## ACE OF PACE (SOLUTION)

1. (3)

2. (2)

3. (3)

4. (2)

5. (4)

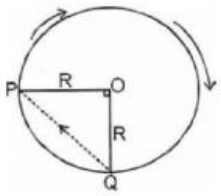
6. (1)

7. (2)
A wire of length 10 m and resistance 10 ohm is cut into 10 equal parts, then resistance of each part is 1 ohm. When all these parts are connected in parallel then equivalent resistance of the combination is $R_{eq} = \frac{R}{n} = \frac{1 \text{ ohm}}{10} = 0.1 \text{ ohm}$

8. (2)
$n = \frac{360°}{\theta} - 1 \left( \text{if } \frac{360°}{\theta} \text{ is even} \right)$

9. (1)
During whole journey, displacement of the vehicle is zero, so average velocity of the vehicle is zero.

10. (4)




Displacement in 3/4th of the revolution is $\sqrt{2}R$

11. (2)
N = A – Z = 232 – 90 = 142

12. (3)

13. (4)
Force of gravity (weight of the box) is perpendicular to the displacement, $\theta = 90°$, so workdone is $W = FS\cos 90° = 0 \text{ J}$

14. (4)
velocity of the object after 2 sec of projection is $v = u - gt$
$= (20 \text{ m/s}) - (10 \text{ m/s}^2)(2 \text{ s})$
$= 0$
Kinetic energy after 2 sec is $KE = \frac{1}{2}mv^2 = 0 \text{ J}$

15. (2)
At surface of the moon, no medium is present for propagation

16. (2)
Weight of displaced light = buoyancy force acting on the body

17. (2)
Repulsion is sure test for electrification as one charged body can attract another uncharged body due to induction also.

18. (3)
Distance of boy from his image = distance of boy from mirror + distance of image from mirror

19. (4)
Initial point and final point are same, so total displacement is 0.

20. (3)
Isotopes means same atomic number (Z), and different atomic mass number (A).

21. (2)

$$H = I^2Rt \Rightarrow R = \frac{H}{I^2t} = \frac{80\ J}{(2\ A)^2(10\ s)} = 2\Omega$$

22. (4)

$$KE = \frac{p^2}{2m} \qquad \Rightarrow KE \propto \frac{1}{m} \qquad \Rightarrow \frac{KE_1}{KE_2} = \frac{m_2}{m_1} = \frac{1}{4}$$

23. (4)

24. (2)

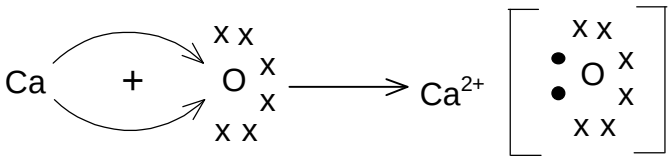
25. (1)

26. (2) Pb (Lead) is used in storage battery
27. (3) HgS- Cinnabar
28. (1) C and Si both belongs to the same group. Hence forms similar hydrides.
29. (3) electrochemical series
30. (1)

$$\underset{\text{Ethanol}}{CH_3CH_2OH} \xrightarrow[-H_2O]{\Delta} \underset{\text{Ethene}(x)}{CH_2=CH_2}$$

31. (2)
32. (4)
33. (2) $CuO + 2HCl \rightarrow \underset{(\text{Blue green solution})}{CuCl_2} + H_2O$
34. (3)
35. (2)

36. (3) The maximum number of electron transfer occurs in the formation of CaO is given as




37. (1) The reaction of iron (III) oxide $\left(Fe_2O_3\right)$ with aluminium is used to join railway tracks or cracked machine parts. This reaction is known as the thermite reaction.

$$Fe_2O_{3(s)} + 2Al_{(s)} \rightarrow 2Fe_{(l)} + Al_2O_{3(s)}$$

38. (3) $2Cl_2 + 2Ca(OH)_2 \rightarrow Ca(OCl)_2 + CaCl_2 + 2H_2O$

39. (1)

40. (3) Au and Pt are soluble in aqua regia (royal water), a mixture of 3 parts of Conc. HCl and 1 part of Conc. $HNO_3$.

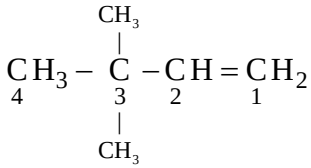
41. (3)

$$2Pb(NO_3)_2 \xrightarrow{\Delta} 2PbO + 4NO_2 + O_2$$

42. (1)
Silver is the best conductor of electricity

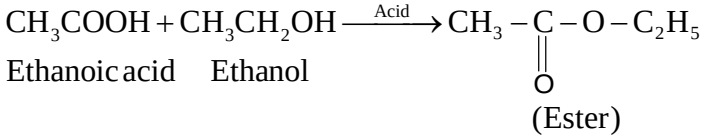
43. (3)
In this reaction
PbO gets converted to Pb. Since it loses oxygen, it gets reduced.
$\therefore$ Metal oxide is reduced
C gains oxygen and becomes CO
$\therefore$ C is oxidized

44. (2)
Structure is

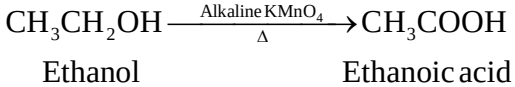


(1) First numbering the longest carbon chain we see 4 carbon atoms forming the longest chain
$\therefore$ but – 1- ene
As double bond exists between C1 and C2 atom.
There are 2 methyl groups both attached to C3 atom
Hence 3,3 – dimethyl but – 1- ene.

45. (2) Ethanoic acid reacts with ethanol in the presence of an acid catalyst to give an ester.




46. (2)



47. (2)
Glauber's Salt $\rightarrow$ $Na_2SO_4.10H_2O$

48. (1)
$(NH_4)_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O + 2NH_3$
NaOH is a strong base whose pH can be 13 $\therefore$ solution P

49. (1)
$2C_5H_{10} + 15O_2 \rightarrow 10CO_2 + 10H_2O$
$x : y \Rightarrow 15 : 10$
$= 3 : 2$

50. (1) The border line elements such as boron, silicon, germanium, arsenic, antimony, tellurium and polonium are intermediate in properties and are called metalloids.

51. (1)
52. (3)
53. (2)
54. (2)
55. (4)
56. (2)
57. (3)
58. (2)
59. (3)
60. (2)
61. (4)
62. (3)
63. (3)
64. (3)
65. (2)
66. (1)
67. (2)
70% of carbon dioxide is carried as bicarbonate ion,23% with hb,7% dissolved in plasma.
68. (2)
During expiration, diaphragm becomes relaxed ie dome shaped.
69. (2)
Main metabolic hormone of body is thyroid hormones which regulate all metabolic reactions of body.
70. (1)
During inspiration,air moves from external environment to lungs due to difference in air pressure.
71. (2)
Double vascular system means blood flows through the heart twice.
72. (4)
73. (2)
$1^{st}$ to $7^{th}$ pair $\rightarrow$ True ribs (attached directly to sternum)
$8^{th}$ to $10^{th}$ pair $\rightarrow$ false ribs
$11^{th}$ , $12^{th}$ pair $\rightarrow$ Floating ribs

74. (3)
Sternum moves upward and forward, diaphragm moves downward and flattens.

75. (4)
Urea, uric acid are secreted as urine while proteins are selectively reabsorbed from the lumen of nephron after ultra filtration of blood