OSONE ACADEMY

No.1 Training Institution For NEET| AIIMS | IIT JEE | CLAT | NATA | CA

Name :
Code : OZO-1

NEET 11TH
FULL SYLLABUS SOULTION - 1

Time :
Date :

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.	3	4	1	3	4	2	3	3	3	2	1	3	2	2	4	2	3	3	3	1	4	3	1	4	1	2	1	4	3	1
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	1	1	2	2	2	1	3	1	3	2	4	4	3	2	4	1	1	1	2	4	4	3	3	3	4	1	4	3	4
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	1	2	3	3	4	3	2	2	4	3	2	1	3	3	1	3	2	2	3	3	1	2	2	1	3	3	2	2	3
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.	4	4	2	1	3	4	2	3	1	4	3	2	4	1	4	4	1	3	2	2	4	2	3	1	2	2	3	4	2	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.	4	4	1	2	4	2	4	2	2	2	3	3	3	2	3	4	4	2	2	1	3	2	3	2	1	3	4	4	4	3
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.	3	1	2	3	1	2	1	1	3	4	2	2	2	1	2	4	4	4	4	2	2	4	2	4	3	2	2	4	3	2

HINT – SHEET

1. Normal reaction is due to 30 N

2. Elogation is case 1 is more then elogation in case 2, mag. of acceleration in both cases will be same.

3. $x = 36t \therefore v_x = \frac{dx}{dt} = 36\,m/s$

$y = 48t - 4.9t^2 \quad \therefore v_y = 48 - 9.8t$

at t = 0 and $v_y = 48\,m/s$

So, angle of projection

$$\theta = \tan^{-1}\left(\frac{v_y}{v_x}\right) = \tan^{-1}\left(\frac{4}{3}\right)$$

Or $\theta = \sin^{-1}(4/5)$

4. $h \propto \frac{1}{r} \Rightarrow \frac{h_2}{h_1} = \frac{r_1}{r_2} = \frac{D_1}{D_2} = 2 \Rightarrow h_2 = 2h_1$

5. $\frac{100-\theta}{R} = \frac{\theta-20}{3R}$

$\boxed{\theta = 80°C}$

6. v_{AB} = 10 m/s, a_{AB} = $-5 m/s^2$

$s_{AB} = 10t - \frac{5}{2}t^2$

$s_{AB_{max}}$ at t = $\frac{10}{5}$ = 2 s

$s_{AB_{max}}$ = 20 × 10 = 10 m

Minimum seperation = 20 – 10 = 10 m

7. $F_b > F_a = F_c$. The masses in c do not add. The pressure underneath each of the two large pistons is mg/A_2 and the pressure under the small piston must be the same.

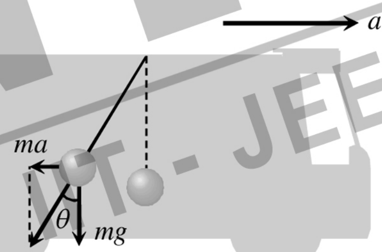
8. Thrust $F = u\left(\frac{dm}{dt}\right) = 5\times10^4 \times 40 = 2\times10^6\,N$

9. If the liquid is incompressible then mass of liquid entering through left end, should be equal to mass of liquid coming out from the right end.

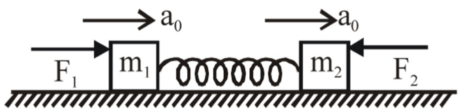
$\therefore M = m_1 + m_2 \Rightarrow Av_1 = Av_2 + 1.5A.v$

$\Rightarrow A\times3 = A\times1.5 + 1.5A.v \Rightarrow v = 1\,m/s$

10. In accelerated frame of reference, a fictitious force (pseudo force) ma acts on the bob of pendulum as shown in figure.



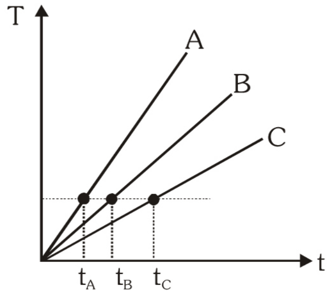
Hence, $\tan\theta = \frac{ma}{mg} = \frac{a}{g} \Rightarrow \theta = \tan^{-1}\left(\frac{a}{g}\right)$ in the backward direction.

11. 

both the blocks can be choosen as a system, thus,

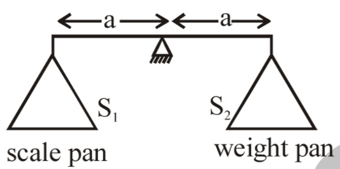
$$a_0 = \frac{F_1 - F_2}{m_1 + m_2}$$

12. Substances having more specific heat taken longer time to get heated to a



higher temperature and longest time to get cooled.If we draw a line parallel to the time axis then it cut the graphs at three difference points. Corresponding points on the times axis shows that $t_C > t_B > t_A \Rightarrow C_C > C_B > C_A$

13.



$S_1 \rightarrow$ weight of scale pan

$S_2 \rightarrow$ weight of weight pan

According to question

$(W + S_1)a = (X + S_2)a$

and $(Y + S_1)a = (W + S_2)a$

$\Rightarrow W = \frac{X+Y}{2}$

14. When salt crystals dissolves, crystal lattice is destroyed. The process requires a certain amount of energy (latent heat) which is taken from the water.

In vessel (B), a part of intermolecular bonds has already been destroyed in crushing the crystal. Hence less energy is require to dissolve the powder and the water will be at higher temperature.

15. $t_1 = 2\pi\sqrt{\frac{m}{K_1}}$ and $t_2 = 2\pi\sqrt{\frac{m}{K_2}}$

Equivalent spring constant for shown combination is

K_1+K_2. So time period t is given by $t = 2\pi\sqrt{\frac{m}{K_1+K_2}}$

By solving these equations we get $t^{-2} = t_1^{-2} + t_2^{-2}$

16. **For statement 1:** Example speed & velocity

For statement 2 : Example unit of energy may be joule electron volt.

17. T = junction temperature

$T - 0 + T - 600 + T - 600 = 0$

$3T = 1200$

$T = 400$

18. Resultant downward force along the incline

$= mg(\sin\theta - \mu\cos\theta)$

Normal reaction $= mg\cos\theta$

Given : $mg\cos\theta = 2mg(\sin\theta - \mu\cos\theta)$

By solving $\theta = 45°$.

19. Heat energy always flow from higher temperature to lower temperature. Hence, temperature difference w.r.t. length (temperature gradient) is required to flow heat from one part of a solid to other part.

20. Slope is irrelevant hence $T = 2\pi\left(\frac{M}{2K}\right)^{1/2}$

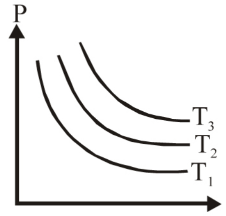
21. $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$

$$\frac{dR_{eq}}{R^2} = \frac{dR_1}{R_1^2} + \frac{dR_2}{R_2^2} \Rightarrow \frac{dR_{eq}}{R_{eq}} = \left(\frac{dR_1}{R_1^2} + \frac{dR_2}{R_2^2}\right) \times R_{eq}$$

$$\Rightarrow \left(\frac{1}{3} + \frac{2}{6}\right) \times 2$$

$$\Rightarrow \therefore \text{ \% error } = \frac{4}{3}\%$$

22.



For shown isotherms

$T_3 > T_2 > T_1$

23. Power of gun $= \dfrac{\text{Total K.E. of fired bullet}}{\text{time}}$

$$= \frac{n \times \frac{1}{2}mv^2}{t} = \frac{360}{60} \times \frac{1}{2} \times 2 \times 10^{-2} \times (100)^2 = 600\,W$$

24. $E \propto T^4$

25. $\lambda = \dfrac{v}{n} = \dfrac{1.7 \times 1000}{4.2 \times 10^6} = 4 \times 10^{-4}\,m$

26. If acceleration of the system is F = 4 ma

$\Rightarrow$ a = F/4m

$\therefore$ since acceleration of each block is F/4m

$\therefore$ net force on each block is F/4

27. *From graph 1*

λ = 4cm

from graph 2

T = 0.8 sec

& speed $= \dfrac{\lambda}{T} = \dfrac{4 \times 10^{-2}}{8 \times 10^{-2}} = 5$ cm/sec

28. K.E. of colliding body before collision $= \dfrac{1}{2}mv^2$

After collision its velocity becomes

$$v' = \frac{(m_1 - m_2)}{(m_1 + m_2)}v = \frac{m}{3m}v = \frac{v}{3}$$

$\therefore$ K.E. after collision $\dfrac{1}{2}mv'^2 = \dfrac{1}{2}\dfrac{mv^2}{9}$

Ratio of kinetic energy $= \dfrac{K.E._{before}}{K.E._{after}} = \dfrac{\frac{1}{2}mv^2}{\frac{1}{2}\frac{mv^2}{9}} = 9:1$

29. $V_{rms} = \sqrt{\dfrac{3P}{\rho}} = \sqrt{\dfrac{3 \times 24 \times 10^4}{2}} = 600$ m/s

$P = 24 \times 10^5$ dyne/cm^2 $= 24 \times 10^4$ N/m^2

$\rho = \dfrac{m}{V} = \dfrac{20 \times 10^{-3}}{10 \times 10^{-3}} = 2$ kg/m^3

30. $v = \dfrac{\text{co-efficient of t}}{\text{co-efficient of x}} = \dfrac{2\pi / 0.01}{2\pi / 0.3} = 30\,m/s$

31. $x_1 = \dfrac{mg}{k_1} = \dfrac{mg}{10}$

$$x_2 = \frac{mg}{\left(\frac{k_1 k_2}{k_1 + k_2}\right)} = \frac{mg}{200/30}$$

32. If the breadth of the lake is *l* and velocity of boat is v_b. Time in going and coming back on a quite day

$$t_Q = \frac{\ell}{v_b} + \frac{\ell}{v_b} = \frac{2\ell}{v_b}$$

.....(i)

Now if v_a is the velocity of air- current then time taken in going across the lake, $t_2 = \dfrac{\ell}{v_b - v_a}$

$t_1 = \dfrac{\ell}{v_b + v_a}$ [As current helps the motion]

and time taken in coming back

[As current opposes the motion]

So $t_R = t_1 + t_2 = \dfrac{2\ell}{v_b[1 - (v_a / v_b)^2]}$ .....(ii)

From equation (i) and (ii)

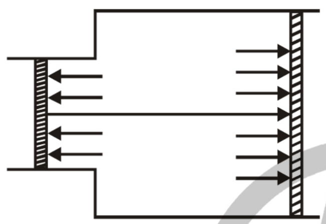
$$\frac{t_R}{t_Q} = \frac{\ell}{[1 - (v_a / v_b)^2]} > 1 \ \left[\text{as } 1 - \frac{v_a^2}{v_b^2} < 1\right] \text{i.e.} \quad t_R > t_Q$$

i.e. time taken to complete the journey on quite day is lesser than that on rough day.

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

34. On heating presence (↑)

As force on right side is more as compared to left so piston will shift in right direction



35. $n_1 l_1 = n_2 l_2 \Rightarrow 250 \times 0.6 = n_2 \times 0.4 \Rightarrow n_2 = 375$

$\Rightarrow n_2 = 375\text{Hz}$

36. $K = as^2 \;\Rightarrow\; v = \left(\sqrt{\frac{2a}{m}}\right)s \Rightarrow \frac{dv}{dt} = \left(\sqrt{\frac{2a}{m}}\right)\frac{ds}{dt}$

Force,

$F = \sqrt{\left(\frac{mv^2}{R}\right)^2 + \left(\frac{mdv}{dt}\right)^2} = \sqrt{\left(\frac{2as^2}{R}\right)^2 + (2as)^2}$

$= 2as\left(1 + \frac{s^2}{R^2}\right)^{1/2}$

37. From $S = ut + \frac{1}{2}at^2$

$S_1 = \frac{1}{2}a(P-1)^2$ and $S_2 = \frac{1}{2}aP^2$ [As u = 0]

From $S_n = u + \frac{a}{2}(2n-1)$

$S_{(P^2-P+1)^{th}} = \frac{a}{2}\left[2(P^2-P+1)-1\right] = \frac{a}{2}\left[2P^2-2P+1\right]$

It is clear that $S_{(P^2-P+1)^{th}} = S_1 + S_2$

38. In the problem orbital radius is increased by 1%.

Time period of satellite $T \propto r^{3/2}$

Percentage change in time period

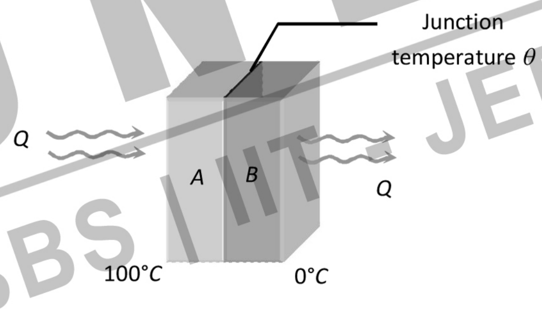
$= \frac{3}{2}$(% change in orbital radius)

$= \frac{3}{2}(1\%) = 1.5\%$

39. It is given that $\frac{K_1}{K_2} = \frac{1}{3} \Rightarrow K_1 = K$ then $K_2 = 3K$

the temperature of the junction in contact

$\theta = \frac{K_1\theta_1 + K_2\theta_2}{K_1 + K_2} = \frac{1\times100 + 3\times0}{1+3} = \frac{100}{4} = 25°C$



40. Since apparent frequency is lesser than the actual frequency, hence the relative separation between source and listener should be increasing.

41. ∵ Moment of inertia about an axis passing through an end $= \frac{ML^2}{3}$

$\therefore I_{\text{given system}} = \frac{ML^2}{3} + \frac{ML^2}{3} = \frac{2ML^2}{3}$

42. $\theta = \tan^{-1}\left(\frac{v^2}{rg}\right) = \tan^{-1}\left[\frac{(14\sqrt{3})^2}{20\sqrt{3}\times 9.8}\right] = \tan^{-1}[\sqrt{3}] = 60^o$

43. $\frac{4}{3}\pi R^3 = 1000\times\frac{4}{3}\pi r^3$

(As volume remains constant)

$R^3 = 1000r^3 \Rightarrow R = 10r \Rightarrow r = \frac{R}{10}$

44. $E = \sigma T^4 \Rightarrow 5.6\times10^{-8}\times T^4 = 1$

$\Rightarrow T = \left[\frac{1}{5.6\times10^{-8}}\right]^{1/4} = 65K$

45. n_1 = Frequency of the police car horn observer heard by motorcyclist

n_2 = Frequency of the siren heard by motorcyclist.

v_2 = Speed of motor cyclist

$n_1 = \frac{330-v}{330-22}\times176 \,;\, n_2 = \frac{330+v}{330}\times165$

$\because n_1 - n_2 = 0 \Rightarrow v = 22m/s$

48. कोणीय संवेग $= \frac{nh}{2\pi} = \frac{h}{\pi}, n = 2$

P.E. = 2 × T. E., $(T.E.)_{n=2} = -3.4$

P.E. + T.E. = 3T.E. = 3 × (–3.4) = –10.2eV

49. $C_2H_4(g) + 3O_2(g) \rightarrow 2CO_2(g) + 2H_2O(l)$,

$\Delta H_f^0 = (\Delta H_C^0)_{C_2H_4} = ?$

$(\Delta H_C^0)_{C_2H_4} = \Sigma(\Delta H_f^0)_{product} - \Sigma(\Delta H_f^0)_{reactant}$

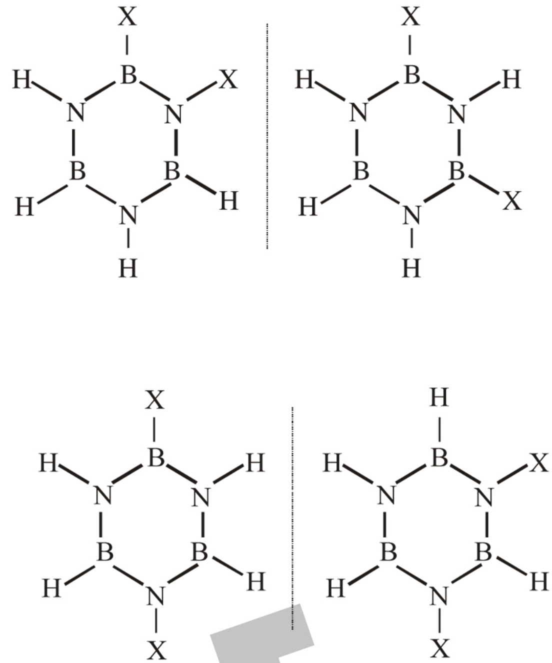
$= 2\times(\Delta H_f^0)_{CO_2} + 2\times(\Delta H_f^0)_{H_2O} - (\Delta H_f^0)_{C_2H_4}$

$= 2(-200) + 2(-150) - (-100) = -600\ kJ\ mol^{-1}$

51. (a) fact

(b) Borax bead for transition element

(c)



52. → A retarder absorbs water molecules & thus removes it from the system. Cement requires water for setting

→ $NaHCO_3$ & $KHCO_3$ possess dissimilar structure. One is in dimer form where as another one is polymeric in nature

→ Because of high charge density. All II–A chlorides are deliquescent in nature

54. $\Delta S_{system} = nR\,ln\frac{V_2}{V_1} = R\,ln3$

For reversible process, $\Delta S_{surrounding} = -\Delta S_{system}$

$\Delta S_{surrounding} = -R\,ln3$

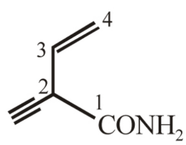
55. Stability of alkene ∝ no. of ∝ –C–H bond at sp^3 hybridised C-atom.

56. $H_2O > H_2O_2$

strength of H-bond

57. K, Rb, and Cs produce $(M^+\ O_2^-)$

59.



2-Ethynyl but-3-en-1-Amide

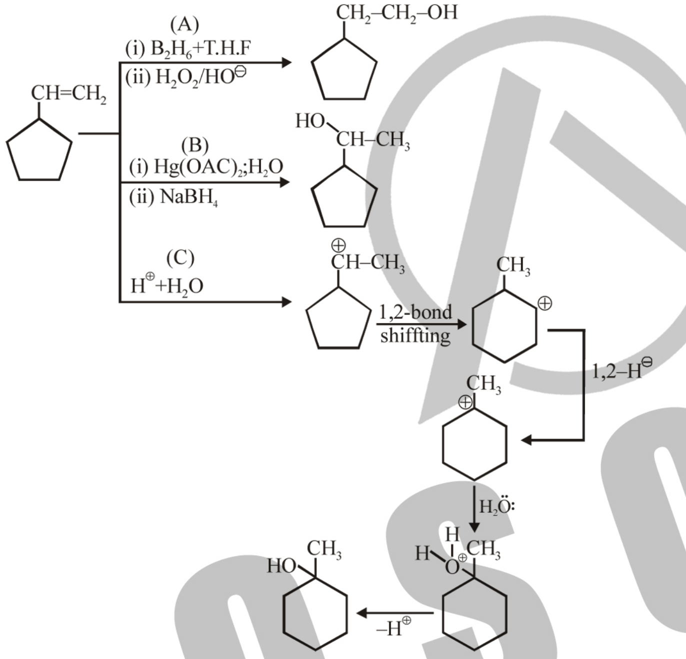
62. All Alkaline earth metal nitrate

63. Let mol of $(NH_4)_2SO_4$ = a

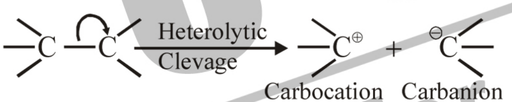
$$pOH = pK_b + \log\frac{[NH_4^+]}{[NH_4OH]},$$

$$5.74 = 4.74 + \log\frac{2a}{.5\times.01}, a = .025$$

64.



65.



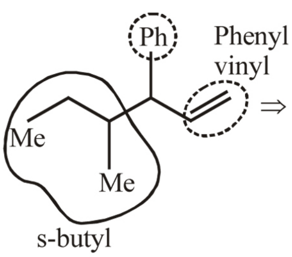
68. C_6H_5COOH, C की ऑक्सीकरण अंक का योग = –2

69. At I double bond one C-atom having two similar group (–Me).

70. $K_b = \boxed{4} > \boxed{2} > \boxed{1} > \boxed{3}$

73. $ClO_3^- + 6I^- + 6H^+ \rightarrow Cl^- + 3I_2 + 3H_2O$

74.



75. $K_a \propto \frac{-I}{+I}$

78. Liquification tendency ∝ critical temp.

79. $\overset{1}{C}H_3-\overset{2}{C}H=\overset{3}{C}=\overset{4}{C}H-\overset{5}{C}H_3$ (C-2: sp^2, C-3: sp)

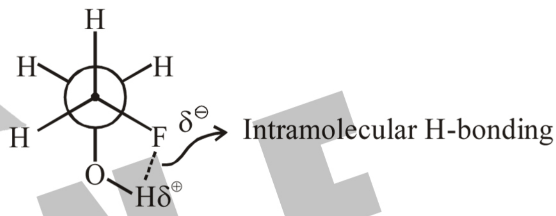
80. I and IV are functional isomers

82. $2NaHCO_3 \rightarrow Na_2CO_3(s) + H_2O(l) + CO_2(g)$

$$\%C = \frac{W_C}{W_{CO_2}}\times100 = \frac{12}{44}\times100 = 27.27\%$$

84. Ease of nitration ∝ stability of Arenium ion.

85.



Due to hydrogen bonding between H and F gauche conformation is most stable hence the correct order is Eclipse, Anti, Gauche.

87. $\Delta x = 2\Delta p$

$$\Delta x \times \Delta p = \frac{h}{4\pi}, 2(\Delta p)^2 = \frac{h}{4\pi}, \Delta p = \sqrt{\frac{h}{8\pi}}$$

$$\Delta V = \frac{1}{2m}\sqrt{\frac{h}{2\pi}}$$

89. 3º benzylic > 2º benzylic > 2º > 1º

92. NCERT XI Pg # (E) 67, (H) 65

97. Module 5 Pg # 107

98. NCERT XI Pg # 311

102. NCERT XI Pg # (E) 71, (H) 70

107. NCERT Pg # 103

108. NCERT XI Pg # 310,311

110. NCERT XI Pg # 321

112. NCERT XI Pg # 80

117. Module 7 Pg # 52

118. NCERT XI Pg # 312

120. NCERT XI Pg # 326

122. NCERT XI Pg # 76

127. Module 7 Pg # 97

128. NCERT XI Pg # 295

132. NCERT XI Pg # 80

137. Module 7 Pg # 99

138. NCERT XI Pg # 296

147. NCERT XI Pg # 47

148. NCERT XI Pg # 297

149. NCERT XI Pg # 321

157. NCERT XI Pg # 60

158. NCERT XI Pg # 116

159. NCERT XI Pg # 321

161. NCERT XI Pg # 68

166. NCERT XI Pg # 101

167. NCERT XI Pg # 57

168. NCERT XI Pg # 113

171. NCERT XI Pg # 71-73

172. NCERT XI Pg # 94

176. Module 5 Pg # 106

177. NCERT XI Pg # 308