

DETAILED SOLUTION
NEET-2020

Section- I (BIOLOGY)

1. (2)

In the alveoli, high pO_2 , low pCO_2 , lesser H^+ concentration and lower **temperature** are all favourable for the formation of oxyhaemoglobin.

2. (2)

The organisms that have evolved due to changes in the environment by anthropogenic actions are herbicide resistant weeds, drug resistant eukaryotes and domesticated animals like dogs.

3. (4)

Gibberellic acid breaks seed dormancy, so can't inhibit dormancy.

4. (1)

Column – I	Column – II
(a) Typhoid	(iii) <i>Salmonella</i>
(b) Pneumonia	(iv) <i>Haemophilus</i>
(c) Filariasis	(i) <i>Wuchereria</i>
(d) Malaria	(ii) <i>Plasmodium</i>

5. (4)

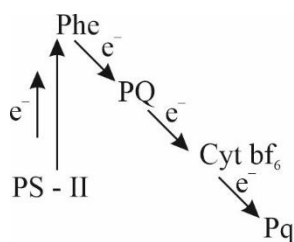
Correct events that occur during inspiration are contraction of diaphragm and external intercostal muscles.

6. (1)

The oxygenase activity of RuBisCo in photorespiration leads to the formation of 1 molecule of 3-phosphoglyceric acid and 1 molecule of 2C compound phosphoglycolic acid.

7. (4)

Plastoquinone facilitates the transfer of electrons from reaction centre PS – II to cytochrome $b_6 - f$ complex.



8. (1)

Ethidium bromide or UV radiation gives orange color to DNA fragments.

9. (2)

The QRS complex in a standard ECG represents the depolarization of ventricles.

10. (3)

Both pollen grain and embryo sac are male and female gametophytes. Consisting of two generations.

11. (1)

The infectious stage of *Plasmodium* that enters the human body is sporozoites.

12. (2)

Sapwood lies on the peripheral side and heart wood on inner most or in the central cylinder.

13. (1)

Flippers of Penguins and Dolphins are examples of convergent evolution.

14. (2)

I^A produces galactosamine sugar and I^B produces galactose sugar.

15. (3)

In Urochordata notochord is present in the tail region of larva and absent in adult.

In vertebrate notochord is present during the embryonic period only and later replaced by vertebral column.

In Phylum Chordata central nervous system is dorsal and hollow.

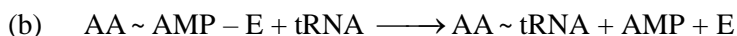
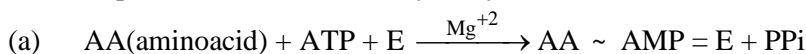
Chordata is divided into three sub-phyla: Cephalochordata, Urochordata and Vertebrata.

16. (2)

Presence of conditions like ketonuria and glycosuria in urine are indicative of Diabetes Mellitus.

17. (2)

The first phase of translation is aminoacylation of tRNA

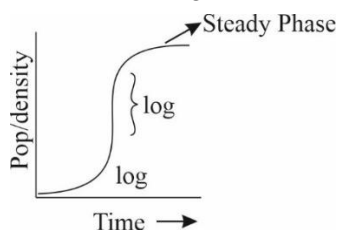


18. (4)

Ray florets of sunflower have inferior or epigynous as above the ovary all other floral parts are present.

19. (4)

The maximum growth occurs during the log or exponential phase.



20. (4)

The roots that originate from the base of the stem are fibrous roots.

21. (4)

In water hyacinth and water lily although they are aquatic but floating so pollination takes place by insect or

22. (3)

Activated sludge is put into anaerobic sludge digester for further sewage treatment.

23. (1)

Platyhelminthes are bilaterally symmetrical and acoelomate animals.

Aschelminthes are pseudocoelomate and bilaterally symmetrical animals.

Annelids are schizocoelomic and bilaterally symmetrical

Ctenophora are acoelomate and radially symmetrical.

24. (2)
Basic amino acid is Lysine. Glutamic acid is acidic. Valine and tyrosine are neutral amino acids.
25. (4)
ZIFT and IUT are the techniques in which embryos are transferred to assist those females who cannot conceive.
26. (1)
Inclusion bodies are non – living structures present in cytoplasm where food, chemical compounds, gases are stored but no digestion takes place.
27. (3)
Morgan has given experimental verifications of the chromosomal theory of inheritance.
28. (4)
Gonorrhoea, Syphilis and Genital herpes are all sexually transmitted diseases.
29. (2)
In man insulin is present as proinsulin with C peptide chain and A and B peptide chains are linked with disulphide bonds.
30. (2)
The formation of glycoproteins and glycolipids in eukaryotic cells occur in Golgi bodies.
31. (1)
- | Column – I | Column – II |
|-----------------------------------|---------------------------------------|
| (a) <i>Clostridium butylicum</i> | (ii) Butyric acid |
| (b) <i>Trichoderma polysporum</i> | (i) Cyclosporin- A |
| (c) <i>Monascus purpureus</i> | (iv) Blood cholesterol lowering agent |
| (d) <i>Aspergillus niger</i> | (iii) Citric acid |
32. (4)
Embryological support for evolution was disapproved by Karl Ernst von Bear.
33. (1)
The ori or origin of replication is the sequence from where replication starts and any piece of DNA when linked to this sequence can be roots to replicate within the host cells. It is also responsible for controlling the copy number of linked DNA.
34. (1)
Viroids have only RNA without protein and infects only plants.
35. (1)
Montreal protocol was signed in 1987 for control of emission of ozone depleting substances.
36. (1)
The number of substrate level phosphorylation in Krebs cycle is one.
37. (4)
High concentration level of Estrogen hormone will cause release of ovum from the Graafian follicle.
38. (2)
Phenylketonuria is an autosomal recessive disease, Thalassemia is an autosomal disorder and Haemophilia is X – linked recessive disorder sickle cell anaemia is autosomal recessive disorder.

39. (2)
Cuboidal epithelium with brush border of microvilli is found in proximal convoluted tubule of nephrons.
40. (1)
Snow-blindness in Antarctica region is due to inflammation of cornea due to high dose of UV-B radiation.
41. (3)
Chlorella and spirulina are unicellular and Anabaena is cyanobacteria rest are multicellular.
42. (4)
In monocots stem vascular bundles are scattered without cambium, hence closed, ground tissue has cortex only and phloem parenchyma is absent.
43. (2)
There are 7 pairs of contrasting characters so true breeding varieties are $7 \times 2 = 14$
44. (1)
Floridean starch is composed of amylopectin and glycogen.
45. (2)
In G1 phase of interphase the cell is metabolically active, grows but does not replicate its DNA.
46. (2)
A new breed of Hisardale, by using Bikaneri ewes and Marino rams was produced by cross breeding technique.
47. (2)
Active Immunity does not happen immediately upon disease exposure. It can take days or weeks after the first exposure for active immunity to develop. But once it does so, the protection can last an entire lifetime.
48. (4)
Eco RI cuts at giving sticky ends.
- $$\begin{array}{c} \downarrow \\ 5' \text{GAATTC} 3' \\ 3' \text{CTTAAG} 5' \\ \uparrow \end{array}$$
49. (2)
Length = No. of base pairs \times distance between base pairs
 $= 6 \times 10^9 \text{ pb} \times 0.34 \times 10^{-9} \text{ m} = 2.2 \text{ meters}$
50. (2)
If the head of cockroach is removed, it may live for few days because the head holds a small proportion of nervous system while the rest is situated along the ventral part of its body.
51. (4)
- | | | | |
|---------------------|-------------------------------|-------------------------------|-------------------------------|
| Grass \rightarrow | Rabbit \rightarrow | Crow \rightarrow | Vulture \rightarrow |
| T_1 | T_2 | T_3 | T_4 |
| First trophic level | 2 nd trophic level | 3 rd trophic level | 4 th trophic level |
52. (1)
The enzyme enterokinase helps in conversion of trypsinogen into trypsin.
53. (2)
Ileum is the highly coiled part of small intestine.

54. (1)
Gibberellin increases the length of the dwarf plant when sprayed.
55. (3)
These enzymes are called genetic gum. They join two individual fragment of dsDNA by forming phosphodiester bonds between them they help in sealing the gaps mDNA fragments.
56. (4)
(a) Inhibitor of catalytic activity (ii) Malonate
(b) Possess peptide bond (iv) Collagen
(c) Cell wall material in fungi (iii) Chitin
(d) Secondary metabolite (i) Ricin
57. (1)
Goblet cells of alimentary canal are modified form of columnar epithelial cells.
58. (4)

Column – I	Column – II
(a) 6-15 pairs of gill slits	(ii) Cyclostomes
(b) Heterocercal caudal fin	(iii) Chondrichthyes
(c) Air bladder	(iv) Osteichthyes
(d) Poison sting	(i) <i>Trygon</i>
59. (2)
Dissolution of synaptonemal complex occurs during Diplotene stage of Prophase I.
60. (3)
Enzyme that facilitates opening of helix during transcription is RNA polymerase
61. (4)
Adenine pairs with thymine with the help of 2H bonds.
62. (3)
Amazon forests falls in tropical rain forest where there is no seasonal variation, so it have highest diversity called as lungs of the planet.
63. (2)

Column – I	Column – II
(a) Pituitary Gland	(iii) Diabetes insipidus
(b) Thyroid Gland	(i) Grave's disease
(c) Adrenal Gland	(iv) Addison's disease
(d) Pancreas	(ii) Diabetes mellitus
64. (3)
The reaction catalysed by nitrogenase in root nodules of leguminous plants is ammonia and hydrogen.
65. (2)
Iron required in synthesis of chlorophyll, Mn is the main photolytic reagent, Boron is for pollen germination and zinc is the precursor for auxin of IAA biosynthesis.
66. (1)
Reabsorption of Na^+ and water from renal tubules due to aldosterone would help in prevention of diuresis.

67. (3)

Meiotic division of the secondary oocyte is completed at the time of fusion of a sperm with an ovum.

68. (1)

Column – I

- (a) Gregarious, polyphagous pest
- (b) Adult with radial symmetry and Larva with bilateral symmetry
- (c) Book lungs
- (d) Bioluminescence

Column – II

- (iv) *Locusta*
- (i) *Asterias*
- (ii) Scorpion
- (iii) *Ctenoplane*

69. (3)

Column – I

- (a) Floating Ribs
- (b) Acromion
- (c) Scapula
- (d) Glenoid cavity

Column – II

- (iv) Do not connect with the sternum
- (iii) Clavicle
- (i) Located between 2nd and 7th ribs
- (ii) Head of the humerus

70. (2)

Secondary metabolites of plants are for defence i.e. to protect from herbivores

71. (4)

- (a) Bt cotton – *Bacillus thuringiensis*
- (b) Adenosinase for gene therapy deaminase
- (c) RANi for cellular defence
- (d) PCR to detect HIV virus

72. (4)

S. L. Miller produced amino acids by mixing the CH₄, H₂, NH₃ and water vapours at 800° C in his experiment.

73. (1)

- (a) *B. thuringiensis* – cry proteins
- (b) *Thermococcus aquaticus* – DNA polymerase
- (c) *Agrobacterium tumefaciens* → cloning vector
- (d) *Salmonella typhimurium* → Construction of first rDNA molecule

74. (4)

Bt. Cotton and Bt corn both are made resistant to insects pests.

75. (4)

Polymerase elongates DNA chain, nucleases digests nucleic acid, endonuclease makes cuts at specific sites but ligase joins the two DNA molecules

76. (4)

The region where the body of the ovule is fused with funicle is called hilum.

77. (3)

Strobili or cones are found in *Equisetum*

78. (4)

Column – I

- (a) Eosinophils
- (b) Basophils
- (c) Neutrophils
- (d) Lymphocytes

Column – II

- (iii) Release histaminases, destructive enzyme
- (iv) Release granules containing histamine
- (ii) Phagocytosis
- (i) Immune response

79. (3)

Glycosidic bond is present in Inulin (Polymer of fructose)

Peptide bond is present in insulin (Peptide hormone)

80. (1)

NPP (Net primary productivity) = **GPP** (Gross primary productivity) - **R** (Respiration)

So NPP is always be lesser then GPP.

81. (3)

Column – I

- (a) Placenta
- (b) Zona pellucida
- (c) Bulbo-urethral glands
- (d) Leydig cells

Column – II

- (ii) Human Chorionic Gonadotropin (hCG)
- (iii) Layer of ovum
- (iv) Lubrication of the penis
- (i) Androgens

82. (3)

Species interaction is not an population attribute.

83. (2)

Column – I

- (a) Organ of Corti
- (b) Cochlea
- (c) Eustachian tube
- (d) Stapes

Column – II

- (iv) Located on the basilar membrane
- (ii) Coiled part of labyrinth
- (i) Connects middle ear and pharynx
- (iii) Attached to the oval window

84. (1)

The most abundant protein in the animals is collagen.

85. (1)

- | | |
|----------------|---------------------|
| (a) Zygotene | (iv) Synapsis |
| (b) Pachytene | (iii) Crossing over |
| (c) Diplotene | (ii) Chiasmata |
| (d) Diakinesis | (i) Terminalization |

86. (3)

According to Robert May, the global species diversity is about 7 million.

87. (3)

The half inferior ovary or penguin us condition is formed in plum.

88. (4)

Glucagon is associated with hyperglycemia.

Insulin acts upon liver cells, muscles and adipocytes.

Insulin is associated with conversion of glucose to glycogen in liver.

Glucocorticoids stimulate gluconeogenesis.

89. (1)

Guttation is removal of excess of water in the form of water droplet from the tips through hydathodes at night in herbaceous plants due to root pressure.

90. (4)

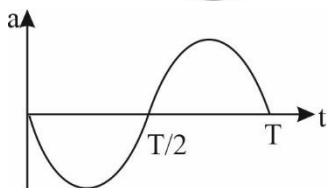
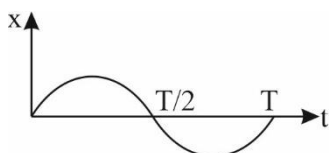
The process of cell entering an inactive vegetative stage called quiescent stage (G_0 stage) occurs at the end of M phase. G_0 stage is an extended G_1 phase.

Section - II (PHYSICS)

91. (4)

$$x = A \sin \omega t$$

$$a = -\omega^2 A \sin \omega t$$

Phase difference = π

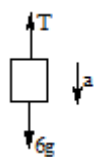
92. (4)

$$B = \mu_0 ni$$

$$4\pi \times 10^{-7} \times \left(\frac{100}{0.5}\right) \times 2.5 = 6.28 \times 10^{-4} \text{ T}$$

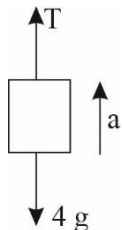
93. (2)

FBD of 6 kg block



$$6g - T = 6a \quad (i)$$

FBD of 4 kg block



$$T - 4g = 4a \quad (ii)$$

Solving (i) & (ii)

$$a = g/5$$

94. (1)

Average energy density is equally distributed between electrical and magnetic components.

95. (4)

Potential is constant,

$$\therefore |\vec{E}| = 0$$

96. (1)

Degree of freedom for a monoatomic gas (f) = 3

$$\therefore E = \frac{3K_B T}{2}$$

97. (2)

$$\begin{aligned}\vec{\tau} &= \vec{r} \times \vec{F} \\ &= (2\hat{k}) \times (3\hat{j}) = -6\hat{i}\end{aligned}$$

98. (1)

$$\text{Mean free path} = \frac{1}{\sqrt{2}n\pi d^2}$$

All other options are dimensionally incorrect.

99. (1)

$$\begin{aligned}E &= mc^2 \\ &= \left(\frac{0.5}{1000}\right)(3 \times 10^8)^2 = 4.5 \times 10^{13} \text{ J}\end{aligned}$$

100. (2)

$$\begin{aligned}\text{L.C.} &= \frac{\text{pitch}}{\text{No. of divisions}} \\ \therefore \text{pitch} &= (0.01 \times 50) \text{ mm} \\ &= 0.5 \text{ mm}\end{aligned}$$

101. (1)

Sudden expansion is taking place therefore the process is adiabatic.

102. (1)

$$\begin{aligned}PV &= \frac{m}{M}RT \\ \text{or } P &= \frac{\rho RT}{M} \\ \rho &= \frac{PM}{RT}\end{aligned}$$

Putting the values we will get

$$\rho = 0.2 \text{ kg/m}^3$$

103. (4)

$$\begin{aligned}{}_{92}^{235}\text{U} + {}_0^1\text{n} &= 3{}_0^1\text{n} + {}_{36}^{89}\text{Kr} + {}_Z^A\text{X} \\ 235 + 1 &= 3 \times 1 + 89 + A \\ \therefore A &= 144\end{aligned}$$

104. (1)

$$\begin{aligned}\mu &= \frac{V_d}{E} \\ \text{or } \mu &= \frac{7.5 \times 10^{-4}}{3 \times 10^{-10}} \\ \text{or } \mu &= 2.5 \times 10^6 \text{ m}^2 \text{V}^{-1} \text{s}^{-1}\end{aligned}$$

105. (1)

$$9.99 - 0.0099 = 9.9801$$

But the final answer must contain only two digits after the decimal. So the right answer is 9.98

106. (4)

$$\mu = \mu_0(1 + \chi)$$

$$\therefore \mu = 4\pi \times 10^{-7} \times (1 + 599)$$

$$= 2.4\pi \times 10^{-4} \text{ T m A}^{-1}$$

107. (1)

$$E = \frac{KQ}{r^2} = \frac{9 \times 10^9 \times 3.2 \times 10^{-7}}{(15 \times 10^{-2})^2} = 1.28 \times 10^5 \text{ N/C}$$

108. (2)

In case (1)

$$|\tan \phi_1| = \frac{x_L}{R}$$

In case (2)

$$|\tan \phi_2| = \frac{x_C}{R}$$

$$\text{But } \phi_1 = \phi_2 = \pi/3$$

$$\therefore x_L = x_C \text{ (condition for resonance)}$$

$$\text{So } \cos \phi = 1$$

109. (2)

$$h = \frac{2T \cos \theta}{r \rho g}$$

$$\text{If } r_f = 2r$$

$$\text{Then } h_f = \frac{h}{2}$$

$$V_i = \pi r^2 h$$

$$V_f = \pi (2r)^2 \left(\frac{h}{2} \right) = 2\pi r^2 h$$

$$\frac{V_f}{V_i} = \frac{m_f}{m_i} = 2$$

$$\therefore m_f = 10.0 \text{ g}$$

110. (2)

$$\beta = \frac{\lambda D}{d}$$

$$\beta' = \frac{\lambda(2D)}{d/2} = 4 \frac{\lambda D}{d}$$

$$\therefore \beta' = 4\beta$$

111. (4)

Given logic circuit will act as AND gate.

$$y = \overline{\overline{A + B}}$$

$$y = AB$$

∴ Truth table should be

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

112. (3)

First two digits of the resistance are decided by the first two strips. Third strip gives the value of multiplier and fourth strip gives the value of tolerance. If we refer to the table for the given colours

$$R = (47 \times 10^1) \pm 5\%$$

113. (2)

$$K = \frac{C}{C_0} = \frac{30\mu F}{6\mu F}$$

$$\epsilon = \epsilon_0 K$$

$$= 8.8 \times 10^{-12} \times 5$$

$$= 0.44 \times 10^{-10} \text{ C}^3 \text{ N}^{-1} \text{ m}^{-2}$$

114. (3)

If height of the tower is h

$$(80)^2 - (20)^2 = 2 \times 10 \times h$$

$$h = 300 \text{ m}$$

115. (1)

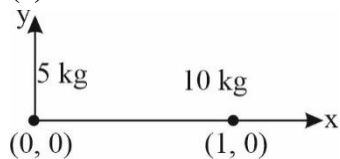
$$\text{At } h = \frac{R}{2}$$

$$g' = \frac{g}{\left(1 + \frac{R}{2R}\right)^2}$$

$$g' = \frac{4g}{9}$$

$$\therefore mg' = \frac{4}{9}(mg)$$

116. (2)



$$x_{\text{cm}} = \frac{5 \times 0 + 10 \times 1}{5 + 10}$$

$$= 0.67 \text{ m} = 67 \text{ cm}$$

117. (1)

Width of depletion region increases in reverse bias.

118. (3)

If $f = 0.75 f_0$, where f_0 is threshold frequency, photoemission will not take place.

\therefore correct answer is (3)

119. (4)

$$\theta_0 \text{ (limit of resolution)} = \frac{1.22\lambda}{D}$$

$$\theta_0 = \frac{1.22 \times 600 \times 10^{-9}}{2}$$

$$\theta_0 = 3.66 \times 10^{-7} \text{ rad}$$

120. (1)

$$\frac{X}{10} = \frac{3}{2}$$

$$\therefore X = 15\Omega$$

If length of the wire is 1.5 m then

For 1Ω resistance,

$$\text{length} = \frac{1.5}{15} \text{ m} = 1.0 \times 10^{-1} \text{ m}$$

121. (2)

$$\text{Power} = (\text{Flux}) \times (\text{Area})$$

$$= \left(\frac{20 \text{ W}}{\text{cm}^2} \right) (20 \text{ cm}^2)$$

$$= 400 \text{ W}$$

Energy received in 1 minute

$$= 60 \times 400 \text{ J} = 24 \times 10^3 \text{ J}$$

122. (2)

If A is small

$$\delta = (\mu - 1)A \quad (i)$$

Also

$$i + e = \delta + A$$

$$\text{but } e = 0$$

$$\therefore i - A = \delta \quad (ii)$$

From (i) & (ii)

$$i - A = (\mu - 1)A$$

$$\text{or } i = \mu A$$

123. (2)

$$i_{\text{rms}} = \frac{V_{\text{rms}}}{X_c}$$

$$X_c = \frac{1}{\omega C}$$

$$\therefore i_{\text{rms}} = 200 \times 100\pi \times 40 \times 10^{-6}$$

$$= 2.51 \text{ A} \approx 2.5 \text{ A}$$

124. (3)

$$[\text{Stress}] = \frac{[\text{Force}]}{[\text{Area}]} = \frac{[\text{MLT}^{-2}]}{[\text{L}^2]} = [\text{ML}^{-1}\text{T}^{-2}]$$

125. (2)

$$\tan i_b = \mu$$

$$\mu > 1$$

$$\therefore i_b > \frac{\pi}{4}$$

126. (3)

$$Y = \frac{\text{stress}}{\text{strain}}$$

$$\text{Stress} = \frac{Mg}{A}$$

$$\text{Strain} = \frac{\Delta L}{L} = \frac{L_1 - L}{L}$$

$$Y = \frac{MgL}{A(L_1 - L)}$$

127. (1)

Potential at a general point (r, θ) due to a small dipole is given by

$$V = \frac{1}{4\pi\epsilon_0} \left(\frac{p}{r^2} \right)$$

$$= \frac{9 \times 10^9 \times 16 \times 10^{-9}}{(0.6)^2} = 200 \text{ V}$$

128. (1)

$$|f_A - f_B| = 6 \text{ Hz}$$

$$f_A = 530 \text{ Hz}$$

$$\therefore f_B \text{ can be } 524 \text{ Hz or } 536 \text{ Hz}$$

With decrease in tension velocity as well as frequency of B should decrease therefore possible answer is 524 Hz.

129. (3)

For an electron

$$\lambda = \frac{1.227}{\sqrt{V}} \text{ mm}$$

Where V is accelerating potential

$$\Rightarrow \sqrt{V} = \frac{1.227}{1.22 \times 10^{-2}}$$

$$\text{or } V = 10^4 \text{ volts}$$

130. (3)

Conductivity of semiconductors as well as insulators increases with increase in temperature.

131. (2)

$$1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$$

$$\therefore E = \frac{10^{-20}}{1.6 \times 10^{-19}} \text{ eV} = 0.06 \text{ eV}$$

132. (4)

$$\frac{Q_1}{Q_2} = \frac{m_1 s_1 \Delta T_1}{m_2 s_2 \Delta T_2}$$

$$s_1 = s_2, \Delta T_1 = \Delta T_2$$

$$\frac{m_1}{m_2} = \frac{\rho(4/3\pi r_1^3)}{\rho(4/3\pi r_2^3)} = \frac{27}{8}$$

$$\therefore \frac{Q_1}{Q_2} = \frac{27}{8}$$

133. (2)

$$\rho = \rho_0 \{1 + \alpha(\Delta T) + \beta(\Delta T)^2\}$$

Resistivity increases parabolically with temperature.

134. (3)

In a transistor,

Order of size: Collector > emitter > base

Order of doping concentration: emitter > collector > base

\therefore correct option is (3)

135. (3)

Bohr model is valid for uni-electron systems only.

Section - III (CHEMISTRY)

136. (2)

In CH_4 carbon has oxidation state of -4 and in CCl_4 its oxidation state is $+4$.

137. (1)

At anode $4\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}^-$ will occur as OH^- will have lesser discharge energy.

138. (3)

Increase in the concentration of reactants leads to a change in Collision frequency.

139. (3)

As acetophenone has α -hydrogen and benzaldehyde does not so, this will be a crossed Aldol condensation

140. (2)

n-heptane is an unsymmetrical alkane it cannot be obtained in good yield through a Wurtz reaction.

141. (4)

Cis-polyisoprene is Natural rubber & hence is a natural elastomer.

142. (2)

7 g N_2 is $\frac{1}{4}$ mole N_2 and 8 g Ar = $\frac{1}{5}$ mole Ar.

$$\text{Mole fraction of } \text{N}_2 = \frac{\frac{1}{4}}{\frac{1}{4} + \frac{1}{5}} = \frac{1}{4} \times \frac{4 \times 5}{9} = \frac{5}{9}$$

$$\text{Mole fraction of Ar} = \frac{4}{9} \quad \text{Partial pressure of } \text{N}_2 = 27 \times \frac{5}{9} = 15 \text{ bar}$$

143. (4)

Temporary hardness: $\text{Mg}(\text{HCO}_3)_2 + \text{Ca}(\text{HCO}_3)_2$

$\text{CO} + \text{H}_2$: Synthesis gas

B_2H_6 : Electron deficient hydride

H_2O_2 : Non-planar structure

144. (3)

$2\text{Cl}(\text{g}) \rightarrow \text{Cl}_2(\text{g})$, $\Delta H_r < 0$ as bond is being formed & as number of particles are decreasing so $\Delta S_r < 0$.

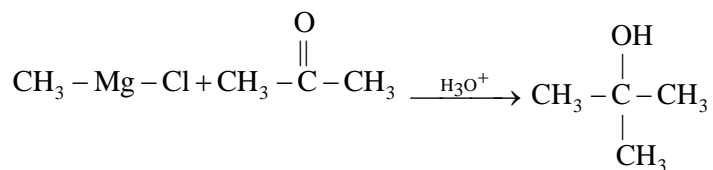
145. (4)

$$\text{For bcc unit cell } r = \frac{\sqrt{3}a}{4} \Rightarrow r = \frac{\sqrt{3}}{4} \times 288$$

146. (1)

Urea on decomposition with water will give NH_3 which on reaction with Cu^{+2} will form $[\text{Cu}(\text{NH}_3)_4]^{+2}$.

147. (2)



148. (3)

Among these, potassium is responsible for transmission of nerve signals by activating enzymes during oxidation of glucose for production of ATP.

149. (4)

Lu_{71}^{175} has 71 protons, 104 neutrons & 71 electrons.

150. (3)

Boron trifluoride ($\text{F} \begin{array}{c} \diagup \text{B} \diagdown \\ | \\ \text{F} \end{array} \text{F}$) has zero dipole moment beryllium difluoride is linear ($\text{F} - \text{Be} - \text{F}$) will zero dipole moment.

Carbondioxide ($\text{O} = \text{C} = \text{O}$) is again linear will zero dipole moment.

1,4-dichlorobenzene ($\text{Cl} - \text{C}_6\text{H}_4 - \text{Cl}$) will again have zero dipole moment

151. (4)

He_2 has zero bond order and hence does not exist.

152. (3)

Element will atomic molecules 119 does not have any official name. Darmstadtium has atomic number 110.

153. (2)

$$t = \frac{2.303}{4.606 \times 10^{-3}} \log \frac{2}{0.2} = \frac{1}{2} \times 100 = 500 \text{ sec}$$

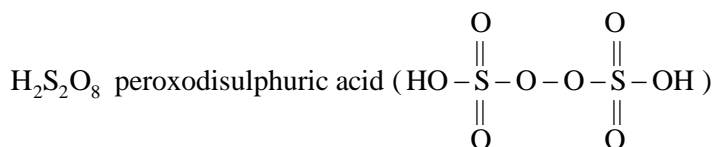
154. (3)

Pig iron can be molded into variety of shapes. All other given statements are incorrect.

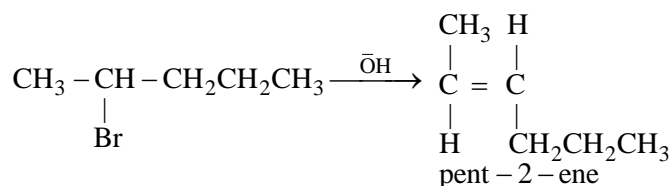
155. (2)

Zeta potential or electrokinetic potential is used to determine the stability of a colloidal sol

156. (2)



157. (4)



Follows Zaitsev rule, is a β -Elimination reaction & is Dehydrohalogenation reaction also. This is not a dehydration reaction.

158. (3)

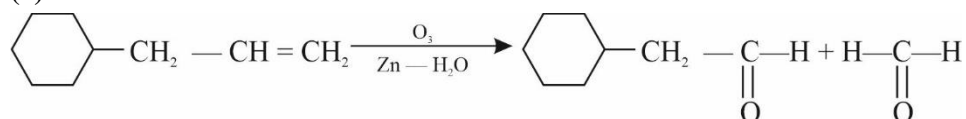
Buckminster Fullerene contains twenty hexagonal and twelve pentagonal rings.

CO_2 as dry Ice is used as refrigerant for ice-cream and not gas.

ZSM-5 (Zeolite of Molecular Sieve -5) is a shape selective catalyst & used for conversion of alcohol to petrol.

CO is a colorless & Odorless gas.

159. (2)



160. (1)

Paper chromatography is based upon the principle of partition chromatography.

161. (1)

CO is a neutral oxide

BaO is a basic oxide

Al_2O_3 is an amphoteric oxide

Cl_2O_7 is a strongly acidic oxide.

162. (3)

$$1 \text{ g Mg is } \frac{1}{24} \text{ moles so atoms} = \frac{1}{24} \times N_A$$

$$1 \text{ g O}_2 \text{ is } \frac{1}{32} \text{ moles so atoms} = \frac{1}{32} N_A \times 2 = \frac{1}{16} \times N_A$$

$$1 \text{ g Li is } \frac{1}{7} \text{ moles so atoms} = \frac{1}{7} \times N_A$$

$$1 \text{ g Ag is } \frac{1}{108} \text{ moles so atoms} = \frac{1}{108} \times N_A \text{ . As per this calculation, Li will have the highest number of atoms}$$

163. (3)

Lysine is a basic amino acid.

164. (1)

Spin only magnetic moment of $\text{Cr}^{+2}(3d^4)$

$$\sqrt{n(n+2)}\text{BM} = \sqrt{24}\text{BM} = 4.91\text{BM}$$

165. (2)

Sucrose on hydrolysis gives α -D-glucose and β -D-Fructose

166. (4)

Ethanol + Acetone is a positive deviating solution

167. (3)

3° cation is more stable than 2° -cation due to Hyperconjugation

168. (4)

$$(\text{Ionic Product}) \text{ ip} = [\text{Ni}^{+2}][\bar{\text{OH}}]^2 = 2 \times 10^{-15}$$

$$[\text{Ni}^{+2}][0.1]^2 = 2 \times 10^{-15} \Rightarrow \text{New solubility} = 2 \times 10^{-13}$$

169. (2)

Cetyl trimethyl ammonium bromide is a cationic detergent.

170. (2)

$$\Delta T_f = 5.12 \times 0.078 = 0.4\text{K}$$

171. (3)

Oxidation state of Cr in CrO_4^{2-} and $\text{Cr}_2\text{O}_7^{2-}$ are both same with a value of (+6)

172. (2)

Carboxyhaemoglobin is more stable than oxy haemoglobin as CO is a strong field ligand.

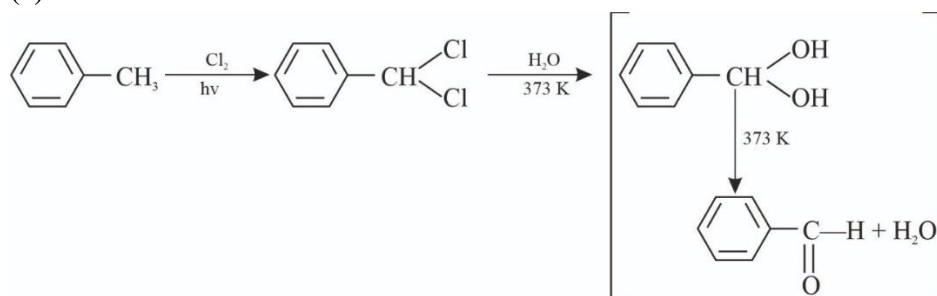
173. (4)

$$\Delta G^\circ = -RT \ln K_{\text{eq}} = -8.314 \times 300 \times \ln(2 \times 10^{13})$$

174. (4)

The order of ligands field strength as per spectro-chemical series is $\text{SCN}^- < \text{F}^- < \text{C}_2\text{O}_4^{2-} < \text{CN}^-$

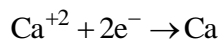
175. (2)



176. (4)

$q = 0, \Delta T = 0$ and $w = 0$ as there will be no work against vacuum. As $q = 0$ and $w = 0$ so, $\Delta U = 0$ which is why $\Delta T = 0$

177. (4)



2F charge is needed to produce 40 g Ca

So, 1 F charge is needed to produce 20 g Ca

178. (1)

As per concept only NaCl will crystallise out on passing HCl and CaCl_2 and MgCl_2 will remain in solution as they are more soluble.

179. (4)



180. (4)

Carbylamine test is given by 1°-amines, both aliphatic & aromatic.