PRE-MEDICAL-LEADER TEST SERIES

Test Type : **MOCK TEST** Test Pattern : **NEET (UG)**

ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A.	2	4	2	1	2	3	3	4	2	1	3	1	1	3	1	3	2	3	2	4	2	2	4	2	2	1	3	1	2	4
Q.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
A.	1	3	2	3	1	2	1	3	3	4	4	2	1	3	2	4	3	2	3	1	4	3	2	3	2	2	2	3	3	1
Q.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A.	2	3	4	3	3	3	4	3	1	4	3	4	2	4	2	4	1	2	2	3	4	1	1	2	2	2	3	3	3	2
Q.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
A.	3	3	1	3	4	2	1	4	4	2	3	3	4	4	2	3	3	4	4	4	4	2	3	1	2	4	1	1	1	2
Q.	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
A.	3	2	2	1	4	4	2	1	4	4	3	4	3	4	2	2	3	3	4	4	2	1	3	2	2	1	3	2	4	4
Q.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
A.	2	2	2	2	2	3	1	2	2	4	3	1	4	1	1	2	3	1	4	3	3	3	3	3	2	2	4	3	3	2
Q.	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200										
A.	3	2	2	2	1	2	3	3	4	3	2	3	1	2	3	2	1	1	1	4										

HINT – SHEET

SUBJECT : PHYSICS

SECTION-A

1. **Ans (2)**

Separation

$= 80 \times 100 \times (28\times10^{-6} - 18\times10^{-6})$cm

$= 0.8$ mm

2. **Ans (4)**

1500×10^3cal. $= mc\Delta T$

3. **Ans (2)**

$$\frac{(3K)\,A\,(100-T)}{L} = \frac{(2K)\,A\,(T-50)}{L} + \frac{K\,(A)\,(T-20)}{L}$$

$3(100 - T) = 2(T - 50) + (T - 20)$

$T = 70°C$

4. **Ans (1)**

As $\frac{dQ}{dt} = ms\frac{dT}{dt} \Rightarrow \frac{dT}{dt} = \frac{1}{ms}\frac{dQ}{dt}$

where $\frac{dQ}{dt} = \sigma A(T^4 - T_s^4)$ = same for both

Now, $\frac{dT}{dt} \propto \frac{1}{m}$

$m_{hollow} < m_{solid}$ for same radius & material

$$\left(\frac{dT}{dt}\right)_{Hollow} > \left(\frac{dT}{dt}\right)_{Solid}$$

So, hollow sphere will cool at a faster rate for all values of T.

5. **Ans (2)**

Closed vessel, V = constant $\Rightarrow p \propto T$

$$\frac{\Delta p}{p} \times 100 = \frac{\Delta T}{T} \times 100 = 0.5$$

$$\frac{2}{T} \times 100 = 0.5$$

$$\Rightarrow T = \frac{2 \times 100}{0.5} = 400K$$

$t = (400 - 273)°C = 127°C$

6. **Ans (3)**

$\Delta Q_p : \Delta V_p : \Delta W_p = (\mu C_p dT) : (\mu C_v dT) : (\mu R dT)$

$= C_p : C_v : R = 7 : 5 : 2$

7. **Ans (3)**

Process A → B ⇒ V = constant $P_0 \rightarrow 2P_0$

$T \rightarrow 2T$

$Q_1 = \Delta U + W_1$

$W_1 = 0 \Rightarrow Q_1 = n\left(\frac{5}{2}R\right)(T) = \frac{5}{2}P_0V_0$

Process B → C ⇒ isothermal 2 T = constant

$Q_2 = \Delta U + W_2 \Rightarrow \Delta U = 0$ & $W_2 = nR(2T)\ln\left(\frac{2V}{V}\right) = 2P_0V_0\ln\left(\frac{2}{1}\right)$

$Q = Q_1 + Q_2 = \frac{5}{2}P_0V_0 + 2P_0V_0\ln(2)$

8. **Ans (4)**

Work done in PV graph is Area under the curve.

9. **Ans (2)**

$\eta = \frac{1}{1+\beta}$

$\frac{1}{10} = \frac{1}{1+\beta} \Rightarrow \beta = 9$

$\beta = \frac{Q_2}{W}$

$\Rightarrow 9 = \frac{Q_2}{10} \Rightarrow Q_2 = 90$

$\Rightarrow Q_1 = Q_2 + W$

$Q_1 = 90 + 10$

$Q_1 = 100$ J

10. **Ans (1)**

$\rho = \frac{M}{V} \quad \Rightarrow \rho \propto V^{-1}$

$\frac{\Delta\rho}{\rho} = -1\frac{\Delta V}{V}$

$\frac{\Delta\rho}{\rho} = -\gamma\Delta T = -49 \times 10^{-5} \times 30$

$\frac{\Delta\rho}{\rho} = -1.47 \times 10^{-2}$

12. **Ans (1)**

In figure - area of cross section is constant so T decreases linearly with x from high temperature to low temperature.

13. **Ans (1)**

$\frac{dQ}{dt} \propto \frac{\theta_1+\theta_2}{2} - \theta_0$

$\left(\frac{\theta_1+\theta_2}{2}\right)_3 < \left(\frac{\theta_1+\theta_2}{2}\right)_2 < \left(\frac{\theta_1+\theta_2}{2}\right)_1$

Time : - $t_3 > t_2 > t_1$ [Inverse relation]

14. **Ans (3)**

$C_{H_2} = xC_{He}$

As $c \propto \frac{1}{\sqrt{M}}$

$\sqrt{M_{He}} = x\sqrt{M_{H_2}}$

$\sqrt{4} = x\sqrt{2}$

or $x = \frac{2}{\sqrt{2}}$ or $x = \sqrt{2}$

15. **Ans (1)**

As $\lambda_m = \frac{b}{T} \Rightarrow \frac{\lambda_2}{\lambda_1} = \frac{T_1}{T_2}$

$\Rightarrow \lambda_2 = \frac{200}{2400} \times 40\mu m = 3.33\ \mu m$

16. **Ans (3)**

$\Delta U = \frac{f}{2}\mu R(T_2 - T_1) = \frac{f}{2}(P_2V_2 - P_1V_1)$

$\Delta U = \frac{3}{2}(4P_0V_0 - P_0V_0) = 4.5P_0V_0$

17. **Ans (2)**

Isothermal $PV = K \Rightarrow P + V\frac{dP}{dV} = 0$

$\Rightarrow \left(\frac{dP}{dV}\right)_1 = \frac{-P}{V}$

adiabatic $PV^\gamma = K \Rightarrow P(\gamma V^{\gamma-1}) + V^\gamma\frac{dP}{dV} = 0$

$\Rightarrow \left(\frac{dP}{dV}\right)_2 = \frac{-\gamma P}{V}$

$\frac{\left(\frac{dP}{dV_1}\right)_1}{\left(\frac{dP}{dV}\right)_2} = \gamma = \frac{C_P}{C_V}$

18. **Ans (3)**

$\eta = 1 - \frac{T_2}{T_1} = \frac{W}{Q_1}$

$\Rightarrow 1 - \frac{300}{400} = \frac{W}{16K}$

$\Rightarrow \frac{1}{4} = \frac{W}{16K} \Rightarrow W = 4KJ$

19. Ans (2)

Change in L_A = change in L_B

i.e., $\Delta L_A = \Delta L_B$

$\Rightarrow \alpha_A \Delta T L_A = \alpha_B \Delta T L_B$

or $\alpha_A L_A = \alpha_B L_B$

20. Ans (4)

Average kinetic energy $\propto$ Temperature

$$\Rightarrow \frac{E_1}{E_2} = \frac{T_1}{T_2} \Rightarrow \frac{100}{E_2} = \frac{300}{450} \Rightarrow E_2 = 150 \text{ J}$$

21. Ans (2)

For 1 kg gas energy, $E = \frac{f}{2}RT$

$$E = \frac{5}{2} \times \frac{8 \times 10^4}{4} = \frac{f}{2}PV$$ [f=5 for diatomic gas]

$E = 5 \times 10^4$ Joule

22. Ans (2)

$x = 0$ to $x = \frac{a}{2}$

$$\frac{a}{2} = a \sin\left(\frac{2\pi}{T}t_1\right) \Rightarrow t_1 = \frac{T}{12}$$

$x = a/2$ to $x = a$

$$t_2 = \frac{T}{4} - \frac{T}{12} = \frac{T}{6}$$

$$\frac{t_1}{t_2} = \frac{1}{2}$$

23. Ans (4)

At mean position velocity is maximum

i.e., $v_{max} = \omega a \Rightarrow \omega = \frac{v_{max}}{a} = \frac{16}{4} = 4$

$$\therefore v = \omega\sqrt{a^2 - y^2} \Rightarrow 8\sqrt{3} = 4\sqrt{4^2 - y^2}$$

$$\Rightarrow 192 = 16(16 - y^2) \Rightarrow 12 = 16 - y^2 \Rightarrow y = 2\text{cm}$$

24. Ans (2)

So $a = 6\text{cm}, \omega = 100\text{rad/ sec}$

$$K_{max} = \frac{1}{2}m\omega^2 a^2$$

$$= \frac{1}{2} \times 1 \times (100)^2 \times (6 \times 10^{-2})^2 = 18 \text{ J}$$

25. Ans (2)

$$T = 2\pi\sqrt{\frac{m}{k}}$$

New k (after cutting) , k' = 4k

so new time period $T' = 2\pi\sqrt{\frac{m}{4k}} = \frac{T}{2}$

26. Ans (1)

$g_{eff} = 0$

$T = \infty, v = 0$

27. Ans (3)

$x = 4(\cos\pi t + \sin\pi t)$

$$= 4\sqrt{2}\left(\frac{1}{\sqrt{2}}\cos\pi t + \frac{1}{\sqrt{2}}\sin\pi t\right)$$

$$x = 4\sqrt{2}\left\{\sin\left(\pi t + \frac{\pi}{4}\right)\right\}$$

Amplitude $= 4\sqrt{2}$

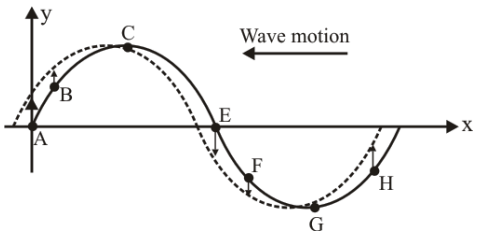
28. Ans (1)

$\because$ K.E. $= K_0\cos^2\omega t$

$\therefore$ Maximum P.E. = Maximum K.E.

= Total energy = K_0

29. Ans (2)



30. Ans (4)

$$P = \frac{1}{2}\mu\omega^2 A^2 v$$

$P \propto A^2$

$$\frac{P_A}{P_B} = \left(\frac{2A}{A}\right)^2 = 4$$

31. Ans (1)

$f_1\lambda_1 = f_2\lambda_2$

$(300)\ (1) = (f_2)\ (1.5)$

$200 \text{ Hz} = f_2$

32. Ans (3)

incident wave $y_I = 0.02 \sin\left(8\pi t - \frac{8\pi}{20}x\right)$

reflected wave $y_R = A \sin\left(8\pi t + \frac{8\pi}{20}x + \phi\right)$

where $\phi = 0 \because$ Reflected from rarer medium

$$A = \frac{75}{100} \times 0.02 = 0.015$$

$$y_R = 0.015 \sin 8\pi\left(t - \frac{x}{20}\right)$$

33. Ans (2)

$\frac{\lambda}{4} = 17 + e$..... (1)

$\frac{3\lambda}{4} = 52 + e$ .... (2)

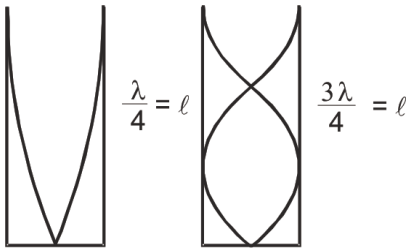
From eq (1) & (2)

$\frac{\pi}{2} = 35 \Rightarrow \boxed{\lambda = 70\text{cm}}$

Now $v = F\lambda$

$= 500 \times \frac{70}{100} = 350\,\text{m/s}$

34. Ans (3)



length will be 3 times

35. Ans (1)

$f_a = \frac{V + V_0}{V - V_s} \times f \Rightarrow f_a = \frac{340 + 20}{340 - 20} \times 240\text{Hz}$

$\Rightarrow f_a = \frac{360}{320} \times 240\text{Hz} = 270\text{ Hz}$

SECTION-B

36. Ans (2)

Heat r_{eq} by ice to convert into 100°C water.

$\Rightarrow 6 \times 80 + 6 \times 1 \times 100$

$\Rightarrow$ 1080 Cal.

Heat released by steam to completely convert into 100°C water.

$= 5 \times 540 = 2700$ Cal.

$\therefore$ steam will not convert completely. Final temp. = 100°C

37. Ans (1)

Ist case : As it is a series combination

$K_s = \frac{2K_1K_2}{K_1 + K_2}$

2nd case : As it is a parallel combination

$K_p = (K_1+K_2) / 2$

$\frac{K_s}{K_p} = \frac{4K_1K_2}{(K_1 + K_2)^2}$

38. Ans (3)

$P = \frac{Q}{t} = e_r \sigma A T^4$

$P = e_r\sigma(4\pi r^2)\left(\frac{b}{\lambda_m}\right)^4$

$P \propto \frac{r^2}{\lambda_m^4}$

$\frac{P_1}{P_2} = \left(\frac{r_1}{r_2}\right)^2 \left(\frac{\lambda m_2}{\lambda m_1}\right)^4$

$\frac{P_1}{P_2} = \left(\frac{3}{5}\right)^2 \times \left(\frac{500}{300}\right)^4 = \left(\frac{5}{3}\right)^2$

39. Ans (3)

P = constant $V \propto T \Rightarrow \frac{V_f}{V_i} = \frac{T_f}{T_i}$

$\Rightarrow T_f = \frac{V_f}{V_i} \times T_i = \frac{500}{250} \times 300 = 600\text{ K}$

$t_i = (600 - 273)°C = 327°C$

40. Ans (4)

In isothermal process : $P_1V_1 = P_2V_2$

$PV = P_2(4V) \quad \Rightarrow \quad P_2 = \frac{P}{4}$

In adiabatic process

$\left(\frac{P}{4}\right)(4V)^\gamma = P'(32V)^\gamma$

$\Rightarrow P' = \frac{P}{4} \times \frac{1}{32} = \frac{P}{128}$

41. Ans (4)

$Q_{loss} = m\,S_A \times (30 - 26) = 4\,m\,S_A$

$Q_{gain} = m\,S_B \times (26 - 20) = 6\,m\,S_B$

$Q_{loss} = Q_{gain}$

$\frac{S_A}{S_B} = \frac{6}{4} = \frac{3}{2}$

42. Ans (2)

$E_2 = E_1\frac{T_2^4}{T_1^4} = Q \times \frac{(273 + 151)^4}{(273 + 27)^4} = Q\left(\frac{424}{300}\right)^4$

$= 3.99Q \approx 4Q$

43. Ans (1)

$\left.\begin{aligned} N_1 &= \frac{P_1V_1}{kT_1} \\ N_2 &= \frac{P_2V_2}{kT_2} \end{aligned}\right\} \Rightarrow \frac{N_1}{N_2} = \frac{P_1V_1}{T_1} \times \frac{T_2}{P_2V_2}$

44. **Ans (3)**

AB → isochoric V = constant ⇒ W = 0

BC → isothermal T_2 = constant ⇒ $W = RT_2 \ln \frac{V_2}{V_1}$

CA → Isobaric P = constant

⇒ $W = P\Delta V = R\Delta T = R(T_1 - T_2)$

45. **Ans (2)**

K_1 & K_1 are in parallel & their parallel combination is in series with K_2.

$$\frac{1}{K_{eq}} = \frac{1}{K_2} + \frac{1}{K_1 + K_1}$$

$$\Rightarrow K_{eq} = \left[\frac{1}{2K_1} + \frac{1}{K_2}\right]^{-1}$$

46. **Ans (4)**

In vacuum, $T = 2\pi\sqrt{\frac{\ell}{g}}$

Let V be the volume and T be the density of the mass of the bob.

Net downward force acting on the bob in side the liquid = Weight – upthrust

$$= V\rho g - V.\frac{T}{8}g = \frac{7}{8}V\rho g$$

$V\frac{\rho}{8}g$ (upthrust)

$V\rho g$ (Weight)

i.e. effective value of g is $\frac{7}{8}g$

So, time period of the bob inside the liquid

$$\therefore T_1 = 2\pi\sqrt{\frac{\ell}{(7/8)g}} = 2\pi\sqrt{\frac{\ell}{g}} \times \sqrt{\frac{8}{7}} = \sqrt{\frac{8}{7}}T.$$

47. **Ans (3)**

$A = A_0 e^{-yt}$

$0.9A_0 = A_0 e^{-5y}$

$\alpha A_0 = A_0 e^{-15y}$

Solve $\alpha = 0.729$

49. **Ans (3)**

Let the frequency of tunning fork be n and as frequency of vibration of wire

$$\propto \frac{1}{\text{length of wire}}$$

$$n \propto \frac{1}{\ell} \Rightarrow n\ell = \text{constant}$$

$n_1\ell_1 = n_2\ell_2$

⇒ (n + 4)49 = (n – 4)50

⇒ 49n + 4 × 49 = 50 n – 200

⇒ n = 396

50. **Ans (1)**

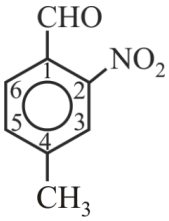
$$f_a = \frac{V + V_0}{V - V_s}(f) \ \& \ \lambda_a = \frac{V - V_s}{V}(\lambda)$$

more frequency & less wavelength.

SUBJECT : CHEMISTRY

SECTION-A

52. **Ans (3)**



53. **Ans (2)**

fact

55. **Ans (2)**

Functional group is different.

58. **Ans (3)**

Product is optically inactive.

59. **Ans (3)**

It has chiral centre and differently di substituted double bonded carbon atoms.

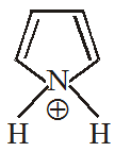
60. **Ans (1)**

Maximum value of dihedral angle = 180°

63. **Ans (4)**

On the basis of –I effect.

64. **Ans (3)**



Here nitrogen atom is sp^3 hybridised.

65. **Ans (3)**

It has more C – Cl double bond character due to mone resonance.

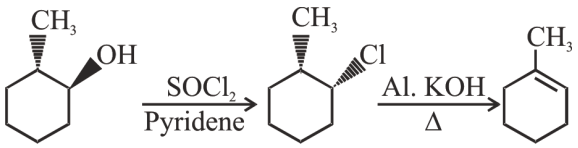
66. **Ans (3)**

On the basis of α–H more α–H, more stability of carbocation.

68. **Ans (3)**

It will given antiaromatic enol which not possible.

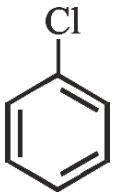
69. **Ans (1)**



70. **Ans (4)**

Similar to cumene hydroperoxide method.

71. **Ans (3)**

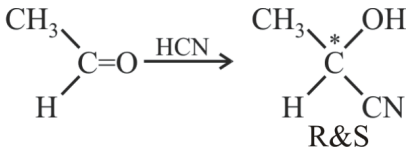


it is resonance stabilised chlorine, so least reactive.

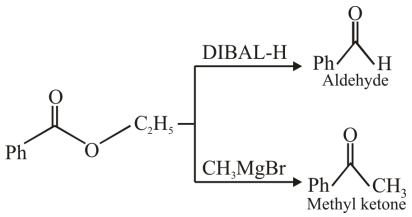
72. **Ans (4)**

Less hindered alkyl halide give S_N2 reaction at fastest rate.

73. **Ans (2)**



74. **Ans (4)**



75. **Ans (2)**

Rate α stability by carbocation.

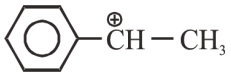
76. **Ans (4)**

$CH_3.Mg.Br$ will react with compound having acidic hydrogen to given methane.

77. **Ans (1)**

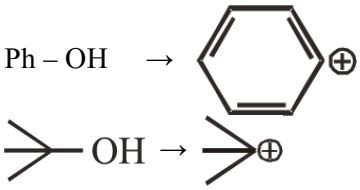
Reactivity towards Acidic Dehydration ∝ stability of carbocation

Ph – $CH(OH)CH_3$ →

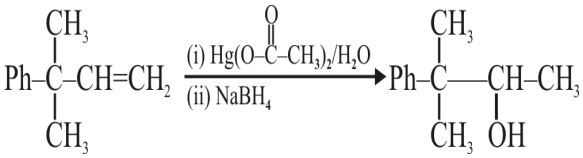


Ph – CH_2CH_2OH → $Ph–CH_2\overset{\oplus}{C}H_2$

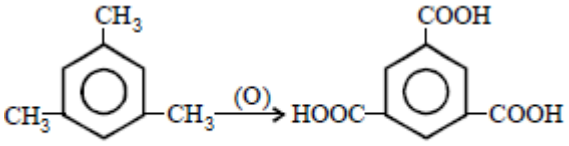
Ph – OH →



78. **Ans (2)**



80. **Ans (3)**



Mesitylene — This is not benzoic acid

82. **Ans (1)**

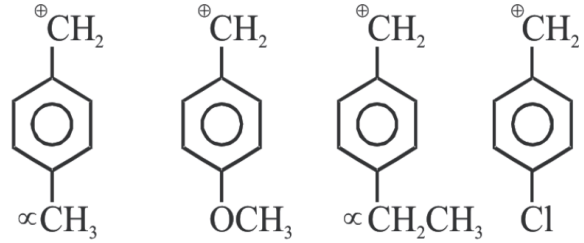
NCERT-XI/Part-II/Page-407

85. **Ans (2)**

fact.

SECTION-B

90. **Ans (2)**



+H (more) +M +H (less) –I

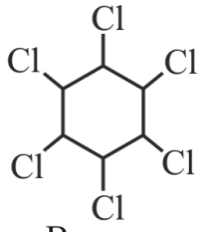
Carbocation stability → +M > +H > +I > –I > –M

II > I > III > IV

91. **Ans (3)**

On the basis of strong –I effect.

93. **Ans (1)**
H–Cl does not show peroxide effect.

94. **Ans (3)**
A is  , B is 
Benzene hexa Chloride

96. **Ans (2)**
H–Cl does not show peroxide effect.

97. **Ans (1)**
Major product will be obtained through more stable carbon free radical.

99. **Ans (4)**
Green house gases → water vapour, CO_2, CH_4, O_3

100. **Ans (2)**
Fact.

SUBJECT : BOTANY

SECTION-A

101. **Ans (3)**
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