FT - 7 (FR) (NEET - CBSE, GSEB) (08 - 06 - 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	2	4	3	3	1	2	1	1	2	2	3	3	4	2	3	3	4	2	3
Q	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans	3	3	4	4	1	2	3	1	4	3	3	2	3	2	4	1	2	3	3	2
Q	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans	3	4	2	3	2	1	3	2	1	4	3	2	4	2	2	3	2	2	1	3
Q	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans	2	2	2	2	1	3	3	1	2	2	3	4	1	2	4	4	2	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	3	3	2	2	2	1	2	4	4	4	2	2	2	3	2	4	3	4	3
Q	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans	4	2	1	4	4	1	4	4	2	4	4	2	4	3	2	2	4	4	3	4
Q	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Ans	3	3	1	3	2	1	4	1	4	4	2	4	4	4	2	1	3	1	2	3
Q	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Ans	3	3	1	2	3	2	1	2	3	3	3	2	4	2	3	3	3	4	2	1
Q	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Ans	1	3	2	3	1	3	2	3	4	3	3	3	3	3	2	2	1	2	2	2

PHYSICS:

1. Sol. (1)

Let $n = k\rho^a a^b T^c$ where $[\rho] = [ML^{-3}]$, $[a] = [L]$ and $[T] = [MT^{-2}]$

Comparing both sides, we get

$a = \frac{1}{2}, b = \frac{3}{2}$ and $c = \frac{-1}{2}$ $\therefore \eta = \frac{k\rho^{1/2}a^{3/2}}{\sqrt{T}}$

2. Sol. (2)

Time of flight for each ball = 1s

$\therefore h = \frac{1}{2}gt^2 = \frac{1}{2}\times 10\times(1)^2 = 5m$

3. Sol. (4)

$T = \frac{2\times m_B m_C}{m_A + m_B + m_C}\times g = \frac{2\times 1\times 5}{3+1+5}\times g = \frac{10}{9}g$.

4. Sol. (3)

$a_1 = a_2 = 1$ and

$a_1^2 + a_2^2 + 2a_1a_2 \cos\theta = (\sqrt{3})^2 = 3$

or $1 + 1 + 2\cos\theta = 3$

or $\cos\theta = \frac{1}{2}$

Now $(\vec{a}_1 - \vec{a}_2)\cdot(2\vec{a}_1 + \vec{a}_2)$

$= 2a_1^2 - a_2^2 - a_1a_2\cos\theta = 2 - 1 - \frac{1}{2} = \frac{1}{2}$

5. Sol. (3)

As the vertical component of velocity of both the particles is same

$\Rightarrow \vec{V}_{yO/O'} = 0$

So the distance h between them will be constant with time and $\vec{V}_{xO/O'} = 2v\cos\alpha$

Total distance between the particles is minimum when horizontal distance between them is zero.

$\Rightarrow t = \frac{d}{2v\cos\alpha}$

6. Sol. (1)

W = 10 × 1 + 20 × 1 – 20 × 1 + 10 × 1 = 20 erg

7. Sol. (2)

Momentum and kinetic energy is conserved only in this case.

8. **Sol. (1)**

Let linear mass density of each brick = λ

so mass of each brick = $\lambda \ell$

$$x_{cm} = \frac{m_1x_1 + m_2x_2 + ... + m_7x_7}{m_1 + m_2 + ... + m_7}$$

$$= \frac{[(\lambda\ell)\times(\ell/2)]2 + \left[(\lambda\ell)\times\left(\frac{\ell}{2}+\frac{\ell}{10}\right)\right]2 + \left[(\lambda\ell)\times\left(\frac{\ell}{2}+\frac{\ell}{10}+\frac{\ell}{10}\right)\right]2 + \left[(\lambda\ell)\times\left(\frac{\ell}{2}+\frac{\ell}{10}+\frac{\ell}{10}+\frac{\ell}{10}\right)\right]}{7(\lambda\ell)}$$

$$= \frac{22\ell}{35}$$

9. **Sol. (1)**

$$\frac{ML^2}{12} = MK^2$$

$$K = \frac{L}{\sqrt{12}}$$

10. **Sol. (2)**

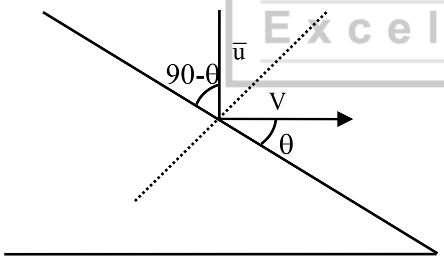
Gravitational pull depends upon the acceleration due to gravity on that planet.

$$M_m = \frac{1}{81}M_e\ ,\ g_m = \frac{1}{6}g_e$$

$$g = \frac{GM}{R^2} \Rightarrow \frac{R_e}{R_m} = \left(\frac{M_e}{M_m}\times\frac{g_m}{g_e}\right)^{1/2} = \left(81\times\frac{1}{6}\right)^{1/2}$$

$$\therefore\ R_e = \frac{9}{\sqrt{6}}R_m$$

11. **Sol. (2)**



$\vec{u} = -\sqrt{2gh}\hat{j}$

$|\vec{v}| = |\vec{u}|$ -

$\vec{v} = \sqrt{2gh}\hat{i}$

ucos θ = v sin θ

tan θ = 1

θ= 45°

12. **Sol. (3)**

Weight of block

= Weight of displaced oil + Weight of displaced water

$\Rightarrow mg = V_1\rho_0 g + V_2\rho_W g$

$\Rightarrow\ m = (10\times10\times6)\times0.6 + (10\times10\times4)\times1$ = 760 *gm.*

13. **Sol. (3)**

The motion of block is S.H.M.

$$Y = A\sin(\omega t + \phi)$$

Here amplitude is

$$A = \frac{mg}{k} = \frac{20\times10}{2000}m = 10\,cm$$

At t = 0, displacement of body with respect to mean position is, Y = 15 – 10 = 5 cm

$\therefore 5 = 10\sin(\omega\times0+\phi)$ or $\frac{1}{2} = \sin\phi \Rightarrow \phi = \frac{\pi}{6}$

$$\therefore y = 10\sin\left(10t + \frac{\pi}{6}\right)$$

14. **Sol. (4)**

$F = YA\,\alpha\Delta\theta$

If *Y, A* and $\Delta\theta$ are constant then $\frac{F_A}{F_B} = \frac{\alpha_A}{\alpha_B} = \frac{3}{2}$

15. **Sol. (2)**

$$Q \propto \frac{A}{l} \propto \frac{r^2}{l}\ \Rightarrow \frac{Q_2}{Q_1} = \frac{r_2^2}{r_1^2}\times\frac{l_1}{l_2}$$

$$\Rightarrow \frac{Q_2}{Q_1} = \frac{4}{1}\times\frac{1}{2}\ \Rightarrow Q_2 = 2Q_1$$

16. **Sol. (3)**

For a given pressure, volume will be more if temperature is more (Charle's law).

From the graph it is clear that $V_2 > V_1$.

$\therefore$ $T_2 > T_1$

17. **Sol. (3)**

w = Area under P–V graph

$$= -\pi\left(\frac{3P_0 - P_0}{2}\right)\left(\frac{3V_0 - V_0}{2}\right) = -\frac{22}{7}P_0V_0$$

18. **Sol. (4)**

Time period of pendulum doesn't depends upon mass but it depends upon length (distance between point of suspension and centre of mass). In first three cases length are same so $T = T_1 = T_2$ but in last case centre of mass lowers which in turn increases the length. So in this case time period will be more than the other cases.

19. **Sol. (2)**

$$\gamma_{mix} = \frac{\frac{\mu_1\gamma_1}{\gamma_1 - 1} + \frac{\mu_2\gamma_2}{\gamma_2 - 1}}{\frac{\mu_1}{\gamma_1 - 1} + \frac{\mu_2}{\gamma_2 - 1}} = \frac{\frac{3 \times 1.3}{(1.3-1)} + \frac{2 \times 1.4}{(1.4-1)}}{\frac{3}{(1.3-1)} + \frac{2}{(1.4-1)}} = 1.33$$

20. **Sol. (3)**

Comparing with $y = a\sin(\omega t - kx) \Rightarrow a = \frac{10}{\pi}, \omega = 200\,\pi$

$$\therefore\ v_{max} = a\omega = \frac{10}{\pi} \times 2000\,\pi = 200\,m/\sec$$

and $\omega = \frac{2\pi}{T} \Rightarrow 200\,\pi = \frac{2\pi}{T} \Rightarrow\ T = 10^{-3}$ *sec*

21. **Sol. (3)**

Beat frequency = $f_1 - f_2$

$$= \frac{v}{2l} - \frac{v}{2(l+x)}$$

$$= \frac{v}{2l}\left[1 - \left(1 + \frac{x}{l}\right)^{-1}\right] \cong \frac{v}{2l}\left[1 - 1 + \frac{x}{l}\right] = \frac{vx}{2l^2}$$

22. **Sol.(3)**

The maximum electric filed that a dielectric medium can withstand without break down (of its insulating property) is called its dielectric strength; for air it is about 3×10^6 Vm^{-1}. For a separation between conductors of the order of 1 cm or so, this field corresponds to a potential difference of 3×10^4 V between the conductors. Thus, for a capacitor to store a large amount of charge without leaking, its capacitance should be high enough so that the potential difference and hence the electric field do not exceed the break down limits. Put differently, there is a limit to the amount of charge can be stored on a given capacitor without significant leaking.

23. **Sol. (4)**

The quantities energy stored and potential difference decreases, because $U = \frac{1}{2}\frac{q^2}{KC}$ and $V = \frac{q}{KC}$ decreases. On inserting a dielectric, the capacitance increase (KC_0) , where C_0 is the capacitance when no glass slab is present and K is dielectric constant, As 'C" increase, U and V both decreases as they are inversely related to C. q is constant here.

24. **Sol. (4)**

Let $E_0 = V_0/d$ be the electric field between the plates when there is no dielectric and the potential difference is V_0. If the dielectric is now inserted, the electric field in the dielectric will be $E = E_0/K$. The potential difference will be

$$V = E_0\left(\frac{3}{4}d\right) + \frac{E_0}{K}\left(\frac{1}{4}d\right)$$

$$= E_0 d\left(\frac{3}{4} + \frac{1}{4K}\right) = V_0 . \frac{3K+1}{4K}$$

The potential difference decreases by the factor $\frac{3(K+1)}{4K}$ while the free charge Q_0 on the plates remains unchanged. The capacitance thus increases.

$$C = \frac{Q_0}{V} = \frac{4K}{3K+1}\frac{Q_0}{V_0} = \frac{4K}{3K+1}C_0$$

25. **Sol. (1)**

Conductivity $\sigma = \frac{1}{\rho}$ .....(i)

and conductance $G = \frac{1}{R}$

$\Rightarrow GR = 1$ .....(ii)

From equation (i) and (ii) $\sigma = \frac{GR}{\rho}$

26. **Sol. (2)**

$$R_1 = R_{01}(1 + \alpha_1\Delta\theta)$$

$$= 600(1 + 0.001 \times 30) = 618\Omega$$

$$R_2 = R_{02}(1 + \alpha_2\Delta\theta)$$

$$= 300(1 + 0.004 \times 30) = 336\Omega$$

$$R_{eq} = R_1 + R_2 = 618 + 336 = 954\Omega$$

27. **Sol. (3)**

Magnetic field at any point lying on the current-carrying straight conductor is zero.

Here,

H_1 = magnetic field at M due to current in PQ.

H_2 = magnetic field at M due to QR + magnetic field at M due to QS + magnetic field at M due to PQ.

$$= 0 + \frac{H_1}{2} + H_1 = \frac{3}{2}H_1 \Rightarrow \frac{H_1}{H_2} = \frac{2}{3}$$

28. **Sol. (1)**

$\therefore$ The total number of turns, N = 400 × 5 = 2000 and number of turns/length, $n = \frac{2000}{0..8} = 2500$ The magnitude of magnetic field inside the solenoid

$B = \mu_0 nI = 4 \times 3.14 \times 10^{-7} \times 2500 \times 8$

$= 2.5 \times 10^{-2} T$

The direction of magnetic field is along the axis of solenoid.

29. Sol. (4)

As $P_m = q_m \times 2l, q_m = \frac{P_m}{2l}$

Here, q_m (and not m) denotes the pole strength as m denotes magnetic moment. Further, as $\pi r = 2\ell$ or $r = 2\ell/\pi$

Distance between the two poles, $2\ell = 2r = \frac{4\ell}{\pi}$

Magnetic moment $P'_m = q_m \times 2\ell'$

$= \left(\frac{P_m}{2\ell}\right)\left(\frac{4\ell}{\pi}\right) = \frac{2P_m}{\pi}$

30. Sol. (3)

Since the magnetic field is uniform therefore there will be no change in flux hence no current will be induced.

31. Sol. (3)

Self-inductance $L = \mu_0 N^2 A / l = \mu_0 n^2 lA$ Where n is the number of turns per unit length and N is the total number of turns and $N = nl$. In the given question n is same. A is increased 4 times and l is increased 2 times and hence L will be increased 8 times.

32. Sol. (2)

The circuit is RLC resonant circuit.

$\therefore$Reading of voltmeter = $v_L - v_C = 0$

Reading of ammeter = $\frac{E_{rms}}{z}$

$= \frac{E_{rms}}{R} = \frac{110}{55} = 2A$

33. Sol. (3)

Current in B_1 will promptly become zero while current in B_2 will slowly tend to zero.

34. Sol. (2)

$I_{av} = \frac{c\varepsilon_0 E_0^2}{2} = \frac{3\times10^8 \times 8.85\times10^{-15} \times 36^2}{2} = 1.72 W/m^2$

35. Sol. (4)

In one second

$p = \frac{2U}{c} = \frac{2S_{av}A}{c} = \frac{2\times6\times40\times10^{-4}}{3\times10^8}$

$= 1.6\times10^{-10} kg - m/s^2$

36. Sol. (1)

$\delta = (\mu - 1) A = 2°$

So by rotating mirror by 1° in clockwise direction, emergent ray after reflection will become horizontal.

37. Sol. (2)

$m_\infty = \frac{v_0}{u_0} \times \frac{D}{f_e}$

from $\frac{1}{f_0} = \frac{1}{v_0} - \frac{1}{u_0}$

$\Rightarrow \frac{1}{(+1.2)} = \frac{1}{v_0} - \frac{1}{(-1.25)} \Rightarrow v_0 = 30cm$

$\therefore |m_\infty| = \frac{30}{1.25} \times \frac{25}{3} = 200$

38. Sol.(3)

According to question $n_1\lambda_1 = n_2\lambda_2$

So $\frac{n_1}{n_2} = \frac{\lambda_2}{\lambda_1} = \frac{10000}{12000} = \frac{5}{6}$

so minimum n_1 and n_2 are 5 and 6 respectively.

$X_{min} = \frac{n_1\lambda_1 D}{d} = \frac{5(12000\times10^{-10})(2)}{2\times10^{-3}}$

$= 6\times10^{-3} m = 6mm$

39. Sol.(3)

For path difference λ, phase difference = 2π rad

For path difference $\frac{\lambda}{4}$, phase difference $= \frac{\pi}{2} rad$

As K = $4I_0$. So, intensity at given point where path difference is $\frac{\lambda}{4}$

$K' = 4I_0 \cos^2\left(\frac{\pi}{4}\right) = 2I_0 = \frac{K}{2}$

40. Sol. (2)

$K_{max}(eV) = 12400\left[\frac{1}{\lambda(\mathring{A})} - \frac{1}{\lambda_0(\mathring{A})}\right]$

$= 12400\left[\frac{1}{1000} - \frac{1}{2000}\right] = 6.2eV$

41. Sol. (3)

$$\frac{1}{\lambda} = R\left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$$

$$\Rightarrow \frac{1}{970.6 \times 10^{-10}} = 1.097 \times 10^7\left[\frac{1}{1^2} - \frac{1}{n_2^2}\right] \Rightarrow n_2 = 4$$

$\therefore$ Number of emission lines $N = \frac{n(n-1)}{2} = \frac{4 \times 3}{2} = 6$

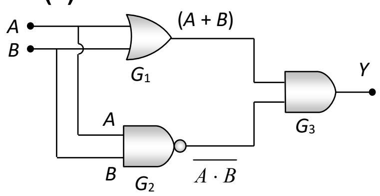
42. Sol. (4)

B.E. of Li^7 = 39.20 MeV and He^4 = 28.24 MeV

Hence binding energy of $2H^4$ = 56.48 MeV

Energy of reaction = 56.48 – 39.20 = 17.28 MeV

43. Sol. (2)



$Y = (A + B).\overline{AB}$

The given output equation can also be written as

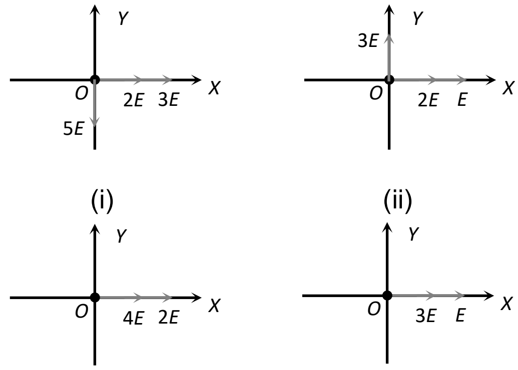
$Y = (A + B).(\overline{A} + \overline{B})$ (De morgan's theorem)

$= A\overline{A} + A\overline{B} + B\overline{A} + B\overline{B} = 0 + A\overline{B} + \overline{A}B + 0 = \overline{A}B + A\overline{B}$

This is the expression for XOR gate.

44. Sol. (3)

If electric field due to charge |q| at origin is E then electric field due to charges |2*q*|, |3*q*|, |4*q*| and |5*q*| are respectively 2*E*, 3*E*, 4*E* and 5*E*



(iii) (iv)

$E_{(i)} = \sqrt{(5E)^2 + (5E)^2} = 5\sqrt{2}E$,

$E_{(ii)} = \sqrt{(3E)^2 + (3E)^2} = 3\sqrt{2}E$,

$E_{(iii)} = 4E + 2E = 6E$ and $E_{(iv)} = 3E + E = 4E$

$\Rightarrow E_{(i)} > E_{(iii)} > E_{(ii)} > E_{(iv)}$

45. Sol. (2)

$V_G = I_G G$

$V_G = 0.01 \times 20 = 0.2V$

$R = (\frac{V}{V_G} - 1)G$

$R = (\frac{20}{0.2} - 1)(20) = 1980\Omega$

CHEMISTRY:

46. Sol.(1)

47. Sol.(3)

48. Sol.(2)

49. Sol.(1)

50. Sol.(4)

51. Sol.(3)

52. Sol.(2)

53. Sol.(4)

54. Sol.(2)

55. Sol.(2)

56. Sol.(3)

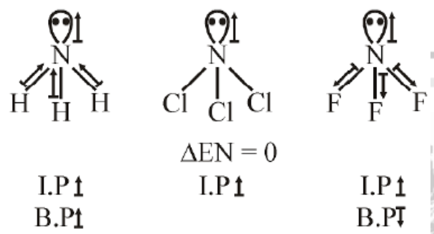
57. Sol.(2)

58. Sol.(2)

59. Sol.(1)

60. Sol.(3)

61. Sol.(2)



62. Sol.(2)

$$CaC_2 + H_2O \longrightarrow Ca(OH)_2 + C_2H_2$$

$\Downarrow$ Organic compound

$H-C \equiv C-H$

2π bonds

63. Sol.(2)

64. Sol.(2)

233 g of $BaSO_4$ contains 32 g of sulphur.

0.3495 g $BaSO_4$ contains $\frac{32 \times 0.3495}{233}$ g of sulphur

Percentage of sulphur $\frac{32 \times 0.3495 \times 100}{233 \times 0.25}$

= 19.2%

65. Sol.(1)

66. Sol.(3)

67. Sol.(3)

68. Sol.(1)

69. Sol.(2)

No. of S^{-2} ions $= \frac{64 \text{ amu}}{32 \text{ amu}} = 2$

$\therefore$ Charge on one ion $= 2 \times (-1.6 \times 10^{-19} C)$

$\therefore$ Charge on two ion $= 2 \times 2 \times (-1.6 \times 10^{-9} C)$

$= -6.4 \times 10^{-19} C$

70. Sol.(2)

71. Sol.(3)

72. Sol.(4)

When A_2 and B_2 are allowed to react, final volume = 4 L

$$A_2(g) + B_2(g) \rightleftharpoons 2AB(g)$$

t = 0	2	2	–
t_{eq}	2 – x	2 – x	2x

$$K_C = \frac{\left(\frac{2x}{4}\right)^2}{\left(\frac{2-x}{4}\right)^2} = 4 \Rightarrow \frac{2x}{2-x} = 2$$

$$\Rightarrow 2x = 4 - 2x \Rightarrow 4x = 4 \Rightarrow x = 1$$

$$\text{Now, } [AB] = \frac{2x}{4} = \frac{2}{4} = 0.5M$$

73. Sol.(1)

$$pH = pK_a + \log\frac{[\text{salt}]}{[\text{acid}]}$$

$\because pK_a + pK_b = 14$

$pK_a + 10 = 14$

$pK_a = 14$

pH = 4 + log 1

pH = 4

74. Sol.(2)

75. Sol.(4)

For (WA + WB) type of salt, degree of hydrolysis does not depends on concentration.

76. Sol.(4)

77. Sol.(2)

78. Sol.(4)

79. Sol.(3)

80. Sol.(3)

81. Sol.(3)

82. Sol.(3)

83. Sol.(3)

Conc. H_2SO_4 + Cu Chips

$\Downarrow$

Reddish brown gas

Confirmatory test for NO_3^- radical.

84. Sol.(2)

85. **Sol.(2)**

86. **Sol.(2)**

87. **Sol.(1)**

88. **Sol.(2)**

$$\frac{P^{o} - P_s}{P^{o}} = X$$

$$\frac{x - P_s}{x} = \frac{6/60}{\frac{6}{60} + \frac{178.2}{18}}$$

$$\frac{x - P_s}{x} = \frac{0.1}{0.1 + 99}$$

$$\frac{x - P_s}{x} = \frac{0.1}{10} = \frac{1}{100}$$

$$100\,x - 100\,P_s = x$$

$$99x = 100\,P_s$$

$$P_s = 0.99\,x$$

89. **Sol.(4)**

90. **Sol.(4)**