1. (b)

Sol. Relation between Celsius and Fahrenheit scale of

temperature is $\frac{C}{5}=\frac{F-32}{9}$

By rearranging we get, C = $\frac{5}{9}F-\frac{160}{9}$

By equating above equation with standard equation of line $y = mx + c$ we get $m=\frac{5}{9}$ and $c=\frac{-160}{9}$

i.e. Slope of the line AB is $\frac{5}{9}$.

2. (c)

Sol. $\frac{\theta-20}{150-20} = \frac{60-0}{100-0}$

$\theta - 20 = \frac{13}{10} \times 60 = 78$

$\theta = 98^0$

3. (b)

Sol. The Brass rod and the lead rod will suffer expansion

when placed in steam bath.

$\therefore$ Length of brass rod at 100^0C

$L'_{brass} = L_{brass}(1+\alpha_{brass}\,\Delta T) = 80[1+18\times10^{-6}\times100]$

and the length of lead rod at 100^0C

$L'_{lead} = L_{lead}(1+\alpha_{lead}\,\Delta T) = 80[1+28\times10^{-6}\times100]$

Separation of free ends of the rods after heating =

$L'_{lead} - L'_{brass} = 80[28-18]\times10^{-4} = 8\times10^{-2}\,cm = 0.8\,mm$

4. (b)

Sol. If the sheet is heated then both d_1 and d_2 will increase since the thermal expansion of isotropic solid is similar to true photographic enlargement.

5. (a)

Sol. Loss of time due to heating a pendulum is given as

$\Delta T = \frac{1}{2}\alpha\Delta\theta T \quad \Rightarrow 12.5 = \frac{1}{2}\times\alpha\times(25-0)^\circ C\times86400$

$\Rightarrow \alpha = \frac{1}{86400}\ per\ °C$

6. (d)

Sol. Due to heating the length of the wire increases.

$\therefore$ Longitudinal strain is produced $\Rightarrow \frac{\Delta L}{L} = \alpha \times \Delta T$

Elastic potential energy per unit volume

$E = \frac{1}{2} \times \text{Stress} \times \text{Strain} = \frac{1}{2} \times Y \times (\text{Strain})^2$

$\Rightarrow E = \frac{1}{2} \times Y \times \left(\frac{\Delta L}{L}\right)^2 = \frac{1}{2} \times Y \times \alpha^2 \times \Delta T^2$ or

$E = \frac{1}{2} \times Y \times \left(\frac{\gamma}{3}\right)^2 \times T^2 = \frac{1}{18}\gamma^2 Y T^2$ [As $\gamma = 3\alpha$ and

$\Delta T = T$ (given)]

7. (a)

Sol. Thermal capacity = mc

$= \frac{Q}{\Delta T} = \frac{300}{45 - 25} = \frac{300}{20} = 15\, J/°C$ Specific heat

$= \frac{\text{Thermal capacity}}{\text{Mass}}$

$= \frac{15}{25 \times 10^{-3}} = 600\, J/kg°C$

8. (c)

Sol. Heat required to raise the temperature of m gm of

substance by dT is given as

$dQ = mc\, dT \Rightarrow Q = \int mc\, dT$

$\therefore$ To raise the temperature of 2 gm of substance from 5°C to 15°C is

$$Q = \int_5^{15} 2 \times (0.2 + 0.14\, t + 0.023\, t^2) dT = 2 \times \left[0.2t + \frac{0.14\, t^2}{2} + \frac{0.023\, t^3}{3}\right]_5^{15} = 82 \text{ calorie}$$

9. (b)

Sol. Initially ice will absorb heat to raise it's temperature to 0^0C then it's melting takes place

If m = Initial mass of ice, m' = Mass of ice that melts and m_w = Initial mass of water

By Law of mixture Heat gain by ice = Heat loss by water

$\Rightarrow\ m \times c \times (20) + m' \times L = m_w c_w [20]$

$\Rightarrow\ 2 \times 0.5(20) + m' \times 80 = 5 \times 1 \times 20 \Rightarrow m' = 1\text{kg}$

So final mass of water = Initial mass of water + Mass of ice that melts = 5 + 1= 6 kg.

10. (a)
Sol. Same amount of heat is supplied to copper and water so $m_c c_c \Delta T_c = m_\omega c_\omega \Delta T_\omega$

$\Rightarrow \Delta T_\omega = \frac{m_c c_c \Delta T_c}{m_\omega c_\omega} = \frac{50 \times 10^{-3} \times 420 \times 10}{10 \times 10^{-3} \times 4200} = 5°C$

11. (c)
Sol. Heat lost by A = Heat gained by B

$\Rightarrow m_A \times c_A \times (T_A - T) = m_B \times c_B \times (T - T_B)$ Since $m_A = m_B$

and Temperature of the mixture (T) = 28°C

$\therefore\ c_A \times (32 - 28) = c_B \times (28 - 24) \Rightarrow \frac{c_A}{c_B} = 1 : 1$

12. (d)
Sol. Temperature of mixture is given by

$$T = \frac{m_1 c_1 T_1 + m_2 c_2 T_2}{m_1 c_1 + m_2 c_2} = \frac{m.c.2T + \frac{m}{2}.2.c.T}{m.c. + \frac{m}{2}.2c} = \frac{3}{2}T$$

13. (b)
Sol. Let the final temperature be T ^{0}C.

Total heat supplied by the three liquids in coming down to 0^0C = $m_1 c_1 T_1 + m_2 c_2 T_2 + m_3 c_3 T_3$ ..... (i)

Total heat used by three liquids in raising temperature from 0^0C to T^0C = $m_1 c_1 T + m_2 c_2 T + m_3 c_3 T$ .....(ii)

By equating (i) and (ii) we get $(m_1 c_1 + m_2 c_2 + m_3 c_3)T = m_1 c_1 T_1 + m_2 c_2 T_2 + m_3 c_3 T_3$

$\Rightarrow\ T = \frac{m_1 c_1 T_1 + m_2 c_2 T_2 + m_3 c_3 T_3}{m_1 c_1 + m_2 c_2 + m_3 c_3}$.

14. (b)
Sol. Let X be the thermal capacity of calorimeter and specific heat of water = 4200 J/kg-K

Heat lost by 0.1 kg of water = Heat gained by water in calorimeter + Heat gained by calorimeter

$\Rightarrow 0.1\times 4200\times(60-35) = 0.2\times 4200\times(35-30) + X(35-30)$

$10500 = 4200 + 5X \Rightarrow X = 1260$ J/K

15. (c)
Sol. Some ice will left in the mixture.

16. (c)
Sol. Hint : Rate of heat loss are equal in both case.

17. (a)
Sol. $m_1 \times 1\ (50 - 30) = m_2(80 - 50)$ ....(i)

$m_1 + m_2 = 40$ kg ....(ii)

18. (b)
Sol. Heat release by water = m s d θ

$= 300 \times 1 \times 25$

= 7500 Cal. amount of Ice melts from this heat

dQ = mL

$m = \frac{dQ}{L} = \frac{7500}{80} = 93.75$ g.

19. (b)
Sol. $\frac{x-273}{373-273} = \frac{f-32}{212-32}$

$\Rightarrow x - 273 = \frac{5}{9}(x - 32)$

$\Rightarrow 9x - 9 \times 273 = 5x - 160 \Rightarrow x = 574.25$

20. (d)
Sol. $Q = 30 \times 1 \times 40$

= 1200 cal.

21. (c)

Sol. Amount of steam required to convert all the ice in water at 100^0C is $\frac{10}{3}$ gm.

22. (b)

Sol. Heat lost in t sec = mL or heat lost per sec = $\frac{mL}{t}$. This must be the heat supplied for keeping the substance in molten state per sec.

$\therefore \frac{mL}{t} = P$ or $L = \frac{Pt}{m}$

23. (c)

Sol. $ms_A \times 4 = ms_B \times \Rightarrow 4s_A = 3s_B$ ....(i)

$ms_B \times 4 = ms_C \times 5 \Rightarrow 4s_B = 5s_C$ ....(ii)

By (i) & (ii)

$16s_A = 15\ s_C$ ....(iii)

$ms_A\ (\theta - 12) = ms_C\ (28 - \theta)$ ....(iv)

By (i) & (iv)

$\theta = 20.25^0C$

24. (b)

Sol. Ice will float when completely immersed.

25. (c)

Sol. $\frac{60-15}{75-15} = \frac{Y-25}{125-25}$

$\frac{45}{60} = \frac{Y-25}{100} \Rightarrow Y = \frac{100}{60} \times 45 + 25 = 100^o$

26. (a)

Sol. $m \times 1 \times (50 - 30) = (40 - m) \times (80 - 50)$

$2m = 3\ (40 - m) \Rightarrow 5m = 120 \Rightarrow m = 24$ kg

So, A = 24 kg & B = 16 kg

27. (a)

Sol. $mc^2 = m_0L$

$1 \times (3 \times 10^8\ 1^2 = m_0x\ (80 \times 4200)$

$m_0 = 2.67 \times 10^{11}$ kg

28. (b)

Sol. $(\Delta Q)_p = 70$cal, $(\Delta Q)_v = nC_v\Delta T = 50$ cal

29. (a)

Sol. $PV^{3/2}$ = const. $\because P = \frac{nRT}{V}$

$T.V^{3/2-1}$ = const. $\Rightarrow TV^{1/2}$ = const.

30. (a)

Sol. $T_{mix} = \frac{n_1T_1 + n_2T_2}{n_1 + n_2} \simeq 305K \simeq 32^0C$

31. (a)

Sol. Heat required by the ice $50 \times 80 = 4000$ cal

heat released by water

$50 \times 1 \times 80 = 400$ cal

both are equal. Final temperature = 0^0C

32. (d)

Sol. $10 \times \left(\frac{1}{2}\right) \times 20 + 10 \times 80 + 10 \times 1 \times 100 + 10 \times 536$

= 100 cal + 800 cal + 1000 cal + 5360

= 7260 cal

33. (c)

Sol. For the first mixing.

$(50 \times L) + (50 \times 1 \times 40) = (200 + W) \times 1 \times 30$

$\Rightarrow 50L + 2000 = 5000 + 30W$

$\Rightarrow 50L - 30W = 4000 \quad \ldots (1)$

For the second mixing.

$(80 \times L) + (80 \times 1 \times 10) = (250 + W) \times 1 \times 30$

$\Rightarrow 80L + 800 = 7500 + 30W$

$\Rightarrow 80L - 30W = 6700 \quad \ldots (2)$

From (1) & (2)

$30L = 2700$

L = 90 Cal/gm

34. (b)

Sol. Let "P" is the rate at which heat is supplied to both A & B.

For A: $P(6) = mC_A (40) \quad \ldots (1)$

For B: $P(4) = mC_B (70) \quad \ldots (2)$

From (1) & (2),

$$\frac{6}{4} = \frac{C_A}{C_B}\frac{(40)}{(70)} \Rightarrow \frac{C_A}{C_B} = \frac{420}{160} = \frac{21}{8}$$

35. (a)
Sol. Plastic tube expanded because of heat and then when one stopped applying heat, it contracted by cooling.

36. (c)
Sol. $\frac{2L}{k_{eq.}A} = \frac{L}{kA} + \frac{L}{kA}$

$\frac{2}{k_{eq.}} = \frac{2}{k} \Rightarrow k_{eq.} = k$

For parallel

$k_{eq.} = \frac{k_1A_1 + k_2A_2}{A_1 + A_2} = k$

37. (d)
Sol. $\frac{L_1}{K_1A} = \frac{L_2}{K_2A}$

$\frac{K_1}{K_2} = \frac{L_1}{L_2}$

38. (c)
Sol. $\gamma = \alpha_1 + 2\alpha_2 = (13 + 2 \times 231) \times 10^{-7} = 475 \times 10^{-7}$

39. (c)
Sol. $T_{mix} = \frac{m_1s_1T_1 + m_2s_2T_2}{m_1s_1 + m_2s_2}$

40. (b)
Sol. Heat lost by hotwater = Heat gained by cold water in beaker + Heat absorbed by beaker

$\Rightarrow 440\,(92 - T) = 200 \times (T - 20) + 20 \times (T - 20) \Rightarrow T = 68^0C$

41. (d)
Sol. During change in phase temp. remains const. So b to c & d to e represents phase change.

42. (a)
Sol. Let P be the rate of heat supplied.

$P \times 50 \times 60 = m \times 340 \times 10^3$ … (1)

$P \times 10 \times 60 = 10 \times 4.2 \times 10^3 \times 2$ … (2)

For (1) & (2),

$\frac{50}{10} = \frac{m \times 340}{20 \times 4.2}$

$\Rightarrow m = \frac{50 \times 20 \times 4.2}{10 \times 340} \Rightarrow 1.2$ kg

43. (b)

Sol. $\dfrac{T_1 - T_2}{\frac{L}{k_A A} + \frac{L}{k_B A}} = \dfrac{T_1 - T_2}{\frac{L}{k_C A}}$

$\dfrac{k_A k_B}{k_A + k_B} = k_C$

44. (b)

Sol. $\tau = \tau_1 + \tau_2$

$= \dfrac{KA(T-0)}{L} = \dfrac{KA(90-T)}{L} + \dfrac{KA(90-T)}{L}$

45. (c)

Sol. Thermal expansion in isotropic bodies is independent of

shape size & availability of cavity.

46. (b)

Sol. By whien's law $\lambda_m = \dfrac{b}{T}$

Here, 'b' is constant Or $\lambda_m \propto T^{-1}$

47. (a)

Sol. Power radiated $= AT^4$

Therefore, when radius becomes twice and area a becomes 4 times and temperature T becomes 2T, power radiated $= 4(2)^4$ Times $= 64$

48. (b)

Sol. According to Wien's law $\lambda_m \propto \dfrac{1}{T}$

When temperature becomes $\dfrac{3}{2}$ time λ_m becomes $\dfrac{2}{3}$ times

49. (b)

Sol. Newton's of cooling

50. (a)

Sol. In the given P. T diagram.

Region I – Liquid

Region II – Solid

Region III – Vapour

SECTION-A

51. (c)

Sol. $58.5\ g\ NaCl = 1 mole = 6.02 \times 10^{23}\ Na^+Cl^-\ units$.

One unit cell contains $4\ Na^+Cl^-$ units. Hence number of unit cell present $= \frac{6.02 \times 10^{23}}{4} = 1.5 \times 10^{23}$.

52. (b)

Sol. In a unit cell, W atoms at the corner $= \frac{1}{8} \times 8 = 1$

atoms at the centre of edges $= \frac{1}{4} \times 12 = 3$

Na atoms at the centre of the cube = 1

$W : O : Na = 1 : 3 : 1$, hence formula $= NaWO_3$

53. (a)

Sol. As each Sr^{2+} ion introduces one cation vacancy,

therefore concentration of cation vacancies = mol % of $SrCl_2$ added.

54. (b)

Sol. When an atom or ion is missing from its normal lattice site, a lattice vacancy is created. This defect is known as Schottky defect . Here equal number of Na^+ and Cl^- ions are missing from their regular lattice position in the crystal. So it is Schottky defect.

55. (a)

Sol. For bcc structure. $2(r_+ + r_-) = \sqrt{3}\,a$

or $r_+ + 225 = \frac{\sqrt{3}}{2} \times 480 \therefore r_+ = 190.7\ pm$

56. (d)

Sol. The no. of A in one unit cell = 6

The no. of C in one unit cell = $\frac{2}{3} \times 6 = 4$

$\therefore$ m.f is $C_4A_6 \equiv C_2A_3$

57. (b)

Sol. Edge length

= 2 × distance between Na^+ & Cl^-

= 2 × 265 = 530 pm

58. (b)

Sol. No. of Tetrahedral Void = 2 × No. of atom

Tetrahedral Void = 2Z

59. (b)

Sol. Between 0.414 to 0.732 $\Rightarrow$ co-ordinaton no. = 6

60. (a)

Sol. $A_{\frac{4}{8}+\frac{4}{2}}\ B_{4-1-\frac{2}{4}}$

$A_{2.5}\,B_{2.5}$ or $\boxed{AB}$

61. (b)
Sol. It is a octahedral void.
62. (a)
Sol. F-centers are the electrons trapped in anionic vacancies.
63. (d)
Sol. Effective no. of atom in a unit cell = 4
no. of atom = $\frac{8}{80} \times N_A$
$\therefore$ no of unit cell = $\frac{N_A}{10} \times \frac{1}{4} = \frac{N_A}{40}$

64. (a)
Sol. CsCl has a bcc structure. Each Cs^+ ion is surrounded by 8 Cl^- ions and each Cl^- ions is surrounded by 8 Cs^+ ions. Thus, the structure has $8:8$ coordination number.
65. (a)
Sol. 12
66. (b)
Sol. ZnS shows Frenkel defect.
67. (c)
Sol. Diamond
68. (c)
Sol. Packing efficiency (i.e., space occupied) for bcc is 68%
$\therefore$ % of empty space = 100 – 68 = 32%
69. (b)
Sol. Crystalline solids are anisotropic in nature due to different arrangement of particles in different directions.
70. (c)
Sol. In orthorhombic crystal system, $\alpha \neq b \neq c$ but axial angles α, β and γ are equal and $90°$.
71. (d)
Sol. No. of X atom (at the corners) $= \frac{1}{8} \times 8 = 1$
NO. of Y atoms (fcc)
$= 6 \times \frac{1}{2} = 3$
Hence, the formula is XY_3.
72. (b)
Sol. Increase of pressure increases coordination number. Hence, by applying high pressure, NaCl types crystal can be changed into CsCl type crystal.
73. (b)

Sol. $a = 2\sqrt{2}r$

Volume of the cell $a^3 = (2\sqrt{2}r)^3 = 16\sqrt{2}r^3$

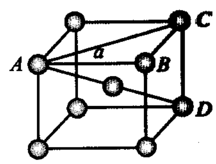
No. of spheres in fcc $= 8\times\frac{1}{8} + 6\times\frac{1}{2} = 4$

Volume of 4 spheres $= 4\times\frac{4}{3}\pi r^3 = \frac{16}{3}\pi r^3$

74. (c)

Sol. Distance between nearest neighbours.

$d = \frac{AD}{2}$



In right angled

$\Delta ABC, AC = AB^2 + BC^2$

$AC^2 = a^2 + a^2$ or $AC = \sqrt{2a}$

Now in right angled ΔADC,

$AD^2 = AC^2 + DC^2$

$AD^2 = (\sqrt{2}a)^2 + a^2 = 3a^2 \Rightarrow AD = \sqrt{3}a$

$\therefore d = \frac{\sqrt{3}a}{2}$

Radius, $r = \frac{d}{2} = \frac{\sqrt{3}}{4}a$

75. (d)

Sol. In antiferromagnetic substances, their dominas are
oppositely oriented and cancel out each other's magnetic moment.

76. (c)

Sol. Order of reaction is sum of the power raised on concentration terms to express rate expression.

77. (a)

Sol. The concentration of reactant does not change with time for zero order reaction (unit of K suggests zero order) since reactant is in excess.

78. (c)

Sol. $k = \frac{0.693}{30} = 0.0231$; $t = \frac{2.303}{k}\log\left(\frac{100}{100-75}\right)$

$t = \frac{2.303}{0.0231} \log 4 = 60$ minutes

79. (b)

Sol. Derive $t_{1/2}$ from $K_t = 2.303 \log \frac{a}{a-x}$, putting $t = \frac{1}{2}$

and $x = \frac{a}{2}$. Therefore it is $\frac{0.693}{K}$.

80. (d)

Sol. $t_{\frac{1}{2}} = \frac{1}{Ka}$

81. (b)

Sol. When A is taken in excess, its concentration will become constant; the rate law may, therefore, be given as :

Rate = $k'[B]^2$ Order = 2

82. (d)

Sol. $k = A \times e^{-Ea/RT}$

For $E_a = 0$; k = A (independent of temperature)

83. (a)

Sol. $K = (mol\,L^{-1})^{1-n}\ sec^{-1}, n = 0, 1$

84. (d)

Sol. $Rate 1 = k\,[A]^n\,[B]^m$

On doubling the concentration of A and halving the concentration of B

$Rat\ 2 = k\,[2A]^n\,[B/2]^m$

Ratio between new and earlier rate.

$$\frac{k[2A]^n\,[B/2]^m}{k[A]^n\,[B]^m} = 2^n \times \left(\frac{1}{2}\right)^m = 2^{n-m}$$

85. (c)

Sol. $Rate_1 = k\,[NO]^2\,[O_2]$

When volume is reduced to 1/2, concentration become two times,

$Rate_2 = k\,[2NO]^2\,[2O_2]$ $\frac{Rate_1}{Rate_2} = \frac{k[NO]^2\,[O_2]}{k[2NO]^2\,[2O_2]}$ or

$\frac{Rate_1}{Rate_2} = \frac{1}{8}$

$\therefore Rate_2 = 8\ Rate_1$.

SECTION-B

86. (c)

Sol. n Arrhenius equation, $k = Ae^{-Ea/RT}$

k = rate constant, A = frequency factor

T = temperature, R = gas constant, E_a = energy of activation.

This equation can be used for calculation of energy of activation.

87. (b)

Sol. In first order reaction for X% complation

$$k = \frac{2.303}{t}\log\left(\frac{100}{100\times X\%}\right) \quad \frac{0.693}{t_{1/2}} = \frac{2.303}{t}\log\left(\frac{100}{100-90}\right)$$

$$= \frac{0.693}{6.93} = \frac{2.303\times 2}{t}$$

So, $t = 46.06$ min.

88. (b)

Sol. $x\ A \longrightarrow YB$

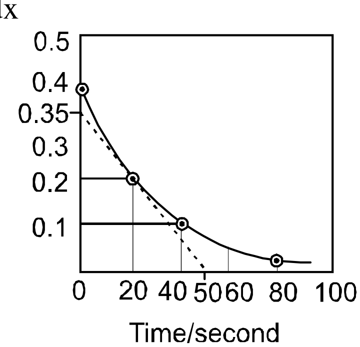
$$\frac{-1}{x}\frac{d}{dt}[A] = \frac{1}{y}\frac{d}{dt}[B] \qquad \Rightarrow \frac{-d}{dt}[A] = \frac{x}{y}\frac{d}{dt}[B]$$

$$\log\left(\frac{-d[A]}{dt}\right) = \log\left(\frac{x}{y}\right)\left(\frac{+d[B]}{dt}\right) \qquad \log\frac{-d}{dt}[A] = \log\frac{-d}{dt}[B] + \log\left(\frac{x}{y}\right)$$

$$\log\left(\frac{x}{y}\right) = 0.3 \qquad \Rightarrow \frac{x}{y} = \frac{2}{1} \qquad \Rightarrow x : y \quad 2:1$$

89. (d)

Sol. Slope of graph at 20 sec $= \frac{dy}{dx} = \frac{0.35}{dx} = 7\times 10^{-3}$



90. (b)

Sol. Order of reaction = $\frac{3}{2} + [-1] = 0.5$.

91. (c)

Sol. $A + 2B \xrightarrow{K} 3C$ [elementary reaction]

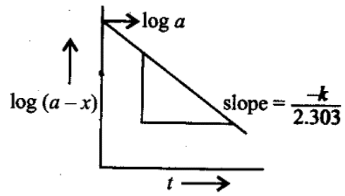
$$\text{Rate} = -\frac{d[A]}{dt} = -\frac{1}{2}\frac{d[B]}{dt} = \frac{1}{3}\frac{d[C]}{dt} = k\,(a)\,(b)^2$$

92. (a)

Sol. Rate constant of a reaction depends on its temperature.

93. (b)

Sol. First order reaction gives a straight line plot of log (a-x) and time.



94. (c)
Sol. According to the collision theory, only a small fraction of collision is effective in bringing about the chemical reaction and the rest of the collisions are ineffective. For effective collision (to yield product) the colliding molecules must have more than or equal to certain minimum amount of energy called threshold energy.
Threshold energy = Activation energy + Average kinetic energy of the molecules.

95. (c)
Sol. Catalyst provides an alternate pathway or reaction mechanism by reducing the activation energy between reactants and products and hence, lowering the potential energy barrier.

96. (a)
Sol. For a zero order reaction, rate $= k\frac{dx}{dt}$

Units of k $= mol\,L^{-1}s^{-1}$

97. (c)
Sol. Let rate of reaction

$R = k[X]^n$ …… (i)

$27R = k[3X]^n$ … (ii)

Or $27 = 3^n$ [Dividing (ii) by (i)]

Or $3^3 = 3^n$ or n = 3

98. (b)
Sol. $O_3 \underset{K_{-4}}{\overset{K_1}{\longleftrightarrow}} O_2 + [O]$ (fast)

$[O] + O_3 \xrightarrow{K_2} 2O_2$ (slow)

Rate of reaction is determined by slow step hence,

Rate $= k_2[O][O_3]$

[O] is unstable intermediate so substitute the value of [O] in above equation.

Rate of forward reaction $= k_1[O_3]$

Rate of backward reaction $k_{-1}[O_2][O]$

At equilibrium,

Rate of forward reaction = Rate of backward reaction

$k_1[O_3] = k_{-1}[O_2][O]$

$[O] = \frac{k_1[O_3]}{k_{-1}[O_2]}$

$\text{Rate} = k_2\left(\frac{k_1[O_3]}{k_{-1}[O_2]}\right)[O_3]$

$\text{Rate} = \frac{k[O_3]^2}{[O_2]}$

99. (a)

Sol. $[R] = [R_0] - kt$

For a completion of reaction [R] = 0

Or $t = \frac{[R_0]}{k}$

100. (b)

Sol. Hydrolysis of an ester is pseudo first order reaction.

BOTANY									
Q.	**ANS.**	**Q.**	**ANS.**	**Q.**	**ANS.**	**Q.**	**ANS.**	**Q.**	**ANS.**
101	A	113	B	125	B	136	C	148	A
102	B	114	A	126	A	137	B	149	B
103	D	115	A	127	D	138	B	150	B
104	B	116	D	128	C	139	A		
105	C	117	C	129	D	140	C		
106	A	118	D	130	C	141	D		
107	B	119	A	131	A	142	D		
108	A	120	C	132	C	143	D		
109	C	121	A	133	C	144	B		
110	B	122	B	134	B	145	C		
111	B	123	C	135	D	146	B		
112	B	124	A			147	B		

ZOOLOGY									
Q.	ANS.	Q.	ANS.	Q.	ANS	Q.	ANS.	Q.	ANS
151	B	163	B	175	C	186	A	198	B
152	D	164	A	176	C	187	D	199	C
153	A	165	C	177	A	188	B	200	C
154	C	166	B	178	D	189	B		
155	B	167	B	179	A	190	D		
156	C	168	C	180	B	191	C		
157	C	169	D	181	B	192	B		
158	A	170	A	182	D	193	C		
159	C	171	B	183	C	194	B		
160	D	172	C	184	B	195	B		
161	B	173	C	185	C	196	C		
162	A	174	B			197	A		