NEET ANSWER KEY & SOLUTION

PAPER CODE :- FULL TEST-2
FULL SYLLABUS TEST

ANSWER KEY

PHYSICS

1.	(B)	**2.**	(A)	**3.**	(B)	**4.**	(B)	**5.**	(D)	**6.**	(B)	**7.**	(D)
8.	(A)	**9.**	(C)	**10.**	(A)	**11.**	(D)	**12.**	(C)	**13.**	(B)	**14.**	(C)
15.	(C)	**16.**	(B)	**17.**	(D)	**18.**	(D)	**19.**	(B)	**20.**	(A)	**21.**	(D)
22.	(D)	**23.**	(D)	**24.**	(B)	**25.**	(D)	**26.**	(D)	**27.**	(C)	**28.**	(A)
29.	(A)	**30.**	(A)	**31.**	(D)	**32.**	(A)	**33.**	(B)	**34.**	(D)	**35.**	(C)
36.	(A)	**37.**	(C)	**38.**	(C)	**39.**	(D)	**40.**	(B)	**41.**	(B)	**42.**	(B)
43.	(A)	**44.**	(B)	**45.**	(C)	**46.**	(C)	**47.**	(B)	**48.**	(A)	**49.**	(B)
50.	(D)												

CHEMISTRY

51.	(C)	**52.**	(B)	**53.**	(C)	**54.**	(A)	**55.**	(C)	**56.**	(D)	**57.**	(D)
58.	(B)	**59.**	(D)	**60.**	(A)	**61.**	(A)	**62.**	(B)	**63.**	(C)	**64.**	(B)
65.	(A)	**66.**	(D)	**67.**	(A)	**68.**	(A)	**69.**	(C)	**70.**	(C)	**71.**	(C)
72.	(A)	**73.**	(C)	**74.**	(C)	**75.**	(A)	**76.**	(D)	**77.**	(C)	**78.**	(B)
79.	(A)	**80.**	(B)	**81.**	(C)	**82.**	(C)	**83.**	(B)	**84.**	(D)	**85.**	(D)
86.	(C)	**87.**	(A)	**88.**	(B)	**89.**	(D)	**90.**	(A)	**91.**	(A)	**92.**	(A)
93.	(A)	**94.**	(C)	**95.**	(B)	**96.**	(C)	**97.**	(C)	**98.**	(B)	**99.**	(A)
100.	(C)												

BIOLOGY

101.	(C)	**102.**	(D)	**103.**	(D)	**104.**	(D)	**105.**	(B)	**106.**	(D)	**107.**	(B)
108.	(A)	**109.**	(A)	**110.**	(A)	**111.**	(A)	**112.**	(D)	**113.**	(B)	**114.**	(C)
115.	(C)	**116.**	(C)	**117.**	(D)	**118.**	(B)	**119.**	(A)	**120.**	(A)	**121.**	(D)
122.	(A)	**123.**	(B)	**124.**	(D)	**125.**	(B)	**126.**	(D)	**127.**	(C)	**128.**	(D)
129.	(B)	**130.**	(B)	**131.**	(C)	**132.**	(A)	**133.**	(D)	**134.**	(D)	**135.**	(C)
136.	(D)	**137.**	(D)	**138.**	(C)	**139.**	(B)	**140.**	(A)	**141.**	(A)	**142.**	(B)
143.	(D)	**144.**	(C)	**145.**	(A)	**146.**	(C)	**147.**	(C)	**148.**	(C)	**149.**	(B)
150.	(C)	**151.**	(A)	**152.**	(B)	**153.**	(D)	**154.**	(A)	**155.**	(B)	**156.**	(D)
157.	(D)	**158.**	(A)	**159.**	(B)	**160.**	(D)	**161.**	(B)	**162.**	(A)	**163.**	(A)
164.	(C)	**165.**	(D)	**166.**	(D)	**167.**	(C)	**168.**	(C)	**169.**	(A)	**170.**	(B)
171.	(C)	**172.**	(C)	**173.**	(D)	**174.**	(B)	**175.**	(C)	**176.**	(B)	**177.**	(B)
178.	(B)	**179.**	(C)	**180.**	(B)	**181.**	(D)	**182.**	(B)	**183.**	(D)	**184.**	(C)
185.	(D)	**186.**	(A)	**187.**	(B)	**188.**	(B)	**189.**	(B)	**190.**	(C)	**191.**	(B)
192.	(D)	**193.**	(D)	**193.**	(B)	**194.**	(D)	**195.**	(D)	**196.**	(A)	**197.**	(B)
198.	(C)	**199.**	(B)	**200.**	(C)								

SOLUTIONS

PHYSICS

1. (B)

2. (A)

Sol. Gauss's law is valid for any closed surface, no matter what its shape or size

3. (B)

Sol. The energy stored = $\frac{1}{2}QV$

4. (B)

Sol. Given R = 6 Ω. When resistor is cut into two equal parts and connected in parallel, then

$$R_{eq} = \frac{R/2}{2} = \frac{R}{4} = \frac{6}{4} = 1.5\Omega$$

5. (D)

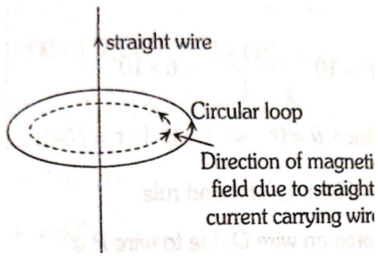
Sol. The given circuit is a balanced wheatstone bridge circuit Hence potential difference between A and B is zero.

6. (B)

Sol. Use Right hand palm rule or Maxwell's Cork screw rule.

7. (D)

Sol.



The figure shows that, magnetic field due to straight wire is either parallel or antiparallel to the current in wire. Thus force F exerted by this magnetic field B is

$\vec{F} = |\vec{d}| \times \vec{B}$

= IdIBsinθ = 0

8. (A)

Sol. On axis of solenoid, B = $\mu_0 ni$

9. (C)

10. (A)

Sol. Domain formation is the necessary feature of Ferromagnetism.

11. (D)

Sol. In secondary e.m.f. induces only when current through primary changes.

12. (C)

13. (B)

Sol. In resonance condition V = V_R, V_L = $V_{C,}$ = $\frac{1}{\sqrt{LC}}$

∴ $V_L = V_C$ i.e., $_iXC$

$= \frac{i}{\omega C} = \frac{v}{\omega CR} = \frac{100}{200 \times 2 \times 10^{-6} \times 10^3}$

V_L = 250V.

14. (C)

Sol. $\lambda_0 = \frac{hc}{W_o} = \frac{12400}{4} = 3100Å = 310nm$

15. (C)

Sol. Angular momentum L= n $\left(\frac{h}{2\pi}\right)$

For this case n=2 , hence L = 2× $\frac{h}{2\pi} = \frac{h}{\pi}$

16. (B)

Sol. $E_n = -\frac{13.6z^2}{n^2}eV \Rightarrow E_1 = -\frac{13.6 \times (2)^2}{(1)^2} = -54.4\ eV$

17. (D)

18. (D)

Sol. $V_1 = I_B.R_B + V_{BE}$

20 = I_B × (500 × 10^3) + 0

$I_B = \frac{20}{500 \times 10^3} = 4\mu A$

$V_{cc} = I_c R_c + V_{cE}$

`20 = I_c × (4 × 10^3) + 0

I_e = 5× 10^{-3} = 5mA

$B = \frac{I_C}{I_B} = \frac{5 \times 10^{-2}}{4 \times 10^{-6}} = 125$

19. (B)

Sol. Diminished, erect image is formed by convex mirror.

20. (A)

Sol. Power of the combination p= p_1+ p_2 = 12–2 = 10D

∴ Focal length of the combination

$$F = \frac{100}{P}\frac{100}{10} = 10cm$$

21. (D)

Sol. $\frac{I_1}{I_2} = \frac{25}{1} \Rightarrow \frac{A_1}{A_2} = \frac{5}{1}$

$$\frac{A_{max}}{A_{min}} = \frac{5+1}{5-1} = \frac{6}{4} = \frac{3}{2}$$

$$\frac{A_{max}}{A_{min}} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$$

22. (D)

Sol. Distance between the first dark fringes on either side of central maxima = width of central maxima

$$= \frac{2\lambda D}{d} = \frac{2\times600\times10^{-9}\times2}{1\times10^{-3}} = 2.4mm.$$

23. (D)

24. (B)

Sol. $\therefore \left(\frac{\Delta R}{R}\times100\right)_{max} = \frac{\Delta V}{1}\times100$

$$= \frac{5}{100}\times100 + \frac{0.2}{10}\times100 = (5+2)\% = 7\%$$

25. (D)

Sol. u = at, x = $\int u\,dt = \int at\,dt = \frac{at^2}{2}$

For t = 4 sec, x = 8a.

26. (D)

Sol. T = (M + m)(g + α) = (940 + 60)(10 + 1) = 1100 N

27. (C)

Sol. $\alpha = \frac{m_2 - m_1}{m_2 + m_1}g\frac{10-5}{10+5}g = \frac{g}{3}$

28. (A)

29. (A)

Sol. Mass of fragment are as 2 : 3

∴ Total mass = 20 kg

∴ Larger fragment = 12 kg

∴ Smaller fragment = 8 kg

Momentum is conserved

∴ 8×6 = 12× $v \Rightarrow v$ = 4 = velocity of larger fragment.

∴ kinetic energy

$$= \frac{1}{2}mv^2 = \frac{1}{2}\times12\times(4)^2 = 96J$$

30. (A)

31. (D)

Sol. m_1 = 2kg, m_2 = 4kg, $\vec{v}_1$ = 20 m/s $\vec{v}_2$ = –10m/s

$$\vec{u}_{cm} = \frac{m_1\vec{v}_1 + m_2,\vec{v}_2}{m_1 + m_2} = \frac{2\times20-\times10}{2+4} = 0 \text{ m/s}$$

32. (A)

Sol. Given $\Delta Q = -20J$, $\Delta W = -8J$ and $U_i = 30J$

$\Delta Q = \Delta U + \Delta W \Rightarrow \Delta U = (\Delta Q - \Delta W)$

$\Rightarrow (U_f - U_i) = (U_f - 30) = -20 - (-8)$

$\Rightarrow U_f = 18J$

33. (B)

Sol. $\frac{T^2}{r^3}$ = constant ⇒ T^2r^{-3} = constant

34. (D)

Sol. $\gamma = \frac{Stress}{Strain} = constant$

35. (C)

Sol. Volume V = cross sectional A × length I or

V= AI strain = $\frac{Elongation}{Original\ length}\frac{\gamma}{1}$

Young's modulus c = $\frac{Stress}{Strain}$

Work done, W = $\frac{1}{2}$ × Stress × Strain × volume

W = $\frac{1}{2}$ × Y × (strain)^2 × AI

$$\frac{1}{2}\times Y\left(\frac{\gamma}{1}\right)^2\times AI = \frac{1}{2}\left(\frac{\gamma A}{1}\right)Y^2 \Rightarrow W \propto Y^2$$

36. (A)

Sol. Increase in surface energy or work done in splitting a big drop = $4\pi R^2$ T ($n^{1/3}$ – 1)

37. (C)

Sol. $a_1 v_2 = a_2 v_2 \Rightarrow \frac{v_1}{v_2} = \frac{a_1}{a_2}\left(\frac{r_1}{r_2}\right)^2$

$\Rightarrow v_2 3\times (2)^2 = 12$ m/s.

38. (C)

Sol. Water has maximum density at 4°C, so is the water is heated above 4°C or cooled below 4°C density decreases, I,e., volume increase . In other words, it expands so it overflows in both the cases

39. (D)

Sol. PV = NKT $\Rightarrow \frac{N_A}{N_B} = \frac{P_A V_A}{P_B V_B} \times \frac{T_B}{T_A}$

$$\Rightarrow \frac{N_A}{N_B} \frac{P\times V\times(2T)}{2P\times\frac{V}{4}\times T} = \frac{4}{1}.$$

40. (B)

Sol. $V_{rms} = \sqrt{\frac{3RT}{M}} \Rightarrow -+- = v_{rms}^2 \propto T.$

41. (B)

Sol. $\Delta Q = \Delta U + \Delta W \Rightarrow \Delta U = \Delta Q - \Delta W = Q - W$ [using proper sign]

42. (B)

Sol. $\left(\frac{Q}{t}\right)_1 = \frac{k_1A_1(\theta_1\theta_2)}{1}$ and $\left(\frac{Q}{t}\right)_2 = \frac{k_2A_2(\theta_2\theta_2)}{1}$

Given $\left(\frac{Q}{t}\right)_1 = \left(\frac{Q}{t}\right)_2 \Rightarrow k_1A_1 = k_2A_2$

43. (A)

Sol. A perfectly black body is a good absorber of radiations falls on it. So it absorptive power is 1.

44. (B)

Sol. work done = ΔKE

$(KE)_i = \frac{1}{2} I\omega^2 + \frac{1}{2} mv^2$

$= \frac{3}{4} mv^2$

$= \frac{3}{4} \times 100 \times (20 \times 10^{-2})^2$

$= \frac{3}{4} \times 100 \times 400 \times 10^{-4}$

= 3J

45. (C)

46. (C)

Sol. $T = 2\pi\sqrt{\frac{1}{g}} \Rightarrow T \propto \sqrt{l}$

47. (B)

Sol. According to ideal gas low

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2} \text{ or } T_2 = T_1\frac{P_2V_2}{P_1V_1}$$

Here, $P_1 = P$, $V_1 = V$, $T_1 = T$, $P_2 = \frac{p}{2}, V_2 = \frac{v}{2}, T_2 = ?$

$$\therefore T_2 = \frac{T\left(\frac{P}{2}\right)\left(\frac{V}{2}\right)}{PV} \Rightarrow T_2 = \frac{T}{4}$$

48. (A)

Sol. According to Cartesian sign convention

Object distance, u = –15 cm

Focal length, f = –10 cm

Using mirror formula

$$\frac{1}{u} + \frac{1}{v} = \frac{1}{f} \Rightarrow \frac{1}{(-15)} + \frac{1}{v} = \frac{1}{(-10)}$$

$$\frac{1}{v} = \frac{1}{(-10)} - \frac{1}{(-15)} = \frac{1}{(-10)} + \frac{1}{(15)}$$ or v = –30 cm

The image is 30 cm from the mirror on the same side of the object.

Magnification, $m = -\frac{v}{u} = -\frac{(-30cm)}{(-15c)} = -2cm$

The image is magnified, real and inverted

49. (B)

Sol. Bohr's quantization condition of angular momentum i.e., $L = n\frac{h}{2\pi}$ led to the quantization of energy.

50. (D)

Sol. According to Ohm's law, V ∝ I or V = RI where the constant of proportionality R is called the resistance of the conductor.

From the above relation it is clear that Ohm's law is valid if V depends on I linearly

51. (C)

Sol. $CaCl_2 + CO_3^{2-} \longrightarrow CaCO_3 + 2Cl^-$

111 g 100g

$CaCO_3 \longrightarrow CaO + CO_2$

100g 56 g

∴ 56 g CaO is obtained by the decomposition of $CaCO_3$
= 100 g

∴ 0.959 g CaO will be obtained by the decomposition of $CaCO_3$

$= \frac{100 \times 0.959}{56} = 1.71g$

Further, 100 g $CaCO_3$ = 111 g $CaCO_2$

171 g $CaCO_3$ = $\frac{111 \times 171}{100}$ = 189 g $CaCl_2$

Percentage of $CaCl_2$ in the mixture

$= \frac{189}{4.22} \times 100$

= 44.78 = 45%

52. (B)

Sol. For XY_2 $n = \frac{w}{M}$

$0.1 = \frac{10}{X + 2Y}$

X + 2Y = 100 ....(1)

For X_3Y_2 $n = \frac{w}{M}$

$0.05 = \frac{9}{3X + 2Y}$

3X + 2Y = 180 ....(2)

Form (1) and (2)

2X = 80

X = 40 and 2Y = 100 - 40

= 60

= Y = 30

53. (C)

Sol. $r_n = \frac{52.9 \times n^2}{Z}$ pm

∴ For He^+, $r_1 = \frac{52.9 \times 1^2}{2}$ = 26.5 pm.

54. (A)

Sol. $\frac{1}{\lambda} = R\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$ $\frac{1}{\lambda}$ = 1.097 × 10^7 m^{-1} $\left(\frac{1}{1^2} - \frac{1}{\infty^2}\right)$ ∴ $\lambda = 91 \times 10^{-9}$ m = 91 m.

55. (C)

Sol. The addition of second electron in an atom or ion is always endothermic because of repulsion between two negative charges.

56. (D)

Sol.

Element :	B	S	P	F
I.E.($kJ\ mol^{-1}$) :	801	1000	1011	1681

In general as we move from left to right in a period, the ionization enthalpy increases with increasing atomic number. The ionization enthalpy decreases as we move down a group. P ($1s^2$, $2s^2$, $3s^2$ $3p^3$) has a stable half filled electronic configuration than S ($1s^2$, $2s^2$, $2p^6$, $3s^2$, $3p^4$). For this reason, ionization enthalpy of P is greater than S.

57. (D)

Sol. For isoelectronic species, ionic radii $\propto \frac{1}{\text{nuclear charge}}$.

So, correct order of ionic radii is ${}_8O^{2-} > {}_9F^- > {}_{11}Na^+ > {}_{12}Mg^{2+} > {}_{13}Al^{3+}$.

58. (B)

Sol. Li_2 $\sigma 1s^2$ $\sigma^* 1s^2$ $\sigma 2s^2$ Bond order = 1

Li_2^+ $\sigma 1s^2$ $\sigma^* 1s^2$ $\sigma 2s^1$ Bond order = 0.5

Li_2^- $\sigma 1s^2$ $\sigma^* 1s^2$ $\sigma 2s^2$ $\sigma^* 2s^1$ Bond order = 0.5

Stability order $Li_2 > Li_2^+ > Li_2^-$

59. (D)

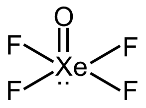
Sol. NO_2^- = sp^2

NO_3^- = sp^2

NO_2 = sp^2

NO_2^+ = sp

60. (A)

Sol. 

61. (A)
Sol. in N_2H_2, N is sp^2 hybrid, in all others N is sp^3

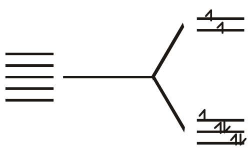
62. (B)
Sol. In peroxides, the oxidation state of O is -1 and they give H_2O_2, with dilute acids, and have peroxide linkage.

63. (C)
Sol. SO_2 is used as a food preservatives but NO_2 does not.

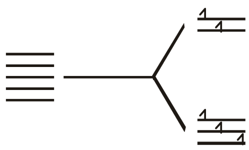
64. (B)
Sol. In these groups the d-orbitals are progressively filled in each of the four long periods (4 to 7).

65. (A)
Sol. Cr^+ has stable half filled electronic configuration, $[Ar]^{18}$ $3d^5$ $4s^0$. the removal of one more electron from this stable half filled configuration will require higher energy.

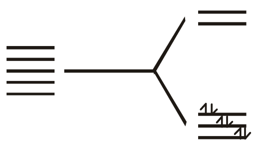
66. (D)



Sol. (i) Co^{2+}, $3d^7$ Cl^- is weak field ligand.

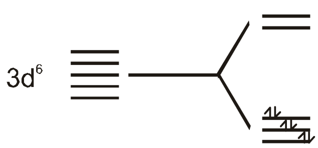


(ii) Mn^{2+}, $3d^5$ Cl^- is weak field ligand.



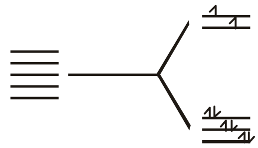
(iii) Fe^{2+}, $3d^6$ CN^- is strong field ligand so compels for pairing of electrons.

67. (A)



Sol. $[Co(CN)_6]^{3-}$;
n = 0
CN^- is strong field ligand ; so it compels for pairing of electrons.

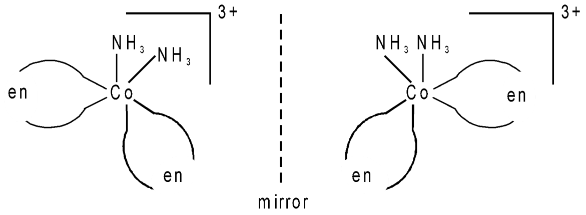
68. (A)



Sol. $3d^8$
H_2O is weak field ligand ; so it does not compel for pairing of electrons. So,

$$\mu = \sqrt{n(n+2)} = \sqrt{2(2+2)} = 2.84 \text{ B.M}$$

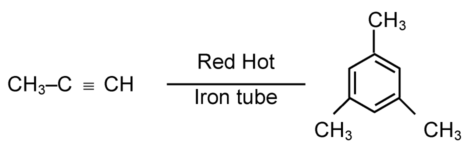
69. (C)
Sol. cis-form of $[Co\ (en)_2\ (NH_3)_2]^{3+}$ has optical isomers.



70. (C)
Sol. Greater the –I effect, greater will be the acidity.

71. (C)
Sol. Electron withdrawing group increases acidic strength and Electron releasing group decreases acidic strength.

72. (A)

Sol. 

Product is mesitylene total σ bonds in mesitykene = 21

73. (C)
Sol. Reactions (C) is free radical substitution reaction.

74. (C)
Sol. Compound Oxidation number of nitrogen

N_2H_4	=	–2
NH_3	=	–3
N_3H	=	–1/3
NH_2OH	=	–1

75. (A)
Sol. $\Delta H = \Delta E + \Delta n(g)\ RT$

$40.66 \times 1000 = \Delta E + (1) \times 8.314 \times 373.$

$\Delta E = 37.56\ kJ\ mol^{-1}$

76. (D)

Sol. $\Delta G = \Delta H - T\Delta S$

For spontaneous process (ΔG = -Ve) at all temperature, $\Delta H < 0$ & $\Delta S > 0$.

77. (C)

Sol. $\frac{1}{2}x_2 + \frac{1}{2}y_2 \longrightarrow xy \quad \Delta H = -200$ kJ/mole

$\Delta H = \frac{1}{2}E_{x-x} + \frac{1}{2}E_{y-y} - E_{xy}$

$-200 = \frac{1}{2}[a] + \frac{1}{2}[0.5\,a] - a$

$-200 = \frac{a}{2} + \frac{a}{4} - a$

$-200 = -\frac{a}{4}$ so a = 800 kJ mol^{-1}

ΔHx_2 = 800 kJ mol^{-1}

78. (B)

Sol. $pH = 7 + \frac{1}{2}(pK_a - pK_b) = 7 + \frac{1}{2}[0]$

pH = 7.

79. (A)

Sol. On adding small amount of acid (H^+) and base (OH^-), weak acid or weak base will form respectively.

80. (B)

Sol. $pOH = pK_b + \log\left(\frac{NH_4Cl}{NH_4OH}\right)$

$14 - 9.25 = pK_b + \log\left(\frac{0.1}{0.1}\right)$

$\Rightarrow pK_b = 4.75$.

81. (C)

Sol. $Na_2SO_4 \rightleftharpoons 2Na^+ + SO_4^{2-}$

1 0 0

$1-\alpha$ 2α α

Vant Hoff factor (i) = $\frac{1-\alpha+2\alpha+\alpha}{1} = 1+2\alpha$.

82. (C)

Sol. $P_A = P^0_A\, x_A = 17.5 \times \frac{178.2/18}{\frac{178.2}{18}+\frac{18}{180}} = 17.325$

83. (B)

Sol. $\Delta T_f = i \times k_f \times m$

$2.8 = 1 \times 1.86 \times \frac{x}{62 \times 1}$

$x = \frac{2.8 \times 62}{1.86} = 93$ g

84. (D)

Sol. The metal placed below in electrochemical series does not react with that metal salt solution which metal is placed above in series.

85. (D)

Sol. $Fe^{3+} + 3e^- \longrightarrow Fe$, – 0.036 volt

$Fe \longrightarrow Fe^{2+} + 2e^-$, 0.44 volt

$Fe^{3+} + e^- \longrightarrow Fe^{2+}$

$+ 3 \times 0.036f - 2 \times 0.44 \times f = -1 \times E^\circ \times f$

E° = 0.772 Volt

86. (C)

Sol. $E = 0 - \frac{0.0591}{2}\log\frac{16}{4} = -\frac{0.0591}{2} \times 2 \log 2 = -0.0591 \times 0.301$ **= – 0.0178 Volt.**

If connected in reverse direction,E = 0.0178 volt.

87. (A)

Sol. Both assertion and reason are correct and reason is the correct explanation of assertion.

88. (B)

Sol. $\frac{r_2}{r_1} = \frac{C_2}{C_1}$ (for first order reaction)

$k = \frac{1}{t_2 - t_1}\ell n\frac{C_2}{C_1} = \frac{1}{t_2 - t_1}\ell n\frac{r_2}{r_1}$

$$k = \frac{1}{20-10}\ \ell n \frac{0.04}{0.03} = \frac{1}{10}\ \ell n \frac{4}{3}$$

$$t_{1/2} = \frac{\ell n 2}{k} = \frac{\ell n 2}{\ell n 4/3} \times 10$$

$$= \frac{2.3 \times 0.3}{2.3(0.6 - 0.477)} \times 10$$

= 24.4 sec.

89. (D)

Sol. For zero order reaction

$$T_{\frac{1}{2}} = \frac{C_0}{2K} \text{ so } T_{\frac{1}{2}} \propto C_0$$

On doubling initial concentration $T_{\frac{1}{2}}$ is double

90. (A)

Sol. Glucose has aldehyde group and six carbon chain.

91. (A)

Sol. In basic medium rate of hydrolysis increases with electron withdrawing group (-M effect predominates)

92. (A)

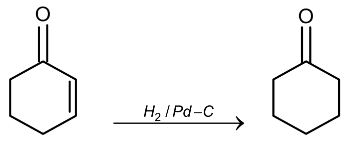
Sol. It is correct that phenol is more reactive than benzene.

93. (A)

Sol. It is known that basic need for the existance of Keto-enol tautomers is the presence of at least one hydrogen atom at adjacent sp^3 carbon of carbonyl carbon.

94. (C)

Sol.



During hydrogenation of α,β unsaturated carbonyl compound by pd catalyst selective reduction is observed of double bond.

95. (B)

Sol. Alkanes with odd carbon atoms have their and carbon atom on the same side of the molecule and in even carbon atom alkane, the end carbon atom on opposite side. Thus alkanes with even carbon atoms are packed closely in crystal lattice to permit greater intermolecular attractions and hence higher melting point.

96. (C)

Sol. $CH_2 = C(CH_3) - CH_2 - CH_3$,

$CH_3 - C(CH_3) = CH - CH_3$,

$CH_3 - CH(CH_3) - CH = CH_2$

97. (C)

Sol. The value of *K* depends on the stoichiometry of reactants and products at the point of equilibrium. For *e.g.,* if the reaction is multiplied by 2, the equilibrium constant is squared.

98. (B)

Sol. Chlorine of vinyl chloride (CH_2 = CHCl) is non-reactive (less reactive) towards nucleophile in nucleophilic substitution reaction because it shows the following resonating structure due to + M effect of – Cl atom.

$$\underset{I}{CH_2 = CH - \ddot{C}l\!:} \longleftrightarrow \underset{II}{\overset{\delta-}{C}H_2 - CH = \overset{\delta+}{Cl}}$$

In structure II, Cl-atom have positive charge and partial double bond character with C of vinyl group, so it is more tightly attracted towards the nucleus and it does not get replaced by nucleophile in S_N reaction.

99. (A)

Sol. Nucleophilic substitution reactions involve substitution (replacement) of a group or atom by a nucleophile.

$$KOH \longrightarrow K^+ + OH^-$$

$$RX + \underset{\text{nucleophile}}{OH^-} \longrightarrow R - OH + KX$$

Nucleophiles are either negative charge or lone pair of electrons bearing species, e, OH^-, $\ddot{N}H_3$ etc.

100. (C)

Sol. It is correct statement that NF_3 is a weaker ligand than $N(CH_3)_3$, the reason is that fluorine is highly electronegative therefore, it with draw electrons from nitrogen atom. Hence, the lone pair of nitrogen atom cannot be ligated. While $N(CH_3)_3$ is a strong ligand because CH_3 has electron releasing group.