. Statement A is correct, statements B and C are incorrect

34. 3

For given elements, the energy band gap of carbon is the maximum and of germanium is the least.

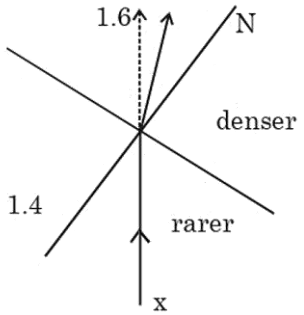
$(E_g)_C>(E_g)_{Si}>(Eg_g)_{Ge}$

35. 4

Sol. In uniform field, the solenoid (magnetic dipole) experiences only torque but no force.

36. 1

Sol.



Light is going from rarer to denser medium it should bend towards the normal.

37. 1

Sol. $m_1=m_2=m,\bar{v}_1=v\hat{j},\bar{v}_2=v\hat{i}$

$\bar{v}_{cm}=\frac{m_1\bar{v}_1+m_2\bar{v}_2}{m_1+m_2}=\frac{mv\hat{j}+mv\hat{i}}{2m}=\frac{v}{2}(\hat{i}+\hat{j})$

$v_{cm}=\sqrt{\left(\frac{v}{2}\right)^2\left(1^2+1^2\right)}=\sqrt{\frac{v^2}{4}(2)}$

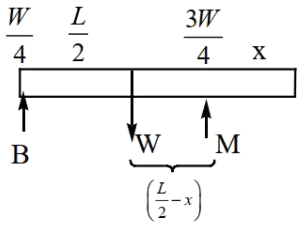
$=\frac{v}{\sqrt{2}}m/sNE$

38. 1

Sol. Both (A) and (R) are true and (R) is the correct explanation of (A)

39. 4

Sol.



$$\frac{W}{4}\times\frac{L}{2}=\frac{3W}{4}\left(\frac{L}{2}-x\right);$$

$$\frac{L}{2}=3\left(\frac{L}{2}-x\right)$$

$$x=\frac{L}{2}-\frac{L}{6}=\frac{3L-L}{6}=\frac{2L}{6};\quad x=\frac{L}{3}$$

40. 4

Sol. $n=\frac{(2p+1)v}{4l}$

$1250=\frac{(2p+1)340}{4\times85}\times100$

$2P + 1 = 12.5$

it is in between 11th and 13th harmonic

13^{th} harmonic

13^{th} harmonic is not possible

no. of resonances = 6

[1, 3, 5, 7, 9, 11]

41. 3

Sol. A free proton can not emit beta particle

42. 2

Sol. Volume is more for hollow sphere

43. 3

Sol. Intensity of emerging light is $I=3W/m^2$

$$\frac{I_0}{2}\cos^2\theta\cos^2(90-\theta)=3$$

$$\frac{32}{2}\cos^2\theta\sin^2\theta=3$$

$$4\left(4\cos^2\theta\sin^2\theta\right)=3\Rightarrow\sin^2 2\theta=\frac{3}{4}$$

$$\Rightarrow\sin 2\theta=\frac{\sqrt{3}}{2}\Rightarrow\sin 2\theta=\frac{\sqrt{3}}{2}=\sin 60^\circ$$

$\theta = 30^\circ$

44. 2

Sol. $P=\frac{\Delta P}{At}=\frac{(2mV\cos\theta)N}{At}$

$$=\frac{2\times3.32\times10^{-27}\times10^{3}\times\cos45\times10^{23}}{1\times2\times10^{-4}}$$

$= 2350\,N/m^2$

45. 2

Sol. Electric force

$= qE = 1.6\times10^{-19}\times2\times10^{4}$

$= 3.2\times10^{-15}\,N$

$$\text{acc of } e^- = \frac{3.2\times10^{-15}}{9.1\times10^{-31}}$$

PART – II : CHEMISTRY

46. 4

Sol.

Element	%	No. of moles	Molar ratio	Whole no. ratio
P	27.3	27.3/12 = 2.27	1	1
Q	72.7	72.7/16 = 4.54	2	2

Empirical formula = PQ_2

48. 4

Sol. As n ↑ distance between adjacent levels decreases.

49. 1

Sol. The radii of the stationary states are expressed as $r_n = n^2a_o$

For 1^{st} orbit, $r_1 = a_o$

For 3^{rd} orbit : $r_3 = 9a_0$

According to Bohr's postulate of angular momentum, $mvr=\frac{nh}{2\pi}$

According to de-Broglie equation,

$\lambda=\frac{h}{mv}$

Substituting this value of equation (i), we get $2\pi r = n\lambda$ or $2\pi\times9a_o = 3\ \lambda;\lambda = 6\pi a_0$

51. 1

Sol. In (i), the lp are at equatorial position so there are less $lp = bp$ repulsions as compared to other positions,

Hence, T-shape is most stable.

52. 4

Sol. 'π' MO's are unsymmetrical around bond axis.

55. 2

Sol. $NH_4COONH_{2(s)} \rightleftharpoons \underset{2p}{2NH_{3(g)}} + \underset{p}{CO_{2(g)}}$

When volume and temperature are constant, the number of moles of a gas is proportional to its partial pressure.

So, $2p + p = 3$

$3p = 3, \quad \therefore p = 1\text{atm}$

$K_p = (2p)^2 \times p = 4p^3 = 4 \times (1)^3 = 4\,\text{atm}^3$

56. 3

Sol. Solution of salt of strong base and weak acid has pH more than 7 because anionic hydrolysis takes place.

$CH_3COONa_{(aq)} + H_2O \rightarrow CH_3COO^-_{(aq)} + Na^+_{(aq)}$

$CH_3COO^-_{(aq)} + H_2O \rightleftharpoons CH_3COOH_{(aq)} + OH^-_{(aq)}$

Solution is basic.

57. 2

Sol. For precipitation, ionic product > solubility product. In all other options, ionic product is less than solubility product.

58. 1

59. 2

Sol. Disproportionation reactions are those in which the same element/compound gets oxidized and reduced simultaneously.

$2Cu^+ \rightarrow Cu^{2+} + Cu^0$

$3\overset{+6}{MnO_4^{2-}} + 4H^+ \rightarrow \overset{+7}{MnM_4^-} + \overset{+4}{MnO_2} + 2H_2O$

60. 4

Sol. 4-chloro-3-ethylcyclohexanol

62. 3

Sol. $3NaSCN + Fe^{3+} \rightarrow \underset{\text{(Blood red)}}{Fe(SCN)_3} + 3Na^+$

63. 1

Sol. X = C_2H_6, Y = C_2H_6, Z = C_6H_6

64. 2

Sol. A = $CH_3CH = CH_2$, B = $CH_2ClCH = CH_2$

65. 4

Sol.

Br_2	alc.KOH	$NaNH_2$	red hot iron tube

67. 1

Sol. $K_4\left[Fe(CN)_6\right] \rightarrow 4K^+ + \left[Fe(CN)_6\right]^{4-}; i = 5$

$Al_2\left(SO_4\right)_3 \rightarrow 2Al^{3+} + 3SO_4^{2-}; i = 5$

68. 4

Sol. In the depression of freezing point experiment only solvent molecules solidify and vapor pressure of solution decreases as some of the surface area is occupied by solute molecules, so less number of molecules will go in vapor form.

69. 1

Sol. Given, $\kappa = 0.0210\,\text{ohm}^{-1}\,\text{cm}^{-1}, R = 60$

or

$\kappa = \frac{1}{R} \times \frac{l}{a}\left(\text{ where } \frac{l}{a} = \text{ cell constant }\right)$

$0.0210 = \frac{1}{60} \times \frac{1}{a} \text{ or } \frac{1}{a} = 60 \times 0.0210 = 1.26\,\text{cm}^{-1}$

70. 1

Sol. $Zn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$

$E^0_{Cu^{2+}/Cu} = 0.34\,V, E^0_{Zn^{2+}/Zn} = -0.76\,V$

Higher reduction potential of Cu^{2+} ion than Zn^{2+} ion shows that Cu^{2+} ion has more tendency to undergo reduction.

71. 1

Sol. For an exothermic reaction, $\Delta H = -ve$

$\Delta H = E_{a(\text{forward reaction})} - E_{a(\text{backward reaction})}$

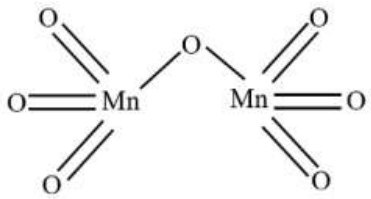
For ΔH to be –ve, $E_{a,b} > E_{a,f}$ which is true in graph (I) only .

72. 3

Sol. Adding a catalyst

74. 2

Sol. Each Mn is tetrahedrally surrounded by oxygen atoms in Mn_2O_7:



Hence, A and C are correct.

75. 1

Sol. In $\left[E(en)_2\left(C_2O_4\right)\right]^+ NO_2^-$, ethylenediamine and oxalate ion $\left(C_2O_4^{2-}\right)$ are bidentate ligand. Therefore, coordination number of the complex is 6 i.e., octahedral complex.

Oxidation number of E in the given complex is

$x+2\times0+1\times(-2)=+1$

$\therefore x=+3$

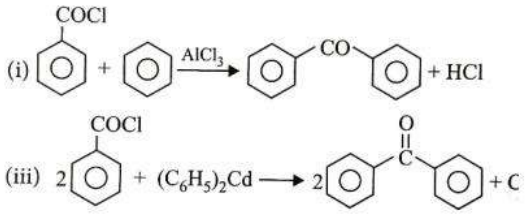
76. 3

Sol. Octahedral complex of type $[MA_5B]$

Cannot show geometrical isomerism.

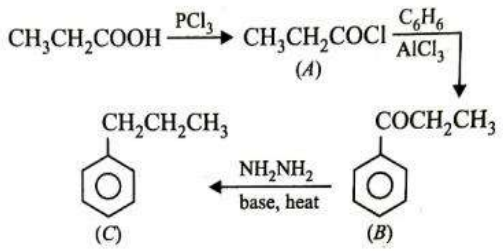
79. 3

Sol.



80. 3

Sol.



81. 3

Sol.

82. 2

83. 4

Sol. In α –amino acids – NH_2 and –COOH groups are on same C.

84. 3

Sol. It is hydrolysed in moist air giving out fumes of HCl.

87. 3

Sol. $x=108.9^0, y=111.7^0$

88. 4

Sol. ΔHeg order $Cl > F > Br > I$