FT - 3 (FR) (NEET - CBSE, GSEB) (30 - 05 - 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	4	2	1	4	2	1	4	1	2	3	4	4	4	4	1	1	2	1	3	1
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	2	1	1	4	2	2	3	3	1	1	2	1	4	1	3	2	1
Q	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans	2	4	3	2	2	3	2	3	3	2	4	2	3	1	2	3	1	2	1	2
Q	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Ans	2	3	3	3	3	3	4	1	3	4	2	3	3	3	1	3	4	2	3	1
Q	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Ans	2	2	2	4	3	2	2	3	2	2	4	1	3	2	3	2	2	3	2	4
Q	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Ans	4	1	3	1	3	4	2	2	3	1	4	2	1	4	3	4	4	2	4	1
Q	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Ans	1	4	1	4	4	3	3	1	2	1	2	1	1	3	2	3	2	4	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	4	4	4	4	4	1	1	2	4	3	1	4	3	3	3	1	2	1	2
Q	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Ans	3	2	1	1	2	2	1	1	3	1	3	4	2	3	2	4	4	3	3	2

PHYSICS:

1. Sol.(4)

$\Delta L = 2L - L = L$

$Y = \frac{\text{Stress}}{\text{Strain}}$

Stress = Y. Strain

$= \frac{Y\Delta L}{L} = Y$

2. Sol.(2)

From volume conservation

$\frac{4}{3}\pi R^3 = 64 \times \frac{4}{3}\pi r^3$

$R = 4r$

$\Rightarrow R = 4 \times 2 = 8\text{ cm}$

3. Sol.(1)

$\tau = \vec{M} \times \vec{B}$

$= MB \sin 90°$

$\tau = (NIA)B$

$\vec{M} = M\hat{k}$

$\vec{B} = B\hat{i}$

$N = 1$

$\tau = iL^2B$

4. Sol.(4)

For maximum intensity on screen

$d\sin\theta = n\lambda$

$\sin\theta = \frac{n}{3.5}$

Since $(\sin\theta)_{max}$ is 1

$\therefore n_{max} = 3.5$

So n = 0, 1, 2, 3 are only possible values of n and they will be on both sides which gives n = –1, –2, –3

$\therefore$7 maximas.

5. Sol.(2)

Initial velocity;

$v = \frac{dx}{dt} = 2 + (3 \times 2(t-2)) = 2 + 6t - 12$

$v = 6t - 10$

at $t = 0 \Rightarrow v = -10\text{m/s}$

Acceleration : $a = \frac{dv}{dt} = 6\text{m/s}^2$

Position of particle at $t = 0$:

$x = 2(0-1) + 3(0-2)^2$

$x = -2 + 3 \times 4 = 10\text{m}$

6. Sol.(1)

Variation of acceleration due to gravity with depth:

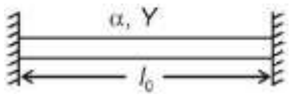
$$g' = g\left(1-\frac{d}{R}\right)$$

At the centre of earth d = R

$$\therefore g' = g\left(1-\frac{R}{R}\right) = 0$$

Weight = mg' =0

7. **Sol.(4)**



$\Delta l = l_0\,\alpha\Delta T$ ....(i)

Stress ⇒ $\sigma = Y\in = \frac{Y\Delta l}{l} = Y\times\alpha\Delta T$

$\therefore \sigma = Y\alpha\Delta T$

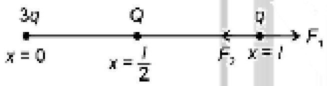
Clearly, stress developed in the rod will be independent of length of the rod.

8. **Sol. (1)**

Power $(P) = \vec{\tau}.\vec{\omega} = (i+2\hat{j}+3\hat{k}).(2\hat{i}+3\hat{j}+4\hat{k})$

$= 2+6+12 = 20\ W$

9. **Sol.(2)**



Force on q due to 3q = F_1 repulsive

Force on q due to Q = F_2 attractive

$\therefore |\vec{F_1}| = |\vec{F_2}|$

$$\frac{kq\times 3q}{l^2} = \frac{k\times q\times Q}{\left(\frac{1}{2}\right)^2}$$

$$Q = \frac{3q}{4}$$

This is magnitude of charge Q and its polarity will be opposite of charge q

$$\therefore Q = \frac{-3q}{4}$$

10. **Sol.(3)**

$v = \lambda\times f \Rightarrow 3\times10^8 = 200\times f$

$f = \frac{3\times10^8}{200}\,Hz = 1.5\times10^6\,Hz$

11. **Sol.(4)**

Refractive index and Poisson's ratio, both have same dimensions as $[M^0L^0T^0]$

12. **Sol.(4)**

$$\frac{dv}{dx} = \frac{2}{1} = 2s^{-1}$$

$$a = \frac{vdv}{dx} = 4m/s^2$$

P = mav = 2 × 4 × 2 = 16 W

13. **Sol.(4)**

Solar cell is used in no biasing for its proper operation.

14. **Sol. (4)**

$P = \vec{F}.\vec{v}$ and unit of power is Watt.

15. **Sol. (1)**

In y = A sin (ωt-kx)

$$v = \frac{\omega}{k} \Rightarrow v = \frac{8}{1/4} = 32\,m/s$$

16. **Sol. (1)**

17. **Sol.(2)**

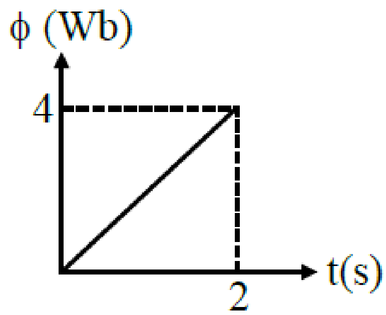
For molar specific heats

$C'_p = C'_v = R$

$\Rightarrow M_0C_pM_0C_v = R$

$\Rightarrow C_p - C_v = \frac{R}{M_0}$

18. **Sol. (1)**



R=2Ω , Δ∅=4

$$e_{in} = \frac{\Delta\phi}{\Delta t} = \frac{4}{2} = 2volt$$

$$i_{in} = \frac{e_{in}}{R} = \frac{2}{2} = 1amp$$

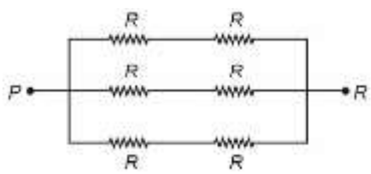
$$\Delta q = \frac{\Delta\phi}{R} = \frac{4}{2} = 2C$$

$H = I^2Rt$

$H = (1)^2 \times 2 \times 2 = 4$ J

19. **Sol.(3)**

Equivalent circuit can be redrawn as



$R_{equivalent} = \frac{2R}{3}$

20. **Sol.(1)**

Mobility $\mu = \frac{v_d}{E} = \frac{\left(\frac{eE}{m}\right)\tau}{E}$

$\frac{e\tau}{m}$

21. **Sol.(3)**

Magnification $= \frac{-1}{2} = \frac{-v}{u}$

$\Rightarrow v = \frac{u}{2} = -20\,cm$

Now $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$

$\Rightarrow \frac{1}{f} = \frac{1}{-20} + \left(\frac{-1}{40}\right)$

$f = \frac{-40}{3}$ cm.

22. **Sol. (2)**

23. **Sol.(2)**

$v_x = 2t$

$v_y = 4$

$\tan\theta = \frac{v_y}{v_x} = \frac{4}{2t} \Rightarrow \tan 30^\circ = \frac{4}{2t} \Rightarrow \frac{1}{\sqrt{3}} = \frac{4}{2t}$

$t = 2\sqrt{3}$ s

24. **Sol.(2)**

$(f_r)_{max} = \mu N = \mu(mg - mg\sin 30^\circ)$

$= \sqrt{3}(50 - 5\sqrt{3})$

$(f_r)_{max} > 10\sqrt{3}\cos 30^\circ$

So $f_r = 10\sqrt{3} \times \frac{\sqrt{3}}{2} = 15\,N$

25. **Sol.(1)**

$|\vec{F}| = \sqrt{13}$

$W = |\vec{F}|\,|\vec{d}|\cos\theta$

$6.5 = \sqrt{13}\sqrt{13}\cos\theta$

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

$\theta = 60^\circ$

26. **Sol.(1)**

$i_{avg} = \int_0^T \frac{(3 + 4\sin 100\pi t)dt}{T}$

$\int_0^T \sin 100\pi t\,dt$ will be 0

Therefore $i_{avg} = 3$

27. **Sol.(4)**

$\phi = 10 \times 2 \times 2t$

$= 40t$

$\left|\frac{d\phi}{dt}\right| = 40$

E.M.F. $\simeq$ 40 V

28. **Sol.(2)**

W = MB ($\cos\theta_1 - \cos\theta_2$)

= MB($\cos 30^\circ - \cos 45^\circ$)

$= MB\left(\frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}}\right)$

$= \left(\frac{\sqrt{3} - \sqrt{2}}{2}\right) MB$

29. **Sol.(2)**

y = Asin(kx – ωt) standard form of sine wave where

$k = \frac{2\pi}{\lambda}, \omega = \frac{2\pi}{T}, v = \frac{\omega}{k}$

30. **Sol.(3)**

Since battery remains connected, potential difference across the capacitor is equal to the emf of the battery.

31. **Sol.(3)**

The centre of mass of the system of particles depends on masses of the particles and relative position of the particles.

32. **Sol. (1)**

As distance being a scalar quantity is always positive but displacement being a vector may be positive, zero and negative depending on situation

33. **Sol.(1)**

Initial surface energy $(SE)_I = 4\pi R^2 T$

Final surface energy $(SE)_f = 4\pi R^2 T(n^{1/3})$

$\frac{(SE)_f}{(SE)_i} = n^{1/3} = (1000)^{1/.3} = 10$

34. **Sol. (2)**

The two springs on left side having spring constant of 2k each are in series, equivalent constant is $\frac{1}{\left(\frac{1}{2k} + \frac{1}{2k}\right)} = k$. The two springs on right hand side of mass M are in parallel. Their effective spring constant is $(k + 2k) = 3k$.

Equivalent spring constants of value k and 3k are in parallel and their net value of spring constant of all the four springs is $k+3k=4k$

$\therefore$ Frequency of mass is $n=\frac{1}{2\pi}\sqrt{\frac{4k}{M}}$

35. **Sol. (1)**

$$\frac{1}{2}gt^2=\frac{1}{2}\times10\times16=80\,m$$

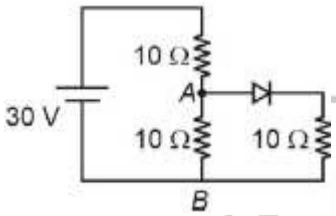
$$(v)=\frac{80}{4}=20\,m/s$$

36. **Sol. (4)**

Among the given, X–Rays has smallest wavelength.

37. **Sol.(1)**

Diode is in forward biased so circuit can be redrawn as



$\therefore V_{AB}=10\text{ V}$

38. **Sol.(3)**

Case –I $\quad P_1=\frac{V^2}{R}$

Case – II $\quad P_2=\frac{V^2}{E_{eff}}=\frac{V^2}{\frac{1}{3}\left(\frac{R}{3}\right)}=\frac{9V^2}{R}$

$P_2=9P_1$

$\frac{P_2}{P_1}=9$

39. **Sol. (2)**

$v_e=\sqrt{2}v_0=1.414\,v_0$

Fractional increase in orbital velocity $\left(\frac{\Delta v}{v}\right)$

$$=\frac{v_e-v_0}{v_0}=0.414$$

$\therefore$ Percentage increase = 41.4%

40. **Sol. (1)**

Distance covered by wheel in 1 rotation = $2\pi r=\pi D$ (Where D= 2r = diameter of wheel)

$\therefore$ Distance covered in 2000 rotation = 2000

πD = $9.5\times10^3 m$ (given)

$\therefore D=1.5\,meter$

41. **Sol.(2)**

X_c = 2πfL

= 2π × 100 × 12

= 2400π

42. **Sol. (4)**

$TV^{\gamma-1}=$ constant $\Rightarrow T_2=T_1\left(\frac{V_1}{V_2}\right)^{\gamma-1}=927^oC$

43. **Sol. (3)**

For adiabatic changes ,

$pV^{\gamma}=$ constant

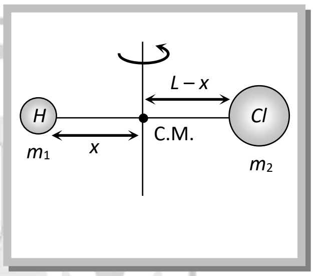
$P\left(\frac{RT}{P}\right)^{\gamma}$ =constant

$\therefore\ P^{1-\gamma}T^{\gamma}=\frac{\text{constant}}{R_{\gamma}}$ another constant

44. **Sol.(2)**

$V_{net}=V_1+V_2+V_3+\ldots V_n$

45. **Sol. (2)**



If r_1 and r_2 are the respective distances of particles m_1 and m_2 from the centre of mass then

$m_1r_1=m_2r_2\ \Rightarrow\ 1\times x=35.5\times(L-x)$

$\Rightarrow\ x=35.5(1-x)$

$\Rightarrow\ x=0.973\,Å$ and $L-x=0.027\,Å$

Moment of inertia of the system about centre of mass $I=m_1x^2+m_2(L-x)^2$

$I=1amu\times(0.973\,Å)^2+35.5\,amu\times(0.027\,Å)^2$

Substituting 1 *a.m.u.* = 1.67 × 10^{-27} *kg* and 1 Å = 10^{-10} *m*

$I=1.62\times10^{-47}kg\,m^2$

CHEMISTRY:

46. **Sol.(3)**

47 **Sol.(2)**

48. **Sol.(3)**

49. **Sol.(3)**

Al(OH) is soluble only in NaOH but $Fe(OH)_3$ is not.

50. **Sol.(2)**

51. **Sol.(4)**

52. **Sol.(2)**

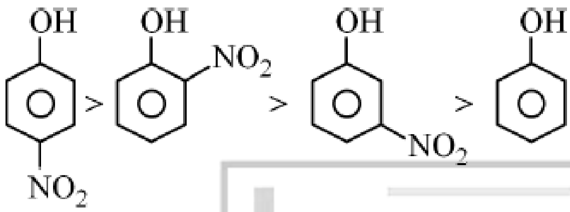
53. **Sol.(3)**

54. **Sol.(1)**

$Cr^{+3} = 4s^0 3d^3$

In a +3 = teg3eg0 configuration

55. **Sol.(2)**



56. **Sol.(3)**

57. **Sol.(1)**

$$CH_3CH_2C\equiv CH \xrightarrow[\text{acid-base}]{NaNH_2} CH_3CH_2C\equiv \overset{\ominus}{C}\overset{\oplus}{Na} \xrightarrow[NSR]{CH_3CH_2Br}$$

58. **Sol.(2)**

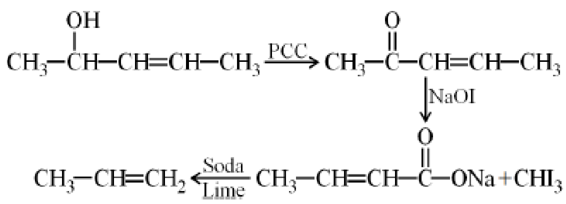
59. **Sol.(1)**

H-bond between water are stronger then water & alkyl halide.

60. **Sol.(2)**

C_2H_5OH is used Here to reduce salt into benzene.

61. **Sol.(2)**



62. **Sol.(3)**

63. **Sol.(3)**

64. **Sol.(3)**

65. **Sol.(3)**

66. **Sol.(3)**

67. **Sol.(4)**

	$2A$	$\longrightarrow$	B	$+$	$5C$
pressure $(t = 0)$	80 mm Hg		0		0
At 't'	$(80-x)$		$\frac{x}{2}$		$\frac{5x}{2}$

$$\Rightarrow P_{total} = (80 - x) + \frac{x}{2} + \frac{5x}{2} = 100 \text{ mm Hg}$$

$$x = 10 \text{ mm Hg}$$

$$(\Delta p)_A = x = 10$$

$$r_A = \left|\frac{\Delta p}{\Delta t}\right| = \frac{10}{5} = 2 \text{ mm Hg min}^{-1}$$

68. **Sol.(1)**

69. **Sol.(3)**

$$\frac{w}{E} = \frac{Q}{F}; \ \frac{6.35}{63.5} \times 2 = \frac{Q}{F}$$

$q = 0.2$ F

70. **Sol.(4)**

71. **Sol.(2)**

72. **Sol.(3)**

73. **Sol.(3)**

$$m = 0.01 \times 10^{-3} \text{ kg}$$

$$v = \frac{0.0001}{100} \times 3 \times 10^8 \text{m/s} = 300 \text{ m/s}$$

$$\lambda = \frac{h}{mv} = \frac{6.6 \times 10^{-34} \text{Js}}{0.01 \times 10^{-3} \times 300}$$

$$= 2.2 \times 10^{-31} \text{ m. } [J = kgm^2 s^{-2}]$$

74. **Sol.(3)**

75. **Sol.(1)**

$\Delta H = \Delta E + (\Delta n)_g RT$

76. **Sol.(3)**

$\Delta n_g = 0$

If T↑ ⇒ ∝↑

77. **Sol.(4)**

$Ba(OH)_2(s) \rightarrow Ba^{2+}(aq) + 2OH^-(aq)$

pH = 12 or pOH = 2

$[OH^-] = 10^{-2}$ M

$Ba(OH)_2 \rightarrow Ba^{2+} + 2OH^-$

0.5×10^{-2} $\quad$ 10^{-2}

[∴ Concentration of Ba^{2+} is half of OH^-]

$K_{sp} = [Ba^{2+}][OH^-]^2$

$= [0.5 \times 10^{-2}][1 \times 10^{-2}]^2$

$= 0.5 \times 10^{-6} = 5 \times 10^{-7}$ M^3

with CH_3COO^-ions to form undissociated acetic acid molecules. Thus there will be no appreciable change in its pH value. Like wise if few drops of NaOH are added, the OH^- ions will combine with H^+ ions to form unionised water molecule. Thus pH of solution will remain constant.

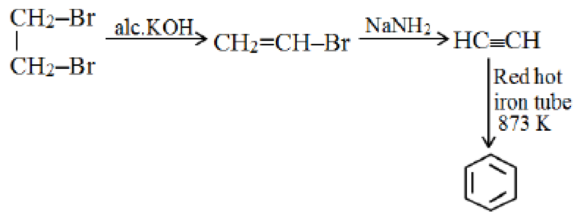
78. **Sol.(2)**

79. **Sol.(3)**

80. **Sol.(1)**

81. **Sol.(2)**

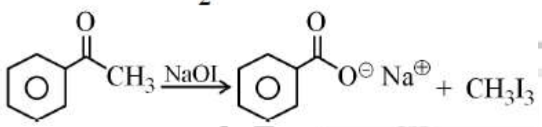
82. **Sol.(2)**



83. **Sol.(2)**

C_8H_8O

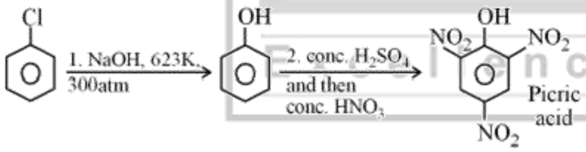
$$D.U. = (8+1) - \frac{(8)}{2} = (5)$$



84. **Sol. (4)**

Elements	B	Ga	Al	In	Tl
Atomic radii (pm)	85	135	143	167	170

85. **Sol.(3)**



86. **Sol.(2)**

87. **Sol.(2)**

Meq. of NaOH = $0.1 \times 50 = 5$

Meq. of $HNO_3 = 0.08 \times 50 = 4$

$$N_{OH^-}(\text{excess}) = \frac{5-4}{V_{total} = 500} = 2 \times 10^{-3}$$

$pOH = 3 - \log 2 \approx 2.7$, $pH \approx 11.3$

88. **Sol.(3)**

$t_{1/2} \propto a^{1-n}$

From graph

$n = 0$

For zero order reaction, rate will be constant through out the reaction.

89. **Sol.(2)**

Isotopes have same chemical properties and chemical behaviour is controlled by number of valence electrons.

90. **Sol.(2)**