# RJ VISION PVT. LTD.

(MOST STABLE & INNOVATIVE INSTITUTE)

# FT – 11

## ENG

**PCB**

# SOLUTION

**COURSE NAME: 12TH** **DATE : 08-04-2026**

## FT - 11 (FR) (NEET - CBSE, GSEB) (08 - 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 | 3 | 2 | 3 | 4 | 1 | 4 | 1 | 4 | 2 | 2 | 1 | 2 | 2 | 4 | 1 | 1 | 4 | 3 | 3 |
| Q | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Ans | 3 | 2 | 2 | 4 | 3 | 2 | 3 | 4 | 4 | 1 | 1 | 4 | 2 | 1 | 2 | 1 | 3 | 2 | 1 | 4 |
| Q | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Ans | 4 | 1 | 2 | 3 | 1 | 2 | 4 | 2 | 4 | 2 | 1 | 3 | 2 | 4 | 3 | 2 | 2 | 2 | 2 | 2 |
| Q | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| Ans | 1 | 1 | 3 | 4 | 3 | 1 | 3 | 3 | 4 | 3 | 2 | 3 | 1 | 3 | 1 | 2 | 4 | 2 | 1 | 3 |
| Q | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| Ans | 2 | 3 | 4 | 2 | 1 | 2 | 3 | 1 | 1 | 3 | 1 | 2 | 1 | 1 | 2 | 2 | 3 | 4 | 3 | 1 |
| 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 | 1 | 4 | 3 | 4 | 1 | 3 | 2 | 2 | 1 | 4 | 4 | 3 | 2 | 3 | 3 | 3 | 2 |
| Q | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
| Ans | 1 | 4 | 3 | 2 | 4 | 3 | 1 | 4 | 3 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 4 | 3 |
| Q | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 |
| Ans | 4 | 2 | 1 | 3 | 4 | 2 | 3 | 4 | 1 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 3 | 4 | 1 | 4 |
| Q | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| Ans | 3 | 3 | 3 | 3 | 1 | 4 | 4 | 4 | 4 | 2 | 3 | 4 | 4 | 2 | 4 | 4 | 3 | 4 | 2 | 1 |

**PHYSICS:**

**1.** **Sol. (1)**

Applying law of energy conservation,

T.KE = T.PE

$\frac{1}{2}mu^2 = \frac{KQq}{r}$ ...(i)

$\frac{1}{2}m\left(\frac{u}{2}\right)^2 = \frac{KQq}{r'}$ ...(ii)

(i) ÷ (ii)

$4 = \frac{r'}{r} \Rightarrow r' = 4r$

**2.** **Sol. (3)**

$U_{dipole} = -\vec{P}\cdot\vec{E} = -PE\cos\theta$

$= -P\left(\frac{\sigma}{\varepsilon_0}\right)\cos(0^\circ) = \frac{-\sigma P}{\epsilon_0}$

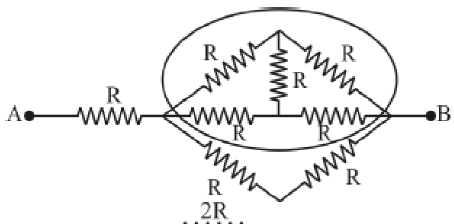
**3.** **Sol. (2)**

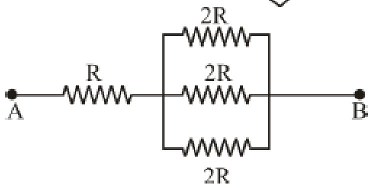
When a dielectric K is introduced in a parallel plate condenser its capacity becomes K times. Hence C' $5C_0$. Energy stored $W_0 = \frac{q^2}{2C_0}$

$\therefore W' = \frac{q^2}{2C'} = \frac{q^2}{2\times 5C_0} \Rightarrow W' = \frac{W_0}{5}$

**4.** **Sol. (3)**

Balanced W.S.B.

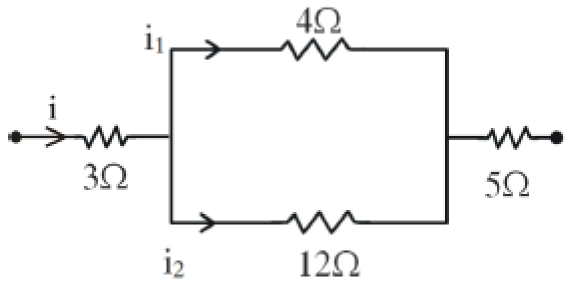



$R_{AB} = R + \frac{2R}{3} = \frac{5R}{3}$

**5.** **Sol. (4)**

$P_{12} = 12W$




$i_2 = \frac{4}{16} \times i = \frac{1}{4} i$

$\because P_{12} = i_2^2 \times 12$

$12 = \left(\frac{i}{4}\right)^2 \times 12$

$i^2 = 16$

$i = 4A$ so $P_3 = i^2 = (4)^2 \times 3 = 48$ W

**6. Sol. (1)**

Both statements are correct

**7. Sol. (4)**

W = MB (1 – cos 60°) = 10 J

**8. Sol. (1)**

$\frac{E}{B} = C$

$B = \frac{E}{C} = \frac{630}{3 \times 10^8} = 2.1 \times 10^{-6}$ Wb/m$^2$

**9. Sol. (4)**

For equivalent focal length,

$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2} + \frac{1}{f_3} = \frac{1}{(+40)} + \frac{1}{(-40)} + \frac{1}{(-15)}$

$\Rightarrow \frac{1}{f} = -\frac{1}{15} \Rightarrow F = -15 cm$

Since, power i.e., P (in D)

$= \frac{1}{F(in\, m)} = -\frac{100}{15} = -\frac{20}{3} = -6.67$ D

**10. Sol. (2)**

At point A,

$I_A = I + 4I + 2\sqrt{I}\sqrt{4I}\cos\pi$

$= I$

At point B,

$I_B = I + 4I + 2\sqrt{I}\sqrt{4I}\cos 2\pi$

$= 9I$

$\therefore I_B - I_A = 9I - I = 8I$

**11. Sol. (2)**

$\because \mu = \frac{c}{v} = \frac{3 \times 10^8}{2.5 \times 10^8} = \frac{6}{5}$

From Brewstar's law

$\therefore i_P = \tan^{-1}(\mu) = \tan^{-1}\left(\frac{6}{5}\right)$

**12. Sol. (1)**

$_{100}X^{244} \xrightarrow{3\alpha} {}_{94}Y^{232} \xrightarrow{2\beta^-} {}_{96}Y^{232}$

**13. Sol. (2)**

First excited state ⟹ n = 2

$T_2 = -13.6 \frac{z^2}{n^2} = -\frac{13.6}{4} eV$

Second excited state ⟹ n = 3

$T_1 = -13.6 \frac{z^2}{n^2} = -\frac{13.6}{9} eV$

$T_1 : T_2 = \frac{1}{9} : \frac{1}{4} = 4 : 9$

**14. Sol. (2)**

Using $V_0 = \frac{hv}{e} - \frac{hv_0}{e}$ ........(1)

$\frac{V_0}{4} = \frac{hv/2}{e} - \frac{hv_0}{e}$ ........(2)

On solving $v_0 = \frac{v}{3}$

**15. Sol. (4)**

Diameter or radius ∝ n$^2$

$\frac{D}{1.06\,\text{Å}} = \left(\frac{10}{1}\right)^2 \Rightarrow D = 100 \times 1.06\,\text{Å} = 106\,\text{Å}$

**16. Sol. (1)**

Momentum of the incident photon $p = \frac{h}{\lambda}$,

Momentum after reflection = $-\frac{h}{\lambda}$

Change in momentum = $\Delta p = \frac{2h}{\lambda}$

If n is the number of photons falling per second on the screen then force

$F = \frac{\Delta p}{\Delta t} = \frac{2nh}{\lambda}$

$\Rightarrow n = \frac{F\lambda}{2h} = \frac{1 \times 6600 \times 10^{-9} \times 10^{-6}}{2 \times 6.6 \times 10^{-34}}$

= 5 × 10$^{21}$ photons s$^{-1}$

**17. Sol. (1)**

$I_Z = \frac{P_Z}{V_Z} = \frac{0.27W}{9V} = 0.03$A

$I_L = \frac{V_L}{R_L} = \frac{9V}{450\Omega}$ = 0.02A

$I_S = I_Z + I_L$ = 0.05A

$R_S = \frac{V_i - V_L}{I_S} = \frac{(12-9)V}{0.05A}$

$R_S = 60\Omega$

**18.** **Sol. (4)**

The P-N junction will conduct only when it is forward biased i.e. when – 5V is fed to it, so it will conduct only for 3rd quarter part of signal shown and when it conducts potential drop 5 volt will be across both the resistors, so output voltage across R is 2.5V.

$\therefore V_0 = -2.5V$

**19.** **Sol. (3)**

$P_1V_1 = P_2V_2$

$10 \times 10 = P_2 \times 15$

Change in pressure = 10 – $\frac{100}{15} = \frac{10}{3}$ kPa

**20.** **Sol. (3)**

For constant heat flow rate (Q)

msdT = Qdt

$\frac{dT}{dt} \propto \frac{1}{s}$

For high specific heat, slope $\frac{dT}{dt}$ is lower that is

for

C.

**21.** **Sol. (3)**

$A_r = \frac{75}{100} \times A_i = \frac{3}{4} \times 0.02 = 0.015$

No phase change at rarer medium.

So y = 0.015 sin 8π $\left[t + \frac{x}{20}\right]$

**22.** **Sol. (2)**

$\Delta n = n_1 - n_2$

= 202 – 200 = 2b/s

$\frac{I_{max}}{I_{min}} = \left(\frac{a_1 + a_2}{a_1 - a_2}\right)^2 = \left(\frac{4+3}{4-3}\right)^2 = \frac{49}{1}$

**23.** **Sol.(2)**

$\frac{1}{2} kA^2 = U_{max} - U_{min}$

$\Rightarrow \frac{1}{2} k \frac{400}{10^6} = 0.03$

$\Rightarrow k \frac{600}{4} = 150$ N/m

**24.** **Sol. (4)**

$\frac{v_1}{v_2} = \frac{9}{4} = \frac{r_1^2}{r_2^2}$

$\frac{r_1}{r_2} = \frac{3}{2}$

$\frac{V_1}{V_2} = \left(\frac{r_1}{r_2}\right)^3 = \frac{27}{8}$

**25.** **Sol. (3)**

Time taken by the rolling body to reach the bottom

$t_{rolling} = \frac{1}{\sin\theta}\sqrt{\frac{2h}{g}\left(1 + \frac{K^2}{R^2}\right)}$

Here, θ, h and g are constant

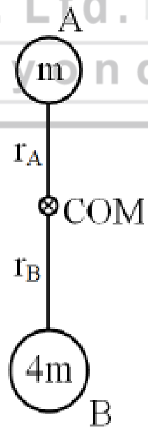
$\therefore t_{rolling} \propto \sqrt{1 + \frac{K^2}{R^2}}$

$\left(\frac{K^2}{R^2}\right)_{ring} = 1, \left(\frac{K^2}{R^2}\right)_{disc} = \frac{1}{2};$

$\left(\frac{K^2}{R^2}\right)_{sphere} = \frac{1}{2}, \left(\frac{K^2}{R^2}\right)_{shell} = \frac{2}{3}$

$\therefore t_{sphere} < t_{disc} < t_{shell} < t_{ring}$

**26.** **Sol.(2)**




$m_A r_A = m_B r_B \Rightarrow \frac{r_A}{r_B} = \frac{4m}{m} = 4$

$\because \omega_A = \omega_B$

$\frac{v_A}{r_A} = \frac{v_B}{r_B}$

$\frac{v_A}{v_B} = \frac{r_A}{r_B} = 4$

**27.** **Sol. (3)**

Inelastic collision

mu = 2mV

V = $\frac{u}{2}$

COME $\frac{1}{2}$ 2m $\left(\frac{u}{2}\right)^2$ = 2 mgh

$h = \frac{u^2}{8g}$

**28.** **Sol. (4)**

$F(x) = -\frac{dU}{dx}(x)$

or $U(x) = -\int F(x)\,dx$

Here F(x) = –kx, where k is a positive constant.

$U(x) = +k\int x dx = \frac{1}{2}kx^2$

i.e. parabola

**29.** **Sol. (4)**

$\frac{[a]}{[b]} = \frac{[MLT^{-2}][L]}{T^{-1}}$

**30.** **Sol. (1)**

Here $\frac{dv}{dx} =$ − 1 and v = 2 at x = 3

so a = $v\frac{dv}{dx}$ = 2(–1) = – 2

∴ Magnitude of acceleration = 2 $m/s^2$

**31.** **Sol. (1)**

a ∝ t ⇒ V ∝ $t^2$

a = constant ⟹ V ∝ t

**32.** **Sol. (4)**

Aply KVL from A to B

–25 + 2 × 2 + 2 × R + 2 × 8 = 0

R = 2.5

Hence option (4)

**33.** **Sol. (2)**

induced charge q = $\frac{\Delta\phi}{R} = \frac{10-2}{2} = \frac{8}{2}$

= 4.0 C

**34.** **Sol. (1)**

$\frac{1}{f} = (\mu-1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$

$\Rightarrow (1.5-1)\times\left[\frac{2}{20}\right]$

$f = 20$ cm

**35.** **Sol. (2)**

$\mu = \frac{1}{\sin\theta_c}$

$\frac{c}{v} = \frac{1}{\sin 30^\circ}$

$v = \frac{c}{2} = \frac{3\times10^8}{2} =$ 1.5 × $10^8$m/s

**36.** **Sol. (1)**

AND + NOT = NAND

**37.** **Sol. (3)**

$\frac{\Delta A}{A} = \frac{2\Delta L}{L} = 6\%$

**38.** **Sol. (2)**

$\lambda_m \propto \frac{1}{T}$

$\frac{\lambda_{m1}}{\lambda_{m2}} = \frac{T_2}{T_1}$

$\frac{\lambda_m}{\lambda_m} = \frac{3000}{2000}$

$\lambda_{m2} = \frac{2}{3}\lambda_m$

**39.** **Sol. (1)**

$Y = \frac{stress}{strain} = \frac{10^8}{10^{-3}} = 10^{11}$ N/$m^2$

**40.** **Sol. (4)**

$\frac{g}{9} = \frac{g}{\left(1+\frac{h}{R}\right)^2}$

$3 = 1 + \frac{h}{R}$ h=2R

**41.** **Sol. (4)**

R = $\frac{1}{2}$ m ; m = 10 kg ; ω = 20 rad $s^{-1}$

K.E.= $\frac{1}{2}$ I$\omega^2$ = $\frac{1}{2}\left(\frac{mR^2}{2}\right)$ $\omega^2$

$= \frac{1}{2}\left(\frac{10}{2}\times\frac{1}{4}\right)$ × 400 = 250 J

**42.** **Sol. (1)**

$T_{max} = m\omega^2_{max}.\ r$

10 = $\frac{1}{4}$ × $\omega^2_{max}$ × 10 × $10^{-2}$

$\omega_{max}$ = 20 rad/sec

**43.** **Sol. (2)**

Pitch = $\frac{5mm}{5\ Rotations}$ = 1mm

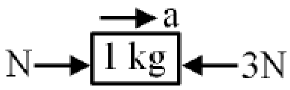
LC = $\frac{Pitch}{100} = \frac{1mm}{100}$

= 0.01 mm

= 0.001 cm

**44. Sol.(3)**

$a = \frac{6-3}{2+1} = 1\text{m/s}^2$




N – 3 = 1 × a

N = 3 + 1 = 4N

**45. Sol. (1)**

$y = 3x - \frac{x^2}{9} = 3x\left[1 - \frac{x}{27}\right]$

compare with

$y = x\tan\theta\left[1 - \frac{x}{R}\right]$

R = 27m

## CHEMISTRY:

46. **Sol.(2)**

47. **Sol.(4)**

48. **Sol.(2)**

49. **Sol.(4)**

No free $S^{2-}$ ion available in acidic medium of $H_2S$.

50. **Sol.(2)**

51. **Sol.(1)**

52. **Sol.(3)**

53. **Sol.(2)**

54. **Sol.(4)**

55. **Sol.(3)**

$[CrF_6]^{-4}$

$\Rightarrow Cr^{+2} \rightarrow 3d^4$

$F^- \rightarrow$ WFL $\rightarrow$ No pairing

So unpaired $e^- = 4$

(b) $[MnF_6]^{-4}$

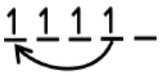
$Mn^{+2} \rightarrow 3d^5$

$F^- \rightarrow$ WFL $\rightarrow$ No pairing

Unpaired $e^- = 5$

(c) $[Cr(CN)_6]^{-4} \Rightarrow Cr^{+2} \Rightarrow d^4$

$CN^- \rightarrow$ SFL



$\rightarrow$unpaired $e^- = 2$

(d) $[Mn(CN)_6]^{-4} \Rightarrow 3d^5$.

 $\Rightarrow d^2sp^3$

Unpaired $e^- = 1$

56. **Sol.(2)**

57. **Sol.(2)**

due to

$s^2 > s^2\,p^1$ and $s^2p^3 > s^2p^4$

58. **Sol.(2)**

59. **Sol.(2)**

$$N_2 \rightarrow \sigma_{1s^2}\, \sigma^*_{1s^2}\, \sigma_{2s^2} \sigma^*_{2s^2}\, \pi_{2p_x^2 = 2p_y^2 \sigma_2 p_z^2}$$

$N_2^+ \rightarrow 4$ antibonding $e^-$

$N_2^- \rightarrow 5$ antibonding $e^-$

60. **Sol.(2)**

Due to inert pair effect

61. **Sol.(1)**

62. **Sol.(1)**

63. **Sol.(3)**

Intermediate $\rightarrow$ Carbanion

64. **Sol.(4)**

$2CH_3 - CH_3 + 3O_2 \xrightarrow[\Delta]{(CH_3-COO)_2Mn} 2CH_3-COOH$

(Ethanoic acid) + $2H_2O$

65. **Sol.(3)**

The bond angle in alcohol is slightly less than the tetrahedral angle due presence of lone pair $e^-$ at –OH group of alcohol.

66. **Sol.(1)**

67. **Sol.(3)**

68. **Sol.(3)**

69. **Sol.(4)**

70. **Sol.(3)**

71. **Sol.(2)**

72. **Sol.(3)**

73. **Sol.(1)**

74. **Sol.(3)**

75. **Sol.(1)**

76. **Sol.(2)**

$$E = \frac{nhc}{\lambda}$$

$$p \times t = \frac{nhc}{\lambda}$$

$$\Rightarrow \frac{n}{t} = \frac{p\lambda}{hc} = \frac{100 \times 400 \times 10^{-10}}{3 \times 10^8 \times 6.6 \times 10^{-34}}$$

$$\frac{n}{t} = \frac{4 \times 10^{20}}{19.8} = 2 \times 10^{19}$$

77. **Sol.(4)**

The reaction given is an exothermic reaction thus according to Le – chatelier's principle lowering of temperature, addition of $F_2$ and or $Cl_2$ favour for the forward direction and hence the production of $ClF_3$.

78. **Sol.(2)**

For first – order reaction.

$$k \frac{2.303}{t} \log_{10} \frac{1}{(a-x)} = \frac{2.303}{60} \log_{10} \frac{100}{(100-60)}$$

$= 0.0153\ min^{-1}$

Now $t_{50\%} = \dfrac{0.693}{K} = \dfrac{0.693}{0.0153} = 45.29\ \text{min}$

79. **Sol.(1)**

More negative or lower is the reduction potential, more is the reducing power.

**80.** **Sol.(3)**

$E_{cell}^{0} = \left(E_{cathode}^{0} - E_{anode}^{0}\right)_{SRP}$

= 0.80 – (–0.76) = 1.56

**81.** **Sol.(2)**

$pH = pK_a + \log\frac{[Conjugate + base]}{[Acid]}$

$= -\log(1.8\times10^{-5}) + \log\frac{[0.30]}{[0.20]}$

$pH = 4.92$

pOH = 14 – pH

= 14 – 4.92 = 9.08

**82.** **Sol.(3)**

$\frac{5\times10}{342} = \frac{1\times10}{M}$

$M = \frac{342}{5} = 68.4$

**83.** **Sol.(4)**

$200\times\left(\frac{2}{10}\right) = 100\times N$

$N = 0.4$

**84.** **Sol.(2)**

$X_B = \frac{P_B}{P_T} = \frac{\frac{1}{3}\times42}{\frac{1}{3}\times42 + \frac{2}{3}\times36}$

$= \frac{14}{14+24} = \frac{14}{38} = \frac{7}{19}$

**85.** **Sol.(1)**

$2SO_2 + O_2 \rightarrow 2SO_3$

2L 1L 2L

**86.** **Sol.(2)**

$I_2$ & $S_2O_3^{2-}$ reaction is redox reaction.

**87.** **Sol.(3)**

$\Delta_f H$ = 81.46 – 2 × 285.78 – (–367.54)

= 449 – 571.56

= –112.56 kJ

**88.** **Sol.(1)**

$3A_{(g)} \rightleftharpoons 2B_{(g)} + 2D_{(g)} + E_{(g)}$

ΔU = 5.1 Kcal/mole

ΔH = ΔU + ΔngRT

= 5.1 + 2 × 2 × 300 = 6.3 Kcal/mole

$\Delta G = \Delta H - T\Delta S = 6.3 - \frac{300\times25}{1000}$

=-1.2 K cal/mole

**89.** **Sol.(1)**

From the equation

$\frac{E_a}{2.303R} = 2000$

$E_a$ =(2000 × 2.303 × 2 × $10^{-3}$)kcal

**90.** **Sol.(3)**

pH range for titration is 6 to 11.