

FT - 12 (FR) (NEET - CBSE, GSEB) (09 - 04 - 2026)

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

PHYSICS:

1. Sol.(1)

In case of a charged conducting sphere

$$V_{\text{inside}} = V_{\text{centre}} = V_{\text{surface}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{q}{R}, \quad V_{\text{outside}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{q}{r}$$

If a and b are the radii of sphere and spherical shell respectively, then potential at their surface will be

$$V_{\text{sphere}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{Q}{a} \quad \text{and} \quad V_{\text{shell}} = \frac{1}{4\pi\epsilon_0} \cdot \frac{Q}{b}$$

$$\therefore V = V_{\text{sphere}} - V_{\text{shell}} = \frac{1}{4\pi\epsilon_0} \left[\frac{Q}{a} - \frac{Q}{b} \right]$$

Now when the shell is given charge $(-3Q)$, then the potential will be

$$V'_{\text{sphere}} = \frac{1}{4\pi\epsilon_0} \left[\frac{Q}{a} + \frac{(-3Q)}{b} \right], \quad V'_{\text{shell}} = \frac{1}{4\pi\epsilon_0} \left[\frac{Q}{b} + \frac{(-3Q)}{b} \right]$$

$$\therefore V'_{\text{sphere}} - V'_{\text{shell}} = \frac{1}{4\pi\epsilon_0} \left[\frac{Q}{a} - \frac{Q}{b} \right] = V$$

2. Sol.(4)

3. Sol.(1)

Compare the given equation with

$$E = E_0 \cos(kz - \omega t)$$

$$\text{We get, } \omega = 6 \times 10^8 \text{ s}^{-1}$$

$$\therefore \text{Wave vector, } k = \frac{\omega}{c} = \frac{6 \times 10^8 \text{ s}^{-1}}{3 \times 10^8 \text{ ms}^{-1}} = 2 \text{ m}^{-1}$$

4. Sol.(1)

$$\begin{aligned} B &= \mu_r \mu_0 ni \\ &= 20 \times 4\pi \times 10^{-7} \times 100 \times 3.5 \\ &= 8\pi \times 3.5 \times 10^{-4} = 28\pi \times 10^{-4} \end{aligned}$$

5. Sol.(4)

$$\begin{aligned} C_{\text{eq}} &= C + \frac{C}{2} = \frac{3C}{2} \\ \text{Work} &= Q \times V \\ &= \frac{3CV}{2} \times V = \frac{3}{2} CV^2 \end{aligned}$$

6. Sol.(3)

ρ : density of liquid

σ : density of bob

$$T_{\text{air}} = 2\pi\sqrt{\frac{\ell}{g}} = 2 \text{ sec}$$

In liquid $\rightarrow g_{\text{eff}} = g\left(1 - \frac{\rho}{\sigma}\right)$

$$\Rightarrow T_{\text{liq}} = 2\pi\sqrt{\frac{\ell}{g\left(1 - \frac{\rho}{\sigma}\right)}} = \sqrt{\frac{3}{2}} \times 2\pi\sqrt{\frac{\ell}{g}}$$

$$\Rightarrow T_{\text{liq}} = \sqrt{\frac{3}{2}} \times 2 = \sqrt{6} \text{ sec}$$

7. **Sol.(1)**

Conceptual

8. **Sol.(1)**

$$\text{From, } F = il \times B = 1.2 \times 0.5 \times 4 = 2.4 \text{ N}$$

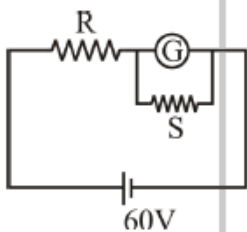
9. **Sol.(3)**

The frequency of revolution of a charged particle in a perpendicular magnetic field is

$$v = \frac{1}{T} = \frac{1}{2\pi r/v} = \frac{v}{2\pi r} = \frac{v}{2\pi} \times \frac{eB}{mv} = \frac{eB}{2\pi m}$$

10. **Sol.(1)**

11. **Sol.(1)**



$$R_{\text{eq}} = R + \frac{GS}{G+S} = 60\Omega$$

$$i = \frac{V}{e_{\text{eq}}} = \frac{60}{60} = 1 \text{ A}$$

12. **Sol.(1)**

$$V_A - 2(1) - 3 - 1 = V_B$$

$$V_A - V_B = 6 \text{ V}$$

13. **Sol.(3)**

14. **Sol.(4)**

$$x = \frac{3\lambda D}{2d}$$

$$10^{-3} = \frac{3\lambda \times 1}{2 \times 9 \times 10^{-4}}$$

$$\frac{18}{3} \times 10^{-7} = \lambda \Rightarrow \lambda = 600 \text{ nm}$$

15. **Sol.(2)**

W_{ABC} = Area enclosed with volume axis

$$= \frac{1}{2}(2+6) \times 10^5 \times (7-2) \times 10^{-3} = 2000 \text{ J}$$

16. **Sol.(4)**

$$\text{K.E} = \frac{L^2}{2I} \propto \frac{1}{I} \propto \frac{1}{r^2}; r \rightarrow r/3$$

$$\text{K.E} \rightarrow 9 \text{ K.E}$$

17. **Sol.(3)**

Angular momentum is conserved $L = \text{const.}$

$$L = I\omega$$

$$\text{if } I \downarrow \Rightarrow \omega \uparrow$$

$$\text{K.E.} = \frac{L^2}{2I}$$

$$\text{if } I \downarrow \Rightarrow \text{K.E.} \uparrow$$

18. **Sol.(4)**

$$P = P_0 + \frac{4T}{R}$$

$\Rightarrow R$ increases and P decreases

19. **Sol.(2)**

$$\Delta U = -GMm \left[\frac{1}{r_f} - \frac{1}{r_i} \right]$$

$$= -GMm \left[\frac{1}{R+h} - \frac{1}{R} \right] = \frac{GMmh}{R(R+h)}$$

20. **Sol.(2)**

$$B_A = \frac{\mu_0 I}{2\pi \frac{R}{2}} - \frac{\mu_0 I}{2\pi \frac{R}{2}} = 0$$

$$B_B = \frac{\mu_0 I}{2\pi \frac{R}{2}} + \frac{\mu_0 I}{2\pi \frac{3R}{2}} = \frac{4\mu_0 I}{3\pi R}$$

$$B_C = \frac{\mu_0 I}{2\pi R} + \frac{\mu_0 I}{2\pi(2R)} = \frac{3\mu_0 I}{4\pi R}$$

$$0 : 16 : 9$$

21. **Sol.(2)**

$$\frac{V}{4L_C} = 4 \left(\frac{V}{2L_0} \right)$$

$$L_0 = 8L_C = 8 \times 15 = 120 \text{ cm}$$

22. **Sol.(1)**

Materials with no unpaired, or isolated electrons are considered diamagnetic. Diamagnetic substances do not have magnetic dipole moments and have negative susceptibilities. However, materials having unpaired electrons whose spins do not cancel each other are called paramagnetic. These substances have positive magnetic moments and susceptibilities.

$$\mu_d = 0, \mu_p \neq 0$$

23. **Sol.(2)**

$$n_1 \mu_1 = n_2 \mu_2$$

$$8 \text{ gm/cm}^3 = n_2 \left(\frac{200}{20 \times 20 \times 20} \right)$$

$$n_2 = 8 \times 40 = 320$$

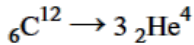
24. **Sol.(1)**

$$\vec{F}_{\text{net}} = \vec{F}_1 + \vec{F}_2 + \vec{F}_3 = \vec{0} = 2R\vec{Q}$$

\Rightarrow a is along +ve x-direction

V increases

25. Sol.(2)



The energy required for this process is given by

$$(-Q) = [3 M_{\text{He}} - M_{\text{C}}]c^2$$

$$-Q = [3 \times 4.00388 - 12]u \times c^2$$

$$-Q = (0.01164 \text{ u}) \times \left(931.5 \frac{\text{MeV}}{\text{u}}\right) \\ = 10.842 \text{ MeV}$$

26. Sol.(4)

$$p = \frac{E}{c} = \frac{10^6 \times 1.6 \times 10^{-19}}{3 \times 10^8} = 5 \times 10^{-22} \text{ kgm/sec}$$

27. Sol.(3)

$$-V_s = \frac{h\nu - \phi}{e} = \left(\frac{1240}{200} - 5\right) \text{ V}$$

$$-V_s = 6.2 - 5 = 1.2 \text{ V}$$

$$V_s = -1.2 \text{ V}$$

28. Sol.(2)

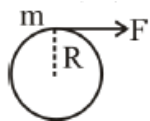
$$\frac{1}{2}mv_1^2 = 1 - 0.5 = 0.5 \dots(1)$$

$$\frac{1}{2}mv_2^2 = 2.5 - 0.5 = 2 \dots(2)$$

equation (1) \div equation (2)

$$\frac{v_1^2}{v_2^2} = \frac{1}{4} \Rightarrow \frac{v_1}{v_2} = \frac{1}{2}$$

29. Sol.(3)



$$\tau = I\alpha$$

$$F \times R = mR^2 \alpha$$

$$\alpha = \frac{F}{mR} = \frac{30}{3 \times 0.4} \\ = 25 \text{ rad/s}^2$$

30. Sol.(2)

31. Sol.(4)

32. Sol.(3)

Acceleration due to gravity acting on a body is independent of the mass of the body.

$$\left(\because g = \frac{GM}{R^2}\right)$$

33. Sol.(1)

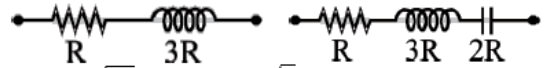
In case of minimum deviation

$\angle i = \angle e$, and ray passes parallel to base and symmetric in above case.

34. Sol.(2)

$$Y = \frac{F/A}{\Delta \ell / \ell} \Rightarrow \Delta \ell = \frac{F \ell}{Y A} = \frac{F \ell}{Y \pi r^2} \Rightarrow \Delta \ell \propto \frac{\ell}{r^2}$$

35. Sol.(3)



$$\therefore Z = \sqrt{10}R \quad \therefore Z = \sqrt{2}R$$

$$P.f_1 = \frac{R}{Z} = \frac{1}{\sqrt{10}} \quad P.f_2 = \frac{R}{Z} = \frac{1}{\sqrt{2}}$$

$$\therefore \frac{P.f_2}{P.f_1} = \frac{1}{\sqrt{2}} \times \frac{\sqrt{10}}{1} = \sqrt{5}$$

36. Sol.(1)

$$r = \frac{0.8}{2\pi}, \quad \Delta B = 2T, \quad \Delta t = 10 \text{ sec}$$

$$\varepsilon = \frac{d\phi}{dt} = \frac{\Delta B \times A}{\Delta t} = \frac{2 \times \pi r^2}{10} = 10 \text{ mV}$$

37. Sol.(4)

For 12Ω resistor:

$$P = \frac{V^2}{R} \Rightarrow V = \sqrt{12(108)} = 36V$$

For 1Ω resistor:

$$V = 36 \left(\frac{1}{4}\right) = 9V$$

38. Sol.(2)

39. Sol.(2)

$$\frac{1}{2} Kx^2 = \frac{1}{2} m \left[u^2 - \left(\frac{u}{2}\right)^2\right]$$

$$\Rightarrow Kx^2 = m \frac{3u^2}{4}$$

$$\Rightarrow x = \sqrt{\frac{3mu^2}{4k}} = \frac{u}{2} \cdot \sqrt{\frac{3m}{k}}$$

40. Sol.(2)

$$KE = h\nu - E_0 \text{ or } h\nu - E_0 = K \dots(1)$$

$$KE' = 2h\nu - E_0 = 2(h\nu - E_0) + E_0 = 2K + E_0$$

41. Sol.(1)

$$eV_s = E - \phi \Rightarrow V_s = \frac{hc}{\lambda_e} - \frac{hc}{\lambda_0 e}$$

$$\text{here } 3V_0 = \frac{hc}{\lambda_e} - \frac{hc}{\lambda_0 e} \dots(1)$$

$$\text{and } V_0 = \frac{hc}{2\lambda_e} - \frac{hc}{\lambda_0 e} \dots(2)$$

equation (1) - (3) \times equation (2)

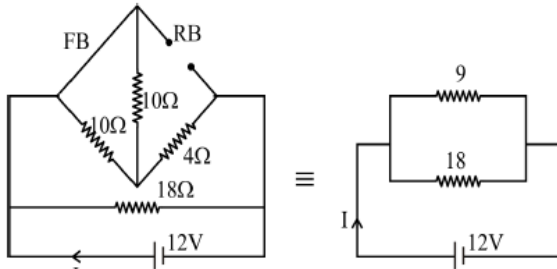
$$\Rightarrow 0 = -\frac{hc}{2\lambda_e} + \frac{2hc}{\lambda_0 e} \Rightarrow \lambda_0 = 4\lambda$$

42. Sol.(1)

$$P + \frac{1}{2} \rho v^2 = \text{constant}$$

$$\Rightarrow P + \frac{1}{2} \rho v^2 = P' + \frac{1}{2} \rho (2v)^2 \Rightarrow P' = P - \frac{3}{2} \rho v^2$$

43. Sol.(3)

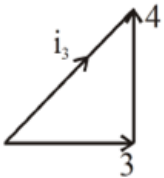


$$i = \frac{12}{6} = 2A$$

44. Sol.(2)

45. Sol.(1)

$$\therefore i_3 = i_1 + i_2$$

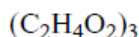
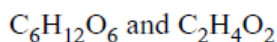


$$i_3 = 5 \sin(\omega t + 53^\circ)$$



CHEMISTRY:

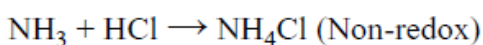
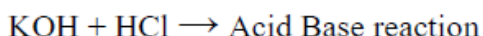
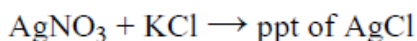
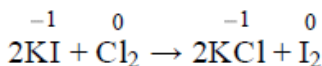
46. Sol.(2)



47. Sol.(2)

48. Sol.(3)

49. Sol.(3)



50. Sol.(1)

$$\Delta T_b = iK_b \cdot m$$

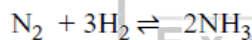
$$\Delta T_b = 3 \times 0.52 \times \frac{13.44}{134.4 \times 1} = 0.156$$

51. Sol.(2)

Due to common ion effect, ionisation of CH_3COOH decreases, so pH changes.

52. Sol.(1)

$$\begin{aligned} n_{NH_3} &= n_{HCl} = 5 \times 100 \\ &= 500 \text{ mmol} = 0.5 \text{ mol.} \end{aligned}$$



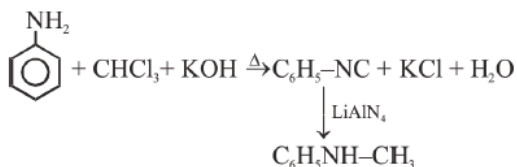
$$\begin{array}{ccccccc} t=0 & & 1 & & 3 & & - \\ \text{eq.} & (1-x) & (3-3x) & 2x & = & 0.5 & \\ & & & & \Rightarrow & x = 0.25 & \end{array}$$

$$\therefore (n_{N_2})_{eq.} = 1 - 0.25 = 0.75$$

$$(n_{H_2})_{eq.} = 3 - 3(0.25) = 2.25$$

$$K_c = \frac{(0.5)^2}{(0.75)(2.25)^3}$$

53. Sol.(1)



54. Sol.(4)

55. Sol.(4)

for 1 mol of each reacted, $\Delta H_{neu.}$ (magnitude) = 57.1 kJ

\therefore for 0.3 mol of each reacted, $\Delta H = 57.1 \times 0.3 = 17.13 \text{ kJ}$

56. Sol.(2)

Basic character of oxides increases down a group.

57. Sol.(1)

58. Sol.(1)

59. Sol.(4)

60. Sol.(3)

61. Sol.(3)

62. Sol.(4)

63. Sol.(2)

64. Sol.(3)

65. Sol.(1)

66. Sol.(3)

67. Sol.(4)

68. Sol.(4)

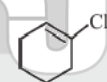
Carbonyl group can be reduce to alkane by

HI/P , $Zn-Hg|HCl$ or $NH_2-NH_2|OH^\ominus$ ethylene glycol.

69. Sol.(4)

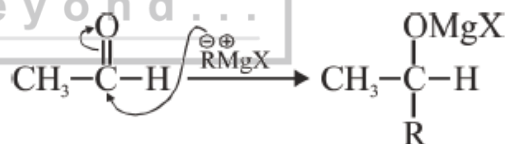
Resonance with complete octet

70. Sol.(2)



Due to resonance, partial double bond character in C-Cl bond.

71. Sol.(2)



Nucleophilic addition reaction

72. Sol.(2)

73. Sol.(3)

Total G.I. = 6

74. Sol.(3)

75. Sol.(4)

Because sucrose is non reducing.

76. Sol.(3)

Ethyl alcohol, alkan -2-ol, aldehyde & ketone having $-COCH_3$ group gives haloform reaction.

77. Sol.(3)

78. Sol.(1)

Both assertion and reason are correct and correctly explain.

79. Sol.(4)

80. Sol.(4)

For 1 g of water L. heat = xJ

∴ for 9 g water L. heat = ΔH = 9x J

$$\text{Now, } \Delta S = \frac{\Delta H}{T} = \frac{9x}{373}$$

$$\frac{1}{2} \times \frac{18x}{373} \text{ JK}^{-1}$$

81. Sol.(3)

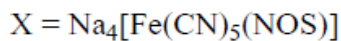
$$k = Ae^{-E_a/RT} \text{ (} e^{-E_a/RT} \text{ is unitless)}$$

∴ unit of A is same as k.

82. Sol.(3)

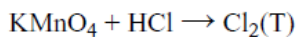
Apply Hess law

83. Sol.(3)



84. Sol.(3)

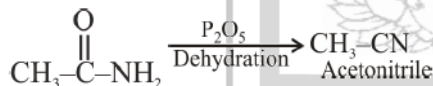
85. Sol.(3)



Greenish yellow

gas

86. Sol.(2)



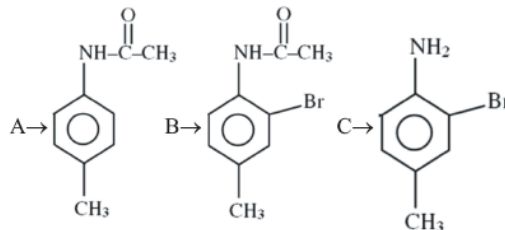
87. Sol.(3)

88. Sol.(2)

$$\text{Br}\% = \frac{80}{188} \times \frac{w_{\text{AgBr}}}{w_{\text{Compound}}} \times 100\%$$

$$= \frac{80}{188} \times \frac{141}{250} \times 100 = 24\%$$

89. Sol.(3)



90. Sol.(1)

