NEET ANSWER KEY & SOLUTION

PAPER CODE :- PART TEST-2
CLASS XII

ANSWER KEY

PHYSICS

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

CHEMISTRY

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

BIOLOGY

101.	(A)	**102.**	(B)	**103.**	(A)	**104.**	(B)	**105.**	(A)	**106.**	(C)	**107.**	(B)
108.	(B)	**109.**	(C)	**110.**	(C)	**111.**	(C)	**112.**	(B)	**113.**	(B)	**114.**	(C)
115.	(A)	**116.**	(B)	**117.**	(D)	**118.**	(D)	**119.**	(B)	**120.**	(D)	**121.**	(C)
122.	(D)	**123.**	(A)	**124.**	(A)	**125.**	(B)	**126.**	(C)	**127.**	(B)	**128.**	(A)
129.	(D)	**130.**	(D)	**131.**	(D)	**132.**	(A)	**133.**	(C)	**134.**	(D)	**135.**	(B)
136.	(A)	**137.**	(B)	**138.**	(A)	**139.**	(C)	**140.**	(B)	**141.**	(C)	**142.**	(B)
143.	(B)	**144.**	(C)	**145.**	(C)	**146.**	(C)	**147.**	(B)	**148.**	(A)	**149.**	(A)
150.	(B)	**151.**	(D)	**152.**	(D)	**153.**	(D)	**154.**	(D)	**155.**	(B)	**156.**	(D)
157.	(D)	**158.**	(D)	**159.**	(C)	**160.**	(D)	**161.**	(C)	**162.**	(A)	**163.**	(D)
164.	(D)	**65.**	(C)	**166.**	(D)	**167.**	(B)	**168.**	(C)	**169.**	(D)	**170.**	(A)
171.	(C)	**172.**	(B)	**173.**	(B)	**174.**	(D)	**175.**	(A)	**176.**	(B)	**177.**	(B)
178.	(C)	**179.**	(C)	**180.**	(D)	**181.**	(B)	**182.**	(D)	**183.**	(C)	**184.**	(C)
185.	(C)	**186.**	(B)	**187.**	(B)	**188.**	(C)	**189.**	(A)	**190.**	(D)	**191.**	(B)
192.	(B)	**193.**	(B)	**194.**	(C)	**195.**	(B)	**196.**	(B)	**197.**	(D)	**198.**	(B)
199.	(B)	**200.**	(C)										

SOLUTIONS

PHYSICS

1. (D)

Sol. $dB = \frac{\mu_0}{4\pi} \cdot \frac{idl \sin\theta}{r^2} \Rightarrow d\vec{B} = \frac{\mu_0}{4\pi} \cdot \frac{i(d\vec{l} \times \vec{r})}{r^3}$

2. (D)

Sol. $B = \frac{\mu_0}{4\pi} \frac{(2\pi - \theta)i}{R} = \frac{\mu_0}{4\pi} \frac{\left(2\pi - \frac{\pi}{2}\right) \times i}{R} = \frac{3\mu_0 i}{8R}$

3. (A)

Sol. $B = \frac{\mu_0 Ni}{2r} = \frac{4\pi \times 10^{-7} \times 100 \times 0.1}{2 \times 5 \times 10^{-2}} = 4\pi \times 10^{-5}$ *Tesla*

4. (B)

Sol. Magnetic field inside the solenoid $B_{in} = \mu_0 ni$

5. (B)

Sol. (B) $B = \mu_o ni$

6. (D)

Sol. At these points, the resultant field $= 0$

7. (D)

Sol. $B = \frac{\mu_o}{4\pi} . \frac{2\pi NiR^2}{r^3} \Rightarrow B \propto \frac{1}{r^3}$

8. (D)

Sol. f = qVB

a = $\frac{f}{m}$

= $\frac{qVB}{m}$

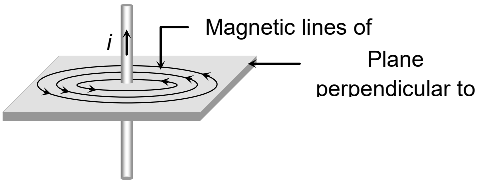
= $\frac{864}{5} \times 10^{12}$ m/s^2

9. (C)

Sol. After passing through a magnetic field, the magnitude of its mass and velocity of the particle remain same, so its energy does not change, ie., kinetic energy will remain T.

10. (C)

Sol. See the following figure



11. (A)

Sol. $B \propto \frac{1}{r} \Rightarrow \frac{B_1}{B_2} = \frac{r_2}{r_1} \Rightarrow \frac{0.04}{B_2} = \frac{40}{10} \Rightarrow B_2 = 0.01\,T$

12. (C)

Sol. Here $B = \mu_0 ni$

where n is number of turns per unit length $= \frac{N}{l}$

13. (C)

Sol. $B = \frac{\mu_0 Ni}{2r} = \frac{4\pi \times 10^{-7} \times 1000 \times 0.1}{2 \times 0.1} = 6.28 \times 10^{-4}\,T$

14. (D)

Sol. $B \propto \frac{i}{r}$

15. (A)

16. (A)

17. (C)

Sol. $B = \frac{\mu_0}{4\pi} \times \frac{\pi i}{r} \Rightarrow B = 10^{-7} \times \frac{\pi \times 10}{5 \times 10^{-2}} = 6.28 \times 10^{-5}\,T$

18. (C)

Sol. $B \propto \frac{1}{r} \Rightarrow \frac{B_1}{B_2} = \frac{r_2}{r_1} = \frac{2r}{r} = 2$

19. (B)

Sol. $B = \frac{mv}{qr} = \frac{9 \times 10^{-31} \times 10^6}{1.6 \times 10^{-19} \times 0.1} = 5.6 \times 10^{-5}\,T$

20. (D)

Sol. $\vec{F} = q(\vec{v} \times \vec{B})$; if $\vec{v} \parallel \vec{B}$ then $\vec{F} = 0$

21. (A)

Sol. Lorentz force is given by

$\vec{F} = \vec{F_e} + \vec{F_m} = q\vec{E} + q(\vec{v} \times \vec{B}) = q[\vec{E} + (\vec{v} \times \vec{B})]$

22. (C)

Sol. $\vec{F} = q\vec{v} \times \vec{B}$

23. (A)

Sol. $F = qvB \sin\theta = qvB \sin 0 = 0$

24. (C)

Sol. $r = \frac{mv}{qB} \Rightarrow \frac{r_\alpha}{r_p} = \frac{m_\alpha}{m_p} \times \frac{q_p}{q_\alpha} = \frac{4}{1} \times \frac{1}{2} = \frac{2}{1}$

25. (B)
Sol. Two wires, if carries current in opposite direction, they repel each other.

26. (C)
Sol. $F = \frac{\mu_0}{4\pi}\frac{2i_1 i_2}{a} = 10^{-3} N$

When current in both the wires is doubled, then

$F' = \frac{\mu_0}{4\pi}\frac{2(2i_1 \times 2i_2)}{a} = 4 \times 10^{-3} N$

27. (B)
Sol. $\theta = \frac{NiAB}{C} \Rightarrow \theta \propto N$ (Number of turns)

28. (B)
Sol. $W = MB(\cos\theta_1 - \cos\theta_2)$

$= (NiA)\, B(\cos 0° - \cos 180°) = 2NAIB$

29. (A)
Sol. When current is passed through a spring, it gets compressed.

30. (D)
Sol. Biot–Savart's law,

$$dB = \frac{\mu_0}{4\pi}\frac{Idl \sin\theta}{r^2}$$

In vector form, $d\vec{B} = \frac{\mu_0}{4\pi}\frac{Id\vec{l} \times \hat{r}}{r^2}$

31. (C)
Sol. At the centre of circular coil carrying current, the magnetic field is,

$B = \frac{\mu_0 Ni}{2r}$

where N = number of turns in the coil
i = current flowing
r = radius of the coil

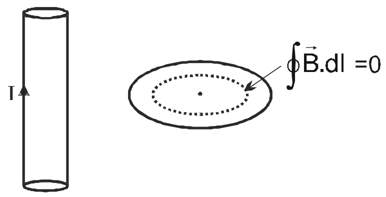
Given, N = 1000, i = 0.1A, r = 0.1m

Substituting the values, we have

$B = \frac{4\pi \times 10^{-7} \times 1000 \times 0.1}{2 \times 0.1}$

$= 2\pi \times 10^{-4} = 6.28 \times 10^{-4}$ tesla

32. (B)
Sol.



$\oint \vec{B}.dl = 0$

B = 0 Ans. (B)

33. (D)
Sol. Provided length of magnet is <<the distance.

34. (C)
Sol. For null deflection $\frac{M_1}{M_2} = \left(\frac{d_1}{d_2}\right)^3 = \left(\frac{40}{50}\right)^3 = \frac{64}{125}$

35. (A)
Sol. Flux $= B \times A;\ \therefore B = \frac{Flux}{A} = Weber\ / m^2$

36. (A)

37. (B)
Sol. $F \propto \frac{m_1 m_2}{r^2}$

38. (B)
Sol. $r = \frac{mv}{qB} = \frac{p}{qB} \Rightarrow r\ \alpha\ \frac{1}{q}$

$\frac{r_n}{r_\alpha} = \frac{q_\alpha}{q_n}$

$= \frac{2}{1}$

$= 2 : 1$

39. (D)
Sol. From ampere circuital law

$\oint B.d\ell = \mu_0 I' \quad \Rightarrow I' = \frac{I}{\pi R^2} \times \pi r^2$

$B 2\pi r = \mu_0 \frac{I}{\pi R^2} \times \pi r^2$

$B = \frac{\mu_0 I}{2\pi R^2} r$

$B_{insdie}\ \alpha\ r$

$B_{outside}$

$\oint B.d\ell = \mu_0 I$ k

$B 2\pi r = \mu_0 I$

$B = \frac{\mu_0 I}{2\pi r}$

$B \alpha \frac{1}{r}$

40. (C)
Sol. Magnetic flux $\phi = BA \Rightarrow B = \frac{\phi}{A} = \frac{Weber}{m^2} = Tesla$

41. (A)
Sol. $M = mL = 4 \times 10 \times 10^{-2} = 0.4\, A \times m^2$

42. (B)

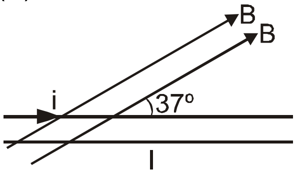
Sol. At magnetic poles, the angle of dip is 90°. Hence the horizontal component $B_H = B\cos\theta = 0.$

43. (C)

44. (C)

45. (B)

Sol.



$$\vec{F} = i\left(\vec{L}\times\vec{B}\right)$$

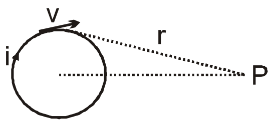
$$F = BiL\sin\theta$$

$$= 0.1 \times 10 \times 0.1 \times \frac{3}{5}$$

$$= 6 \times 10^{-2}\ N$$

46. (A)

Sol. $\vec{B} = \frac{\mu_0}{4\pi}\frac{q(\vec{v}\times\vec{r})}{r^3}$



Magnitude fixed but direction keeps on changing

47. (A)

Sol. A force which always acts perpendicular to velocity of the particle does no work on the particle, but changes the direction of momentum of the particle. Hence statement 2 is correct explanation of the statement 1.

48. (D)

Sol. $\mu_r = 1 + \frac{I}{H}$; as we know *I* dependent on *H*, initially value of $\frac{I}{H}$ is smaller so value of μ_r increases with *H* but slowly but with further increases of *H* value of $\frac{I}{H}$ also increases *i.e.* μ_r increases speedily. When material fully magnetised *I* becomes constant then with the increase of *H* ($\frac{I}{H}$ decreases) μ_r decreases. This is confirm with the option (D).

49. (A)

Sol. In case of the electric field of an electric dipole, the electric lines of force originate from positive charge and end at negative charge. Since isolated magnetic lines are closed continuous loops extending through out the body of the magnet.

50. (D)

Sol. The earth has only vertical component of its magnetic field at the magnetic poles. Since compass needle is only free to rotate in horizontal plane. At north pole the vertical component of earth's field will exert torque on the magnetic needle so as to align it along its direction. As the compass needle can not rotate in vertical plane, it will rest horizontally, when placed on the magnetic pole of the earth.

CHEMISTRY

51. (B)

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

$$\log\left(\frac{-d[A]}{dt}\right)\left(\frac{d[B]}{dt}\right) = 0.3.$$

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

$$\log\left(\frac{x}{y}\right) = 0.3$$

$x/y = 10^{0.3} = 1.99$

x : y = 2 : 1

52. (D)

Sol. For a first order reaction,

$$K = \frac{2.303}{t}\log\frac{[A]_0}{[A]}$$

$$\frac{2.303}{1.26\times10^{14}}\times\log\frac{[100]}{[50]} = \frac{2.303}{t}\log\frac{100}{100}$$

$$t = \left(\frac{1}{0}\right) = \infty \qquad t = \infty$$

53. (B)

Sol. $r \propto [A]^2$ ...(i)

$r \propto [B]$ ...(ii)

$r \propto [A]^2 [B]$

$r = K [A]^2 [B]$

54. (D)

Sol. Unpredictable (fractional value)

55. (B)

Sol. Rate α [Reactant]

$r \ \alpha \ [A_2]^1$

order = 1

Rate of reaction always depends on the slow process

56. (D)

Sol. Zero order reaction

The units of rate constant and rate of the reaction are same in a zero order reaction.

57. (A)

Sol. $k = Ae^{-Ea/RT}$, $\log k = 15 - \frac{10^6}{T}$

$\log_{10} k = \log_{10}A - \frac{E_a}{2.303RT}$

$\log_{10}A = 15 \ A = 10^{-15}$

$\frac{E_a}{2.303RT} = \frac{10^6}{T}$

$E_a = 10^6 \times 2.303 \times 8.314$

$19.147 \times 10^6 = 1.9 \times 10^4$ kJ

58. (C)

Sol. $K = A.e^{-40000/T}$

The energy of activation

$\Rightarrow 40000 \times R = 4000 \times 2 = 80000$ cal

59. (D)

Sol. $\frac{t_{99\%}}{t_{99.9\%}} = \frac{2}{3} = t_{99.9\%} = \frac{3}{2} \times 32 = t_{99.9\%} = 48\text{min}$

60. (C)

Sol. **2 order**

$\frac{1}{[A]} = Kt + \frac{1}{[A]_0}$

$\frac{1}{0.25} = 8 \times 10^{-4} \times t + 1/0.5$

$4 = 8 \times 10^{-4} t + 2$

$t = 2.5 \times 10^{-3}$ min

61. (C)

Sol. $t_{1/2} = 15$ hr, K ??

$K = \frac{0.693}{t_{1/2}} = \frac{0.693}{15}$

$t = \frac{2.303}{K} \log \frac{[A]^0}{[A]}$

$t = \frac{2.303}{0.693} \times 15 \log \frac{[100]}{[20]}$

t = 34.89 hr

62. (A)

Sol. $\Delta H = E_f - E_b$

$\Delta H = 0$

63. (C)

Sol. Because $E_a > E_{a1}$ hence on addition of catalyst rate of reaction increases.

64. (B)

Sol. $AgNO_3 : CuSO_4 : AlCl_3 :: \frac{1}{1} : \frac{1}{2} : \frac{1}{3}$ or 6 : 3 : 2

65. (D)

Sol. At STP ;

valume of O_2 = 2.4 L

$H_2 + \frac{1}{2}O_2 \longrightarrow H_2O$

So, volume of $H_2 = 2.4 \times 2 = 4.8L$

or $V_{H2} = 2 \times V_{O2}$

66. (A)

Sol. $2Cl^- \longrightarrow Cl_2(g) + 2e^-$

67. (B)

Sol. Assumed by IUPAC

68. (A)

Sol. $\frac{W_{Al}}{E_{Al}} = \frac{W_{Ag}}{E_{Ag}} = \frac{1 \times 27}{27/3} = \frac{108 \times X}{108/1} = X = 3$

69. (B)

Sol. $K = C \times \frac{l}{a}$

$0.3568 = 0.0268 \times Z \frac{l}{a}$

cell cost = $\frac{l}{a} \ \frac{0.3568}{0.0268} = 13.31 \text{cm}^{-1}$

70. (A)

Sol. Refer theory.

71. (D)

Sol. ^m = $\frac{1000 \times K^1}{M} = \frac{1000 \times 0.0110}{0.05}$

=220 scmv matc^{-1}

72. (B)

Sol. $\frac{wh_2}{EH_2} = \frac{Wcu}{Ec^{+2}}$ $\frac{0.504}{2/2} = \frac{Wcu}{63.5/2}$

Wcu = 16 gm

73. (C)

Sol. $W = \frac{E \times i \times t}{96500} = 0.01 = \frac{q}{96500} = q = 965C$

74. (C)
Sol. SRP increases, depostion increase i.e, higher SRP Will deposit first Ag, Hg, Cu

75. (C)
Sol. pt/H_2(g)/Hcl (sol)//Agcl (s)/Ag.

76. (C)
Sol. Zn $\longrightarrow$ 0.76v
Ag $\longrightarrow$ 0.80 v
Cu $\longrightarrow$ 0.34 v
Zn Can reduce Ag^+ and cu^{+2}

77. (B)
Sol. $E^{\circ}_{zn/zn^{+2}} = 0.76V \quad E^{\circ}_{fe/fe^{+2}} = 0.41V$

$Ec^{\circ}_{u} = (e^{\circ}_{\circ}p)_A - (E^{\circ}_{\circ oP})_C = 0.76 - 0.41$

$E^{\circ}_{C}eu = 0.35V$

78. (A)
Sol. We can not add or substract E.M.F. directly we go through with DG.
$Mn^{+7}O_4^- 8H^+ + 5e^- \longrightarrow Mn^{+2} + 4H_2O \; E^{\circ}_1 = 1.5\,N, \Delta G_1 = -5fE^{\circ}_1$
$mn^{+2} + 2H_2O \longrightarrow MnO_2 + 4H^+ + 2E^- E^{\circ}_1 = -1.23V, \Delta G_2 = -2FE^{\circ}_1$
overall:-
$Mn^{+7}O_4^- + 4H^+ + 3e^- \rightarrow Mn^{+4}O_2 + 2H_2O \; E_f =$

to be calc $\Delta G_f = \Delta G_1 - \Delta G_2 \; \Delta G^{\circ}_f = \Delta G_1 - \Delta G_2$ = -5F

$E^{\circ}_1 - (-2FE^{\circ}_2) = (-5 \times 1.51 + 2 \times 1.23)F$

$\Delta G_f = -nfE^{\circ}_f = -5.09 = -3fE^{\circ}_f = 1.6966V$

79. (B)
Sol. $Zn/Zn^{+2}//cu^{+2}/cu$

80. (A)
Sol. Act as anode

81. (B)
Sol. An electrolytic cell.

82. (C)
Sol. Rate of reaction depends on the reactants concentration as:
R = K[A] [B]

83. (B)
Sol. 2A + 2B $\longrightarrow$ C + D

$\frac{r}{r'} = \frac{[A]^1[B]^1}{\left[\frac{A}{2}\right]^1\left[\frac{B}{2}\right]}$

$\frac{4 \times 10^{-1}}{r'} = 4$

$r' = 1 \times 10^{-2}$

84. (B)
Sol. Arrhenius equation
$K = A.e^{-Ea/RT}$

85. (B)
Sol. $PCl_5 \rightarrow PCl_3 + Cl_2$
$t_{1/2}$ = 20 min
PCl_5 = 25% (Reduce)

$t_{1/2} = \frac{0.693}{K} \qquad K = \frac{0.693}{20} = 0.03465$

$t = \frac{2.303}{K} \log \frac{[A]_0}{[A]} \; t = \frac{2.303}{0.03465} \times \log \frac{100}{25}$

t = 39.8 min $\qquad t \approx 40$ min

86. (C)
Sol. $t_{1/2} \; \alpha \frac{1}{a^{n-1}} \quad t_{1/2} \; \alpha \; a^{1-n}$

87. (C)
Sol. Charge required = n × f = 10 × f
= 10 × 96500 C
Since oxidation takes place in following ways :
$2Mn_3O_4 + 2OH^- \longrightarrow 3Mn_2O_3 + 2e^- + H_2O$
$3Mn_2O_3 + 6OH^- \longrightarrow 6MnO_2 + 6e^- + H_2O$
$6MnO_2 + 24OH^- \longrightarrow 6MnO_4^{-2} + 12e^- + 12H_2O$
Total 20 e^- for 2 moles Mn_3O_4
$\therefore$ for 1 mole $Mn_3O_4 = 10e^-$
$\therefore$ n = 10
So charge = 10 × 96500 C

88. (C)
Sol. aqeous NaCl

89. (A)
Sol. $\frac{1}{R} = \frac{70 + 40}{2800}$
Since equal valume are mixed
$R = \frac{2800}{110} \times 2 = 50.9$ ohm

90. (A)
Sol. Zn (s) as Zn has least value of SRP being in product side.

91. (D)
Sol. $Fe^{+2} + 2e^- \longrightarrow Fe \; E_{\circ} = 0.440$
$\Delta G_1 = 2f \times 0.440 = 0.88$
$Fe^{+3} + 3e^- \longrightarrow Fe \; E_{\circ} = -0.036$
$\Delta G_2 = 3f \times 0.036 = 0.108$
$= \Delta G_1 - \Delta G_2 = 0.88 - 0.108 = +0.772V$

92. (D)

Sol. Zn+2Ag+ → Zn^{+2} +2Ag.

$$Q = \frac{0.01}{(1.25)^2}$$

Q= 6.4×10^{-3}

93. (A)

Sol. The nature of the cathode can affect the order of discharge of ions.

94. (D)

Sol. Electrical conductivity of copper decreases with increase in temperature because the metallic conductivity is due to the motion of electrons. On increasing temperature the motion of electron increases which hinder in conductance of current. Hence, here assertion is false but the reason is true.

95. (A)

Sol. Dry air is heavier than wet air because the density of dry air is more than water.

96. (B)

Sol. Instantaneous rate of a reaction is equal to small change in concentration (dx) during a small interval of time (dt) at that particular instent of time divided by the time interval.

97. (B)

Sol. Molecularity of a reaction can be defined only for an elementary reaction because complex reaction does not take place in one single step and it is almost impossible for all the total molecules of the reactants to be in a state of encounter simultaneously.

98. (B)

Sol. For a zero order reaction, $t_{1/2} = [A_0]/2K$.

99. (B)

Sol. According to Arrhenius equation, $K = Ae^{-E_a/RT}$ when $E_a = 0, K = A$.

100. (A)

Sol. Zinc metal which has a more negative electrode potential than iron will provide electrons in preference of the iron, and therefore corrode first. Only when all the zinc has been oxidised does the iron start to rust.