BEATS
HIGH CARE CLASS

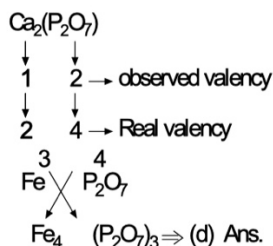# CEE MODEL ENTRANCE EXAM

(SET-5 Solutions)

Instructions:

- There are 200 multiple-choice questions, each having four choices of which only one choice is correct.
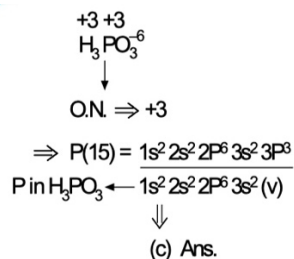- Fill (●) the most appropriate one.

Date : 2081/09/27
(Jan 11)

Duration : 3 hours
Time : 10 A.M. – 1 P.M.

1.

$Ca_2(P_2O_7)$

$\downarrow$ $\downarrow$

1   2 $\rightarrow$ observed valency

$\downarrow$ $\downarrow$

2   4 $\rightarrow$ Real valency

    3   4

Fe $\diagdown$ P_2O_7

   Fe_4 $(P_2O_7)_3 \Rightarrow$ (d) Ans.

2.

        $+3\ +3$

        $H_3PO_3^{-6}$

        $\downarrow$

    O.N. $\Rightarrow$ +3

$\Rightarrow$ $P(15) = 1s^2\,2s^2\,2P^6\,3s^2\,3P^3$

P in $H_3PO_3 \leftarrow 1s^2\,2s^2\,2P^6\,3s^2$ (v)
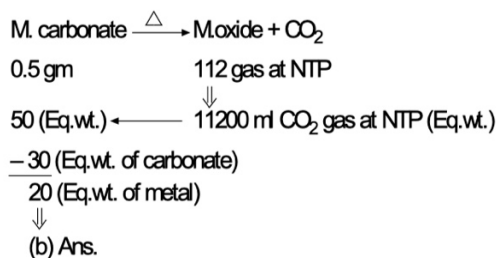
            $\Downarrow$

         (c) Ans.

3.

$W = \dfrac{VEN}{1000} = \dfrac{10 \times 49}{1000} \times \dfrac{N \times 1.5\,gm}{10} \times \left|\dfrac{mole}{98}\right| \times 6.02 \times 10^{23}\ H_2SO_4\ \text{molecules} \left|\times 2\ O_2\ \text{molecules}\right|$

$= 9.03 \times 10^{20}$ Ans. (c)

4.

M. carbonate $\xrightarrow{\triangle}$ M.oxide + CO_2

0.5 gm   112 gas at NTP

                  $\Downarrow$

50 (Eq.wt.) $\leftarrow$ 11200 ml CO_2 gas at NTP (Eq.wt.)

$\underline{-30}$ (Eq.wt. of carbonate)

  20 (Eq.wt. of metal)

   $\Downarrow$

  (b) Ans.

5.   a) $\Rightarrow CH_4 \Rightarrow \dfrac{H}{C} = \dfrac{4}{12} = \dfrac{1}{3}$

6.

$\dfrac{R_X}{R_Y} = \dfrac{1}{5}$ .... (i)   & $\dfrac{R_Y}{R_Z} = \dfrac{1}{6}$ .... (ii)

$\therefore\ \dfrac{R_Y}{R_X} = \dfrac{5}{1}$ .... (iii)

Dividing eq^n (iii) by (ii) we get,

$\dfrac{\frac{R_Y}{R_X}}{\frac{R_Y}{R_Z}} = \dfrac{\frac{5}{1}}{\frac{1}{6}}$

or, $\dfrac{R_Y}{R_X} \times \dfrac{R_Z}{R_Y} = \dfrac{5}{1} \times \dfrac{6}{1}$

or, $\dfrac{R_Z}{R_X} = \dfrac{30}{1} = 30 \Rightarrow$ (d) Ans.

7.   In one unit of NaCl, one Na^+ is surrounded by 6 Cl^- ions. (c) Ans.

8.   l= 3

      m = 2l + 1 = 2 × 3 + 1 = 7 (d) Ans.

9. $1s^2, 2s^2, 1P^6, 3s^2\,3P^6\,3d^5, \dfrac{4s^1 \rightarrow \text{chromium}}{4s^2 \rightarrow \text{manganese}} \rightarrow$ (b) Ans.

10.   The hybridization of s atom in SO_2 is SP^2 so   (b) Ans.
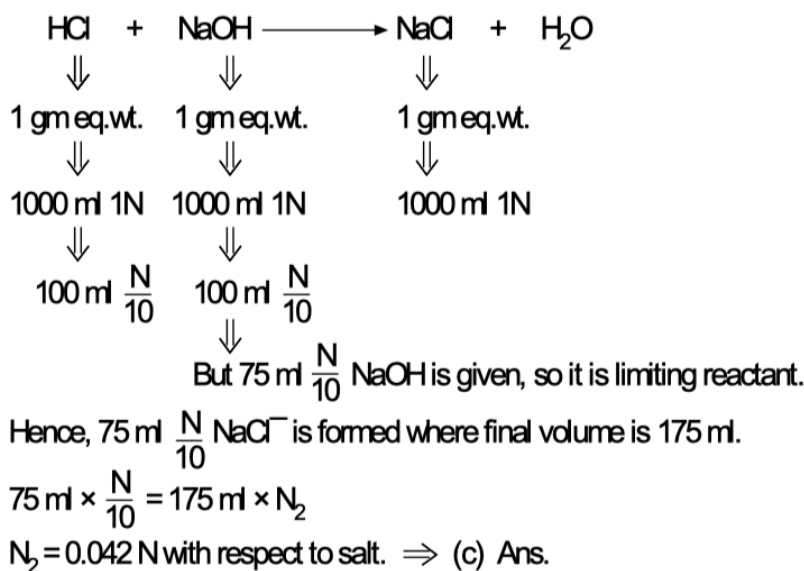
11.   Isoster of N_2 is CO, so (b) Ans.

12.   10% aq. solution of NaOH by weight mass 10 gram NaOH is dissolved in 100 gm NaOH solution i.e. 90 gm solvent (H_2O).

$$XA = \frac{n}{N + r} = \frac{\frac{10}{40}}{\frac{90}{18} + \frac{10}{40}} = \frac{\frac{1}{4}}{5 + \frac{1}{4}} = \frac{\frac{1}{4}}{\frac{21}{4}} = \frac{1}{21} = \text{(c) Ans.}$$
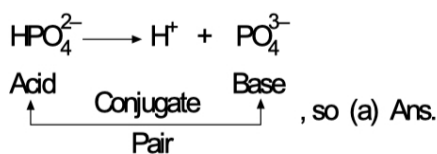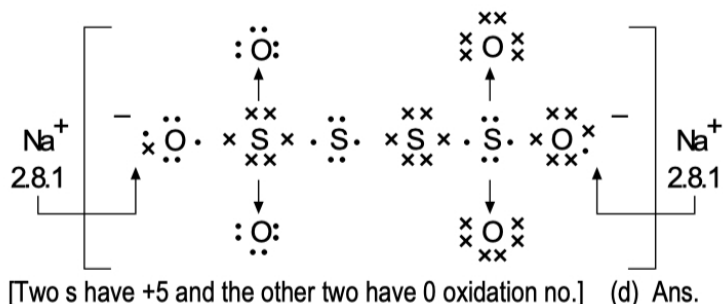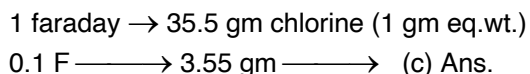
13.

A	+	B	$\rightleftharpoons$	C	+	D	
4 mole		4 mole		0		0	initially
2 mole		2 mole		2 mole		2 mole	at equilibrium

$$KC = \frac{[C][D]}{[A][B]} = \frac{2 \times 2}{2 \times 2} = 1 \quad \text{(b) Ans.}$$

14.

$$HCl + NaOH \longrightarrow NaCl + H_2O$$

$\Downarrow$	$\Downarrow$	$\Downarrow$
1 gm eq.wt.	1 gm eq.wt.	1 gm eq.wt.
$\Downarrow$	$\Downarrow$	$\Downarrow$
1000 ml 1N	1000 ml 1N	1000 ml 1N
$\Downarrow$	$\Downarrow$	
100 ml $\frac{N}{10}$	100 ml $\frac{N}{10}$	

$\Downarrow$

But 75 ml $\frac{N}{10}$ NaOH is given, so it is limiting reactant.

Hence, 75 ml $\frac{N}{10}$ $NaCl^-$ is formed where final volume is 175 ml.

$$75 \text{ ml} \times \frac{N}{10} = 175 \text{ ml} \times N_2$$

$N_2 = 0.042$ N with respect to salt. $\Rightarrow$ (c) Ans.

15.

$$HPO_4^{2-} \longrightarrow H^+ + PO_4^{3-}$$

Acid   Base

Conjugate Pair, so (a) Ans.

16.

[Two s have +5 and the other two have 0 oxidation no.]   (d) Ans.

17.

1 faraday $\rightarrow$ 35.5 gm chlorine (1 gm eq.wt.)

0.1 F $\longrightarrow$ 3.55 gm $\longrightarrow$ (c) Ans.

18.

   $2A + B \rightarrow$ products

   x   y $\longrightarrow$ Rate = k[A]^2 [B] = k(x)^{2}y = k.x^{2}y

   2x   y $\longrightarrow$ Rate = k[A]^2 [B] = k[2x]^{2}y $\Rightarrow$ k.4x^{2}y
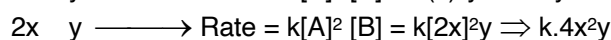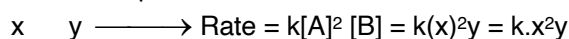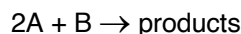
   So, (b)   Ans.

19.   d. Low density is not a property of metals.

20.   d. Iron is not found in nature as a free element.

21.   a. Aluminum is used as a reducing agent in the extraction of iron from its oxide.

22.   b. Metals at the top are more reactive than those at the bottom in the reactivity series of metals.

23.   c. Brass is an example of an alloy.

24.   c. Iron is used as a catalyst in the Haber process for the production of ammonia.

25.   b. Zinc is used in the manufacture of dry cells and storage batteries.

26.   c. Sodium is not a non-metal.

27.   d. Bromine is a non-metal that is liquid at room temperature.

28.   b. Chlorine is used as a bleaching agent.

29.   b. Graphite is a poor conductor of electricity among the allotropes of carbon.

30.   d. Phosphorus is used in the preparation of fertilizers.

31.   a. Oxygen is used as an oxidizing agent in the manufacture of sulphuric acid.

32.   c. Silicon is a non-metal used in the production of semiconductors and solar cells.

33.   d) More is the difference in electronegativity of the two atoms constituting a bond,greater is the probability for the bond between them to undergo heterolysis.

34.   c) Ester having the same number of carbon atoms in the alkyl and acyl group i.e.CH_3CH_2 and $COCH_3$ group in $CH_3CH_2OCOCH_3$ will produce only one product on reduction with LiAlH4.

35.   a)   Follow IUPAC rules.

36.   d) More reactive carbonyl compound forms more stable hydrates.

37.   a) Essential oils are steam volatile while heavy oils containing fatty acids and minerals oil are non-volatile in steam.

38.   b)

39.   c) Shared paired of electron moves towards the attacking reagents. Eg; EAR of alkene/alkyne.

40.   c) The tendency to donate lone pair of e–

      i.e. nucleophilicity increases with the decreases in electronegativity of atom (F > O > N > C). Thus CH3⁻has the highest nucleophilicity.

41.   d) Only in CH3NHCHO, electron pair on N it delocalized.

42.   d) Lysine is amino acid, hence it forms Zwitter ion.

43.   b) Aromatic hydrocarbon

44.   d) All plant cells contain cellulose.

45.   c)

46.   b)

47.   a) SN1 mechanism can be explained on the basis of stability carbocation.

48.   d)

49   d) Only polyvalent functional group-containing organic compound can exhibit metamerism.

50.   d)

51.   d) $\rho = \dfrac{m}{v} = \dfrac{m}{\pi r^2 \cdot \ell}$

$\therefore \dfrac{\Delta\rho}{\rho} = \dfrac{\Delta m}{m} + 2 \cdot \dfrac{\Delta r}{r} + \dfrac{\Delta\ell}{\ell}$

$\dfrac{\Delta\rho}{\rho} \times 100 = \left(\dfrac{0.003}{0.3} + \dfrac{2 \times 0.005}{0.5} + \dfrac{0.006}{0.6}\right) \times 100$

$= (1 + 2 + 1) = 4\%$

52.   a) Component of velocity perpendicular with acceleration is minimum velocity.

53.   c)

54.   b) T = same   So, ω = constant

$F = m\omega^2 \cdot R \Rightarrow \boxed{F \,\alpha\, R}$

55.   d) $a = \dfrac{\text{net force}}{\text{total mass}} = \dfrac{20 - 10}{6 + 4} = 1 \text{ m/s}^2$

If R is reading, taking M as system

F – R = Ma

R = F – Ma = 20 – 6 × 1 = 14 N

56.   a)

57.   d)

58.   b) Total weight act from centre of gravity so original length is $\dfrac{\ell}{2}$

$\Delta\ell = \dfrac{mg \cdot \dfrac{\ell}{2}}{Y \cdot A} = \dfrac{\ell A \cdot \rho \cdot g \cdot \dfrac{\ell}{2}}{Y \cdot A} = \dfrac{1}{2}\dfrac{\rho g \ell^2}{Y}$

59.   c)

60.   b) y = A Cos ωt

$\dfrac{A}{2}$ = A Cos ωt

$\text{Cot} = \text{Cos}^{-1}\left(\dfrac{1}{2}\right) \Rightarrow \dfrac{2\pi}{T} \cdot t = \dfrac{\pi}{3} \Rightarrow \boxed{t = \dfrac{T}{6}}$

61. a)

62. b) Let θ be resulting temperature,
    Heat lost by water = heat gained by ice
    1 × 1(100 – θ) = 1 × 80 + 1(θ – 0)
    θ = 10°C

63.   a) Q = mgh $\Rightarrow$ Q = mc·ΔT = mgh

$\Delta T = \dfrac{gh}{C} = \dfrac{10 \times 100}{4200} = 0.23°C$

64.   b)

65.   a) ΔQ = Δv + Δω

$1 = \dfrac{\Delta v}{\Delta Q} + \dfrac{\Delta\omega}{\Delta Q} \Rightarrow = 1 - \dfrac{\Delta v}{\Delta Q}$

$\dfrac{\Delta\omega}{\Delta Q} = 1 - \dfrac{\eta\, C_v \cdot \Delta T}{\eta\, C_p \cdot \Delta T} = 1 - \dfrac{C_v}{C_p} = 1 - \dfrac{1}{\gamma} = 1 - \dfrac{3}{5} = \dfrac{2}{5} \times 100\% = 40\%$

66.   d)

67.   a) $R\,\alpha\,\ell^2 \Rightarrow \dfrac{\Delta R}{R} = \dfrac{2 \cdot \Delta\ell}{\ell} \Rightarrow \dfrac{\Delta R}{R}\% = 2 \times 0.1 = 0.2\%$

68.   c) Using KVL, between A and B

$$V_A - \frac{2}{3} V - \frac{2}{3} V = V_B \; ; \quad \boxed{V_A - V_B = \frac{4}{3} V}$$

69. c) In short circuiting, R = 0, So V = 0

70. b)

71. c) $P = \frac{V^2}{R} \alpha \frac{1}{R}$ and $R \alpha \ell$

$$P \alpha \frac{1}{R} \Rightarrow \frac{P_1}{P_2} = \frac{\ell_2}{\ell_1} \Rightarrow \frac{P_2}{P_1} = \frac{\ell}{\frac{\ell}{2}} = 2 : 1$$

72. b) For inside the pipe, i = 0

$$\therefore B = \frac{\mu_0 i}{2\pi r} = 0$$

73. b)

74. c) $U = \frac{1}{2} LI^2 = \frac{1}{2} L \left(\frac{E}{R}\right)^2 = \frac{1}{2} \times 5 \times \left(\frac{100}{10}\right)^2 = 250$

75. c) $X_L = X_C$ (They cancel) so phase difference between V and I is 0°.

76. a)

77. c) $\mu = \frac{\text{real depth(x)}}{\text{apparent depth(y)}} \Rightarrow x = \mu.y = \frac{4}{3} \times 30 = 40$ cm

78. a)

79. b)

80. b)

81. b) $L_1 = \frac{I_1}{2}{r_1}$ & $L_2 = \frac{I_1}{2}{r_2}$

$L_1 = L_2$

$$\frac{I_1}{I_2} = \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{4}{12}\right)^2 = 1 : 9$$

82. c) $V \alpha \sqrt{T} \Rightarrow T' = \frac{(V')^2}{V^2} \times T = 2^2 \times (27 + 273) = 1200$ K = 927°C

83. d) If I_1 and I_2 be intensities

$$1 = \log_{10}\left(\frac{I_1}{I_0}\right) \text{ and } 5 = \log_{10}\left(\frac{I_2}{I_0}\right)$$

$$4 = \log_{10}\left(\frac{I_2}{I_0}\right) - \log_{10}\left(\frac{I_1}{I_0}\right)$$

$$4 = \log_{10}\left(\frac{I_2}{I_0}\right) \Rightarrow \frac{I_2}{I_1} = 10^4$$

$$\frac{a_1}{a_2} = \sqrt{\frac{I_1}{I_2}} = \frac{1}{10^2}$$

84. c) $\delta = A(\mu - 1) = 6° \left(\frac{5}{3} - 1\right) = 4°$

85. b) Energy spent by battery $= 2U = \frac{1}{2} CV^2 \times 2 = \frac{1}{2} \times 2 \times 15^2 \times 2 = 450$ J

86. a)

87. d)

88. b)

89. a)

90. d)

91. d) $\beta = \frac{\alpha}{1 - \alpha} = \frac{0.9}{1 - 0.9} = 9$

92. b)

93. a)

94. b) $u = \dfrac{2e}{3}$ $d = \dfrac{-e}{3}$ $udd = \dfrac{2e}{3} + \dfrac{-e}{3} + \dfrac{-e}{3} = 0$

Quark combination of a neutron is udd.

95. d)

96. b) $\dfrac{M}{M_0} = \dfrac{1}{16}$ $\left(\dfrac{1}{2}\right)^n = \left(\dfrac{1}{16}\right)$ $\left(\dfrac{1}{2}\right)^n = \left(\dfrac{1}{2}\right)^4$

$n = 4$

$T_{1/2} = \dfrac{t}{n} = \dfrac{2}{4}$ hrs = 30 min

97. c)

98. a)   Photons exert pressure

99. b)

100. c)   Forbidden energy gap of a semi-conductor does not change with change in temperature.

101. (a)   Ichthyology is the study of fishes. Herpetology is the study of reptiles. Ornithology is the study of birds. Mammalogy is the study of mammals.

102. (a)   Protista protozoan is classified on the basis of locomotory organ whereas porifera is classified on the basis of types of spicules.

103. (b)   Contractile vacuoles are meant for osmoregulation and excretion both, but if single option is given, osmoregulation is best answer.

104. (d)   Female Anopheles' mosquito is the vector for Plasmodium vivax. Female culex is responsible for filariasis.

105. (a)   Sycon is Porifera which is always attached to the substratum, so it can't move.

106. (b)   Both man and earthworm are ureotelic as both excrete urea as nitrogenous waste.

107 (b)   Mode of nutrition in earthworm is detritivorous in which organism gets food from dead and decaying part of organic substances.

108. (c)   Gizzard is the hardest part of the alimentary canal of earthworm which is internally lined by cuticle and is used for mastication of food materials.

109. (d)   Porphyrin is chlorophyll pigment found in the circular muscle of earthworm that helps earthworm to protect body from high intensity of light.

110. (b)   Foramen of Monro is the gap or foramen found in the skull of frog that communicates the canal between paired lateral ventricles and third ventricle cavity on either side.

111. (c)   Blastocoelomate or pseudocoelomate is found in Nemathelminthes. e.g., Ascaris, Ancyclostoma

112. (d)   Excretion in amoeba occurs through general body surface.

113. (d)   Totipotent cell of sponges are archaeocytes cell.

114. (c)   Physalia is hexamorphic.

115. (b)   Flame cells are excretory organ of Platyhelminthes.

116. (d)   Giant cell or rennet cell are excretory cell of Phylum Nemathelminthes.

117. (d)   Largest phylum -Arthropoda

Largest class -Insecta

2nd Largest phylum - Mollusca

118. (b)   Cephalopoda are exclusively marine and carnivorous.

119. (a)   Tad-pole is the larva of frog.

120. (c)   Lysolecithin gets enlarged in spleen

121. (b)   Sporozoite is formed in oocyst and formed from sporoblast.

122. (c)   Septa are absent in 1st four segments.

123. (c)   Septal and pharyngeal nephridia is enteronephric while integumentary nephridia is exonephric in nature.

124. (b)   Blood circulation in earthworm is close type.

125. (c)   Salivary gland is absent in frog.

126. (c)   No. of external gills =3 pairs and internal gills=4 pairs.

127. (a) The pyloric sphincter is found between the stomach & duodenum and the cardiac sphincter is found between the esophagus and stomach.

128. (c) Stercobilin gives whitish green color to stool, Urine is yellow due to urochrome.

129. (d) Respiratory center is located in medulla oblongata.

130. (d) Total no. of cartilage present in larynx of man is 9. 3 paired (arytenoid, cuneiform, corniculate) and 3 unpaired (epiglottis, thyroid, cricoid)

131. (c) Heart valve – A heart murmur is whooshing or swishing sound heard through a Stethoscope when blood flows abnormally over heart valves.

SA node= Pacemaker of heart, AV node = Pacesetter of heart.

132. (b) Arbor vitae (tree of life) is the cerebellar white matter, appears in branched tree like structure and is present in both cerebellar hemispheres.

133. (b) Urine formation occurs in the kidney.

134. (d) Renin is secreted by Juxtaglomerular cells of the kidney while Rennin is secreted by the stomach.

135. (a) Spermatogonia is changed to spermatocyte which gives spermatid and finally spermatozoa or sperm.

136. (a) Orra serrata is present in retina of eye.

137. (c) Typhoid is also called enteric fever.

138. (a) BCG; Bacillus Calmette Guirine is used to prevent TB (tuberculosis). It is given intradermally at the time of birth.

139. (a) Brown sugar is produced from heroin. LSD is hallucinogen.

140. (b) Sprain occurs by ligament and strain is caused by a tendon.

141. (a) Vitelline membrane is a multilayered proteinous structure separating egg's white from yolk and is secreted by Golgi body.

142. (b) Mitochondria is known as ATP mill or power house of cell. Chloroplast is known as kitchen house of cell. E.R. is known as vacuolar system. Golgi body is also known as traffic police.

143. (c) Smallest cell organelle is known as Ribosome. Largest cell organelle in plant cell is chloroplast and in animal is called mitochondria.

144. (a) Sequence $\rightarrow G_1 \rightarrow S \rightarrow G_2 \rightarrow M$. G_1, S and G_2 all three phases are commonly called interphase which is the longest phase. Among them G_1 is the longest phase. Cell becomes ready for division in interphase. Mitotic or M phase is shortest phase. Interphase is morphologically passive and physiologically active phase.

145. (a) Colchicine is known as mitotic poison because it prevents the function and arrangement of spindle fibers. Since no spindle fibers are arranged, no division occurs.

146. (b) Synaptonemal complex or synapsis in zygotene, Crossing over in pachytene, Chiasma formation in diplotene and terminalization in diakinesis.

147. (a) Envelope is the covering of virus. Without the covering of virus, it is considered as naked.

148. (b) Inert & complete virus outside the host body is called virions &viroid is the smallest infectious agent.

149. (a) Fucoxanthin is a xanthophyll, which is accessory pigment in chloroplast of brown algae. Carotenoid for red algae.

150. (a) Yeast is rich in protein and vitamin B_2 commonly called riboflavin. It is best for body growth and helps in making body stronger from inside.

151. (b) Protonema is the juvenile stage of moss gametophyte. Since it is gametophytic, it must be haploid, so option (b).

152. (d) Stele is the central part of the root or stem containing the tissues derived from the procambium. Stele includes all vascular tissue, pith and pericycle.

153. (a) Generally, in angiosperm companion cells of phloem controls sieve elements in conducting tissue but it is replaced by albuminous cells in gymnosperm. Albuminous cell control other conducting sieve elements.

154. (c) Mendel's first law is law of equal segregation which states during gamete formation, the two alleles at a gene locus segregate from each other, each has equal probability of containing either allele. Second law is law of independent assortment which states that a pair of traits segregates independently of another pair during gamete formation.

155. (b) Cross between F1 hybrid and parents is known as back cross & cross between F1 hybrid and recessive parents is called test cross.

156. (d) DNA or RNA are the genetic material containing genes to be transferred to next generation. In chromosomes, both DNA or RNA are covered by histone protein. So, DNA, RNA and protein all are present in chromosome.

157. (b) Centromere is also referred as primary constriction or kinetochore where two identical sister chromatids are most closely in contact. Secondary constriction is constriction anywhere except primary centromere.

158. (a) Co-inheritance of gene in same chromosome is linkage. Crossing over is exchange of genetic material between non-sister chromatids. Allele is alternative gene.

159. (c) RNA is the site for protein synthesis. Mitochondria is the site for respiration. Generally, cytoplasm is site for metabolism.

160. (c) The typical dihybrid ratio (phenotype) is 9:3:3:1. In polygenic inheritance the ratio is modified to 1:4:6:4:1, In complementary gene the ratio is 9:7. In the supplementary gene the ratio is 9:3:4.

161. (a) The innermost nutritive layer of pollen chamber is called tapetum. Endothelium is inner lining of body cavities. Endothecium is central region of zygote after division in sporophyte of bryophytes. Perisperm is a mass of nutritive material outside the embryo sac.

162. (a) Ubisch bodies are produced by tapetal cells. They are produced by secretory or glandular tapetal cells. These cells secrete sporopollenin, pollen kit & compatibility proteins. These cells provide ubisch bodies which help in ornamentation of exine. They have a chemical called sporopollenin in which they are deposited on them.

163. (b) Development of fruit without fertilization is called parthenocarpy. Development of plant from egg without fertilization is called parthenogenesis.

164. (c) Agrobacterium has ability to transfer DNA to plant and is used as pathogens as well. So, it is commonly used in plant genetic engineering.

165. (b) Green manure is prepared by ploughing down the field. Green crop decays inside & becomes green manure.

166. (d) Megasporophylls of gymnosperm is female cone, microsporophyll of gymnosperm is male cone.

167. (c) Sunflower belongs to family Asteraceae or Compositae and inflorescence of Compositae is head or capitulum. Fruit of Compositae is called cypsella.

168. (b) They are green roots which are capable of photosynthesis. The green assimilatory roots are submerged like other roots. They develop from the stem nodes and are highly branched to increase photosynthesis.

169. (d) The edible part in apple is thalamus. Edible part in litchi is fleshy aril. Edible part in guava is pericarp. Edible part in mango is the mesocarp.

170. (c) Verticillaster is an example of inflorescence in which the flowers are arranged in a seeming whorl, consisting in fact pair of opposite axillaries, usually sessile, cymes as in many mints.

171. (c) In papilionaceae, there are 10 stamens, diadelphous filaments of 9 stamens fused forming one bundle, tenth stamen free (9+1). nine fused so (9), one free 1. So, A $_{1+(9)}$.

172. (d) Basal placentation is characteristics of Asteracea and Graminae. Among them syngenesious anther is characteristics of Asteraceae.

173. (c) Plants growing on sandy soil is called psammophytes, on rock is called lithophytes, on acidic soil is called oxylophytes.

174. (a) Eutrophication occurs when the environment becomes enrich with nutrients, increasing the amount of plant & algae growth to estuaries & coastal waters which occur in lakes & ponds.

175. (b) Overgrazing is the major causative agent or factor for desertification. Slowly the land dries and is converted to desert.

176. (c) "Sym" means same, "Allo" means different and "patric" means geographical area. So, species growing in same grographical region is called sympatric and the species growing in different geographical region are called allopatric species.

177. (c) Monoclonal antibodies are produced by hybridoma technology. In this process antibody-producing B-lymphocytes are isolated from mice after immunizing the mice with specific antigen and are fused with immortal myeloma cell lines to form hybrid cells.

178. (b) Nitrogen must require components for plant, so nitrogen fixing bacteria containing plants are preferred more. So, nitrogen fertilizers are the best used as biofertilizer for plant growth.

179. (a) Largest ovule in plant kingdom is present in Cycas. Winged pollen grains are present in Pinus.

180. (a) Pollen grains are shed by Pinus at 4 celled stage and by Cycas at 3 celled stage.

181. (d)
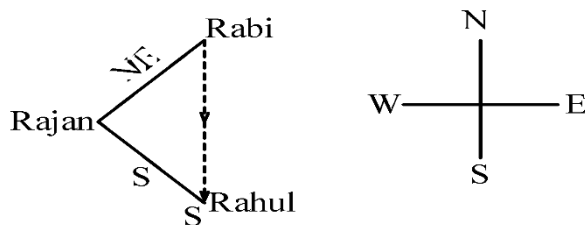
182. (c) Let 'x' be the age of the daughter. The mother was also 'x' years old when her daughter was born. Then age of mother is
$x + x = 40$
$2x = 40$
$x = 20$ years

183. (a) December, November, October, September, August, July, June

184. (b) tok mil yat → eat healthy food .... (i)
ke rot mil → food gives energy .... (ii)
Amd zot ke → give me bread .... (iii)
From (i) and (ii) mil means food
From (ii) and (iii) ke means give
In (ii) remaining is rot in L.H.S. and energy in R.H.S.
So, rot → energy.

185. (a) Let C.P of 1 ball is x. Then C.P of 5 balls is 5x and C.P of 17 ball is 17a
C.P. – loss = S.P.
$17x – 5x = 720$
$12x = 720$
$x = 60$

186. (c) Adding consecutive numbers: $1 + 1 = 2, 2 + 1 = 3, 3 + 2 = 5$ .... $21 + 34 = 55$

187. (b) $20 – 8 × 10 ÷ 10$ following BODMAS
$20 – 8 + 2 ÷ 10$ since x is ÷
$160 + 2 ÷ 10$ Since – is ×
$160 – 2 + 10$ since + is – and ÷ is + 168.

188. (c) $a = 5$
$d = 7$
$t_n = (n – 1)d + a$
$t_{15} = 14 × 7 + 5 = 98 + 5 = 103$

189. (d) $13 + (7 × 2) = 27$

54 + (45 × 2) = 144

x + (32 × 2) = 68

x = 4

190. (d) According to option, 4 or d is the answer. Water image is downwardly inverted.

191. (d) We have,

Lokendra > Nakul > Nabin > Netra. Thus, that whole sequence may be:

(i)   Lokendra > Nakul > Nabin > Netra

(ii)   Lokendra > Nakul > Kamesh > Nabin > Netra

(iii)   Lokendra > Nakul > Kamesh > Netra > Nabin

Thus, either Netra or Nabin may be the shortest So the given information is insufficient.

192. (b) 70% are male and 30% are female

Married male = × 70 = 20%

Total married persons = 30%

Married female = Total married – married males

= 30% – 20% = 10%

Total female = 30%

Unmarried female

= Total female – married females

= 30% – 10% = 20%

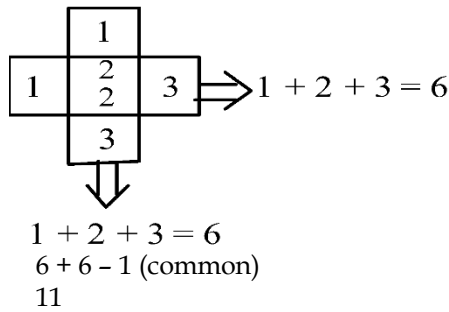Unmarried females, then that 20% represents

= 20/30 = 2/3 of the female

193.   (d)

Hen   Goat   Camel   Man

$(50 \times 2) + (45 \times 4) + (8 \times 4) + (x \times 2)$

leg

- (50+ 45 + 8 + x) = 214

Solving: 209 + x = 214 ⇒ x = 5

194. (b)

$1 + 2 + 3 = 6$

$1 + 2 + 3 = 6$

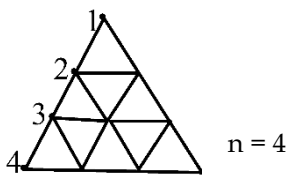6 + 6 – 1 (common)

11

195. (c) Here,

4 + 5 – 6 = 3

Similarly,

5 + 8 – x = 7

x = 6

196. (b) Observe the eastern

197. (b) Observe the pattern

198. (b)

n = 4

No. of triangle = $\frac{n(2n^2 - n - 2)}{8}$ = 13

If n is odd number, then

No. of triangles = $\frac{(n^2-1)(2n-1)}{8}$

199. (b) Athletics: Track
      Badminton: Court
      Baseball: Field
      Boxing: Ring
      Hockey: Ring
      Tennis: Court
200. (b) A is 1 number alphabet F is 6, T is 20. Similarly, just write the position of alphabet.