1. (A)
    For super conductors,
    Resistivity (ρ) = 0

    $\therefore$ Conductivity (σ) = $\dfrac{1}{\rho} = \dfrac{1}{0} = \infty$

2. (B)
    SI unit of Magnetic field intensity ($\vec{B}$) is "Tesla (T)"

3. (A)
    If Distance = 0; object is at rest
    So, Displacement = 0

4. (C)
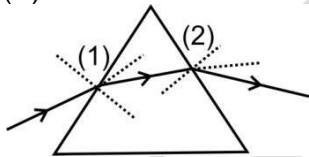   Viscous force is fluid friction, it is non-conservative in nature.

5. (C)
    Escape velocity is given by $V_e = \sqrt{2gR}$
    $= \sqrt{2 \times 9.8 \times 6.4 \times 10^6}$
    = 11.2 km/s

6. (B) When a satellite falls to an orbit of smaller radius, its orbital speed increases.
    Hence its K.E. will increase.

7. (B)

    Ray bends twice

8. (A)
    Transverse waves can not exist in a gas medium. Hence waves inside gas are always longitudinal.
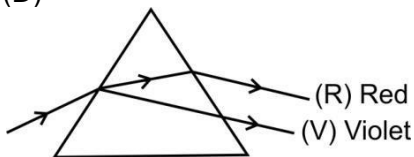
9. (D)
    Petroleum

10. (A)
    Moon

11. (D)

12. (C)
    All Jovian planets have rings around them.
    i.e. Jupiter, Saturn, Uranus, Neptune.

13. (C)

1 kWh = (1000 W) × (3600s) = 3.6 × 10^6 Ws = 3.6 × 10^6 J

SOLUTION – CHEMISTRY

14. (B)
Milk : Because it is only colloidal solution among them.

15. (D)
Soda water : Homogeneous solution of liquid water and CO_2 dissolved in it under pressure

16. (A)
$MgCl_2$: Magnesium chloride

17. (C)
Isotopes are those chemical species which have same atomic number (i.e. number of proton and number of electrons) but different atomic mass.

18. (B)
Electronic configuration of Cl^- is 2, 8, 8

19. (D)
Electronic configuration of Na is 2, 8, 1 as its atomic number is 11

20. (A) & (B)
At 0⁰C water can exist in both i.e. solid and liquid state so both a and b are correct.
(most appropriate answer is (A) among all options)

21. (A)
Homogeneous solution

22. (A)
Fractional distillation (using difference in boiling point of gases)

23. (B)
Cl^- chloride anion

24. (A)
J.J. Thomson

25. (A)
$2n^2$

26. (A)
Atomic number of C is 6 so its electronic configuration will be 2, 4

SOLUTION – BIOLOGY

27. D
28. B
29. D
30. B
31. A
32. D
33. B
34. D
35. B
36. D
37. A
38. B
39. C
40. C

SOLUTION – SST

41.B
42.A
43.C
44.D
45.C
46.A
47.A
48.B
49.C
50.D
51.A
52.A
53.C
54.B
55.C
56.D
57.C
58.A
59.B
60.B

61.C
62.A
63.A
64.A
65.D
66.C
67.A
68.A
69.B
70.B
71.B
72.A
73.C
74.D
75.A
76.C
77.B
78.A
79.D
80.B

MATHS

81. (D)
$q \neq 0$

82. (A)
$p(n) = 2n + 1$
$\qquad 2n + 1 = 0$
$\qquad x = -1/2$

83. (D)
∞

84. (A)
$\angle P = \angle Q = \angle R = \angle S = 90^0$
PQRS is rectangle

85. (D)
$V = 15a^3 \qquad = 15 \times 3^3 = 405$

86. (B)

87. (C)
Mean of $\left(\dfrac{n}{2}\right)^{th}$ and $\left(\dfrac{n}{2} + 1\right)^{th}$ term

88. (C)

89. (B)

90. (B)   3

91. (A)
$\dfrac{x-1}{y} = \dfrac{1}{3} \qquad\qquad \dfrac{x}{y+8} = \dfrac{1}{4}$
$3x - 3 = y \qquad\qquad 4x = y + 8$
$3x - 3 = 4x - 8$
$5 = x \qquad\qquad\qquad y = 12$

92. (A)
$a_n = a + (n - 1)d$
$99 = 12 + (n - 1)3$
$(n - 1) = 87/3$
$N = 30$

93. (B)
$AB^2 = AC^2$
$6^2 + (y - 5)^2 = 4^2 + (y - 3)$
$y = 9$
So, B (0, 9)

94. $\sec A(1 - \sin A)(\sec A + \tan A)$
$(\sec A - \sec A.\sin A)(\sec A + \tan A)$
$(\sec A - \tan A)(\sec A + \tan A)$
$\sec^2 A - \tan^2 A = 1$

95. (A)

$$A = \frac{\pi r^2 \theta}{360}$$

$$= \frac{22}{7} \times 14 \times 14 \times \frac{30}{360}$$

$$= \frac{154}{3}$$

96. (B)

$$Sum = \frac{n(n+1)}{2}$$

$$Mean = \frac{n+1}{2}$$

97. (C)

$$P(E) = \frac{Favourable\,outcome}{Total\,outcome} = 2/9$$

98. (C)

All Integers are not rational number

99. (C)

$$\tan 60 = \frac{h}{15}$$

$$h = 15\sqrt{3}$$

100. (A)

$a_n = 3 + 2n$

$a_1 = 5$

$a_2 = 7$ $a_{24} = 3 + 48$

$a_3 = 9$ $= 51$

$$S_{24} = \frac{n}{2}(a + \ell)$$

$$= \frac{24}{2}(5 + 51)$$

$= 12 \times 56$

$= 672$fQP_Madhya Pradesh_NTSE_Stg1_2018-19_SATa