NEET SAMPLE PAPER – 4 (ANSWER KEY & SOLUTIONS)

PART – A (PHYSICS)

1. b	**2.b**	**3.c**	**4.d**	**5.d**	**6.a**	**7.d**	**8.b**	**9.a**	**10.c**
11.b	**12.a**	**13.b**	**14.d**	**15.b**	**16.d**	**17.c**	**18.c**	**19.b**	**20.a**
21.b	**22.c**	**23.a**	**24.c**	**25.a**	**26.c**	**27.c**	**28.a**	**29.a**	**30.c**
31.a	**32.c**	**33.b**	**34.d**	**35.a**	**36.d**	**37.a**	**38.c**	**39.b**	**40.c**
41.c	**42.c**	**43.b**	**44.b**	**45.b**					

1. This error occur in all the instruments which utilizes screw or nut-bolt system

2. Amplitude (A) = $\left(\frac{b-a}{2}\right)$; $V_{max} = A\omega$
$V = \left(\frac{b-a}{2}\right) \times \frac{2\pi}{T}T = \frac{\pi(b-a)}{V}$

3. From figure we can analyse
$\mu_2 > \mu_1$
$\mu_3 = \mu_1$
$\mu_3 < \mu_2$

$\therefore \mu_1 = \mu_3 < \mu_2$

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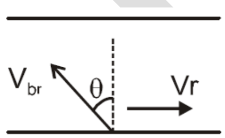


$\theta = \sin^{-1}\left(\frac{v/2}{v}\right)$
$\theta = 30^0$
So angle with direction of flow of river is $90^0 + 30^0 = 120^0$

5.

Power in circuit P = $\frac{V^2}{3R}$ Power in circuit Q = $\frac{3V^2}{R}$

Power in circuit R = $\frac{V^2}{R}$ Power in circuit S = $\frac{4V^2}{R}$

So the order is S > Q > R > P

6.

$\frac{F}{l} = \frac{\mu_0}{2\pi}\frac{i_1 i_2}{d}, \quad F' = \frac{\mu_0}{2\pi}\frac{2i_1 i_2}{3d}$

7. From conservation of momentum and elastic transfer last bodies f and g move with speed 3m/s

A moves back with speed 3 m/s .rest all will be at rest.

8. The ejected electrons have a distribution of kinetic energy from zero to $h\nu - \phi$

9. $S = \frac{G}{\frac{i}{i_g}-1} = \frac{150}{11-1} = 15\,\Omega$

10. Addition of charges on the outer sphere does not change the potential difference between the two spheres.

11. $\lambda = \frac{36}{30} = 1.2m$. An anti-node is formed at a distance of $\frac{\lambda}{4}$ from the free end. Hence the distance = 1.2/4 = 0.3m

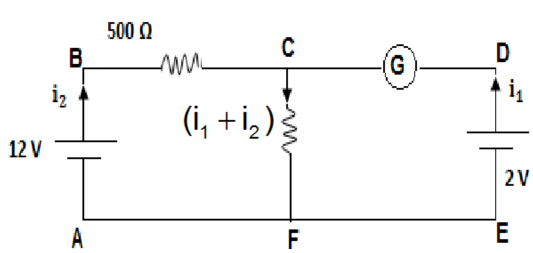
12. $\vec{B} = \frac{\mu_0 I}{2R}\left(\pm\hat{i}\right) + \frac{\mu_0 I}{2R}\left(\pm\hat{j}\right) + \frac{\mu_0 I}{2R}\left(\pm\hat{k}\right) \Rightarrow \left|\vec{B}\right| = \frac{\mu_0 I}{2R}\sqrt{3}$

13.

$\frac{1}{C^1} = \frac{1}{c} + \frac{1}{2c} + \frac{1}{4c} + \ldots \infty = \frac{1}{C}\left[1 + \frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} +, \ldots\ldots \infty\right] = \frac{1}{c}\left[\frac{1}{1-1/2}\right] = \frac{2}{C} \Rightarrow C^1 = \frac{C}{2}$

14. $\bar{B} = \frac{\mu_0}{2}\left(\bar{j} \times \bar{L}\right)$

15.



EDCFE: 2 = i_2 R as i_1 =0 ---- (1)

ABCFA : $12 - 500\, i_2 - R\, i_2 = 0$ ------(2)

From (1) and (2) R = 100 ohms

16. Let $I_1 = I\,;\, I_2 = 4I$

$I_m = (\sqrt{I_1} + \sqrt{I_2})^2 = (\sqrt{I} + 2\sqrt{I})^2 = 9I$

$I = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\phi$

$= I + 4I + 2\sqrt{I(4I)}\cos\varphi = 5I + 4I\ \cos\phi = 5I + 4I\left[2\cos^2\left(\frac{\phi}{2}\right) - 1\right] = I\left[1 + 8\cos^2\left(\frac{\phi}{2}\right)\right]$

$= \frac{I_m}{9}\left[1 + 8\cos^2\left(\frac{\phi}{2}\right)\right]$

17. The principal maximum in diffraction is independent of the width of the slit

18. $W = U_f - U_i = MB - (-MB) = 2MB$

19. Refer to NCERT text book

20. q_1 should have negative charge as the net force is along positive direction due to charges q_2 and q_3. Hence the net force due to Q will support the force due to q_2 and q_3.

21. $r = \frac{h}{\sqrt{\mu^2-1}} = \frac{12}{\sqrt{\frac{16}{9}-1}} = \frac{36}{\sqrt{7}}\,\text{cm}$

22. The direction of propagation is perpendicular to the plane containing E and B and direction of Polarization is parallel to B

23. $\frac{1}{2}\left(\frac{1}{2}\frac{q_0^2}{L}\right) = \left(\frac{1}{2}\frac{q^2}{C}\right)$

$q = \frac{q_0}{\sqrt{2}}$

$q_0\cos wt = \frac{q_0}{\sqrt{2}} \Rightarrow wt = \frac{\pi}{4} \Rightarrow t = \frac{\pi}{4} \times \frac{1}{\sqrt{LC}}$

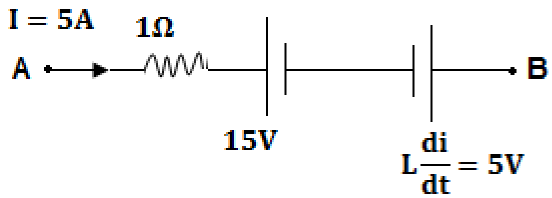
24. $\frac{P_a}{P_m} = \frac{(\mu_g - 1)}{\left(\frac{\mu_g}{\mu_l} - 1\right)} \Rightarrow \frac{-5}{P_m} = \frac{0.5}{\frac{1.5 - 1.6}{1.6}}$. Hence Pm = - 5/8 D

25.

A	B	Y	Y_1	Y_2	Y

0	0	1	1	1	0
0	1	1	1	0	1
1	0	1	0	1	1
1	1	0	1	1	0

26. The circuit can be redrawn as shown. $V_A - 1\text{x}5 - 15 + 5 = V_B$



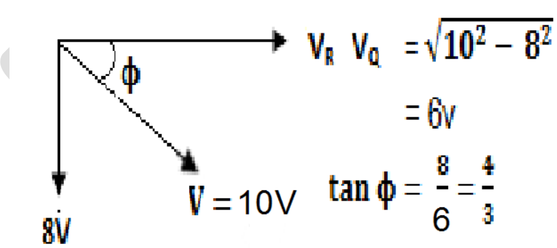
27. The circuit can be redrawn as two rods in linear motion

$$V_p + 4Bvr = V_A$$
$$V_Q - 4Bvr = V_B$$

$$V_A - V_B = 8Bvr$$

28. $u_1 = R\left(\frac{1}{1^2} - \frac{1}{\infty}\right)$; $u_2 = R\left(\frac{1}{1^2} - \frac{1}{2^2}\right)$; $u_3 = R\left(\frac{1}{2^2} - \frac{1}{\infty}\right)$; Hence $u_1 - u_3 = u_2$

29.



30. Refer NCERT text book.

31. $\frac{A_1}{A_2} = \frac{N_1}{N_2} \therefore A_2 = 10^3 \times \frac{1}{2} = 500$

32. The sense of rotation of the earth and the satellite should be same that is from west to east.

33. $v_0 = \frac{2}{g} r^2 \frac{(8.5-0.8)g}{\eta}$ and $nv_0 = \frac{2}{g} r^2 \frac{(2.5-0.8)g}{\eta} \Rightarrow$ n=17/77

34. Breaking stress is independent of the original length.

35. When connected in series, the force in both the springs is the same. Hence $\frac{W_1}{W_2} = \frac{k_2}{k_1} = \frac{3}{2}$

36. Draw the free body diagram of block and platform. As $M >> m$, the acceleration of the platform, $a = \frac{\mu mg}{M}$ can be taken as zero and hence its velocity remains constant as 4m/s. Acceleration of the block is, $a_{block,ground} = \mu g = 2\,m/s^2$ towards right.

Let velocity of block wrt ground at time t be v (towards right), then $v = 2t$.
Solve the question w.r.t platform frame of reference.

$\vec{a}_{block,\,platform} = 2m/s^2$ (towards right)

$\vec{v}_{block,\,platform} = (2t-4)\,m/s$ (towards right)

Initial velocity of block wrt platform is 4 m/s towards left.

Let s be the required distance, then $v^2 = u^2 + 2\vec{a}.\vec{s} \Rightarrow 0 = (-4)^2 + 2(2)s \Rightarrow s = 4m$.

37. $\vec{F} = -\nabla U = -\left[\frac{\partial U}{\partial x}\hat{i} + \frac{\partial U}{\partial y}\hat{j}\right] = -\left[-7\hat{i} + 24\hat{j}\right].\ |\vec{F}| = \sqrt{7^2 + 24^2} = 25\,units$

38. $50\cos 37^0 = \frac{v^2}{R} \Rightarrow 40 = \frac{v^2}{10}; v = 20\ m/s$

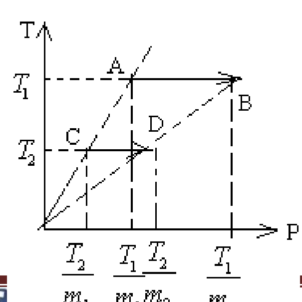
39. Conservation of angular momentum

$L_i - L_f \Rightarrow \omega_0 \times \frac{mR^2}{2} = \omega'\left[\frac{mR^2}{2} + \frac{ml^2}{3}\right] \Rightarrow \omega' = \frac{3\omega_0 R^2}{3R^2 + 2l^2}$

40. Let V be the total volume of ice piece and V' is the volume of ice piece which is outside the water, then $(V - V')\rho_{water} g = V\rho_{ice} \times g \Rightarrow$ $(V - V')1000 = V \times 900$ or $V' = \frac{V}{10} = 0.1V$ .So, fraction of ice piece outside the water is, $f = \frac{V'}{V} = 0.1$.

41. Water equivalent is the ratio of the thermal capacity of the substance to the specific heat of water. Hence

42.



Let slope of line AC is m_1 & that of line DB is m_2, then $nRT_1 \ln\frac{m_2}{m_1} = 2nRT_2 \ln\frac{m_2}{m_1} \Rightarrow \frac{T_1}{T_2} = 2$

43. This brings in concepts of relative motion and that when collision takes place, it is the relative velocity which changes

44. When heated the length between adjacent markings increases. Hence the actual length will be less than 25 cm.

45.

$$F^2 + F^2 + 2F^2\cos\theta = 3F^2$$

$$\cos\theta = \frac{1}{2}$$

$$\theta = 60^0$$

PART – B (CHEMISTRY)

46. b	**47. c**	**48. a**	**49. a**	**50. a**	**51. d**	**52. b**	**53. b**	**54. a**	**55. a**
56. a	**57. c**	**58. a**	**59. a**	**60. d**	**61. c**	**62. d**	**63. a**	**64. c**	**65. c**
66. a	**67. c**	**68. b**	**69. b**	**70. c**	**71. c**	**72. b**	**73. c**	**74. b**	**75. c**
76. b	**77. c**	**78. b**	**79. d**	**80. c**	**81. b**	**82. d**	**83. c**	**84. d**	**85. d**
86. c	**87. b**	**88. c**	**89. a**	**90. b**					

46. Solution (b): The eq^b constant for the reverse reaction is $\frac{1}{k}$.Since the eq^n given is further divided by 2, the value of theeq^b constant will be $\frac{1}{\sqrt{k}}$ hence the answer is $\frac{1}{\sqrt{0.09}} = 3.3$.

47. Solution(c) : 20× 0.25 + 20× 0.5 + 90×1 = 130 × N

$\therefore N = \frac{5+10+90}{130} = \frac{105}{130}$

After dilution 130 × $\left(\frac{105}{130}\right) = x \times 1000$

X = 0.105 N

48. Solution (a): Ox^n state of element in free state = 0

S_2F_2	H_2S
2x – 2 = 0	+2+x=0

$\boxed{x = +1}$ $\boxed{x = -2}$

49. Solution (a): The oxidation state of N in HNO_2 is + 3.
So $3e^-$ are lost by N. Hence the
Configuration of N $1S^2 2S^2 2P^3$ changes to $1S^2 2S^2$

50. Solution(a): $CaC_2 + 2D_2O \longrightarrow C_2D_2 + Ca\,(OD)_2$

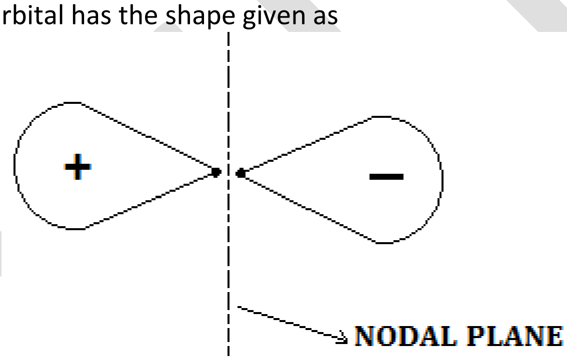
51. Solution (d): If the e^- is a particle then mc^2 and if it's a wave then $h\nu$ and combiningλ = $\frac{h}{mc}$

52. Solution (b) Factual

53. Solution (b): The element contains 2 valence electrons. By the second ionization the ion attains stable inert gas configuration. Hence third IE is very high.

54. Solution (a): Conceptual

55. Solution (a)_: σ^* s orbital has the shape given as



So only
1 nodal plane

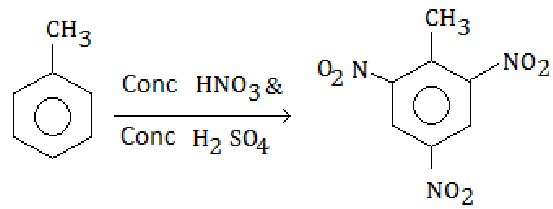
56. Solution (a): $CO_2 + H_2O \rightleftharpoons H_2CO_3$
$H_2CO_3 \rightleftharpoons H^+ + HCO_3^{\ominus}$

$HCO_3^{\ominus} \rightleftharpoons H^+ + CO_3^{2-}$

57. Solution (c): $pV + \frac{a}{v} = RT$
$\therefore \frac{pV}{RT} + \frac{a}{RTV} = 1$ $\therefore Z = \frac{pV}{RT}$

= $\left[1 - \frac{a}{RTV}\right]$

58. Solution (a):



59. Solution (a): The excess pressure inside the soap bubble is inversely proportional to the radius of soap bubble ie. P $\propto\frac{1}{\gamma}$ so air flows from the smaller bubble to the larger bubble hence the result.

60. Solution (d): Ratio is $\frac{12\times6}{1\times14} = \frac{72}{14} = 5.1428$
This way the ratio has to be calculated for each case to find the answer.
61. Solution (c): CH_3OCH_3 does not have H – bonding

62. Solution (d): London smog or sulphurous smog contains SO_2 and hence reducing in nature.

63. Solution (a): Entropy change $\Delta S = \frac{Q}{T}$

Amount of heat absorbed per mole, $Q = 333 \times 18\, J$

Temp = $0^{\circ}C$ = 273 K

$$\therefore\ \Delta S = \frac{333\times18}{273} = 21.95\, J/K.$$

64. Solution (c): A atom contribution = $\frac{1}{8} \times 8 = 1$

5 face centered B atom = $5 \times \frac{1}{2} = 2.5$

$\therefore$ Ratio of A: B = 1: 2.5

= 2 : 5

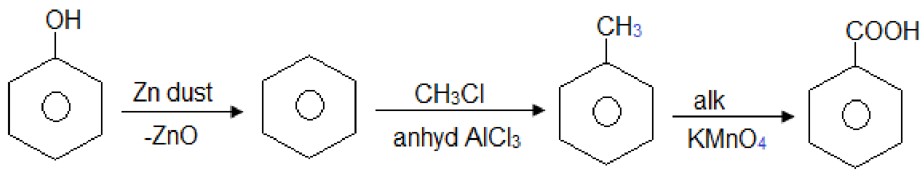
$\therefore$ Formula A_2B_5

65. Sol: (c) Conceptual

66. Solution (a): $M_2 = \frac{W_2M_1}{W_1}\left(\frac{P^0}{P^0-P}\right)$

= $\frac{5\times18}{100}\left[\frac{3000}{15}\right] = 180$

67. Sol: (c)

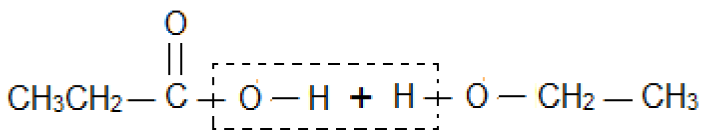


68. Sol: (b)

$$\frac{M_{cu}}{E_{cu}} = \frac{V_{H_2}}{V_{H_2} in\ cm^3} = \frac{16 \times 10^{-3} g}{32} = \frac{V_{H_2}}{11200}$$

∴Volume of Hydrogen = 5.6 cm^3

69. Sol: (b)



by isotopic studies the mechanism suggests this

70. Sol: (c)

The velocity increase = 2^5 = 32 times

so nearest value = 30 times

71. Sol: (c) Conceptual

72. Sol: (b) Condensation polymer having ester linkages.

73. Sol: (c) Tertiary carbocation are the most stabletest> sec > prim

74. Sol: (b) Conceptual

75. Sol: (c)

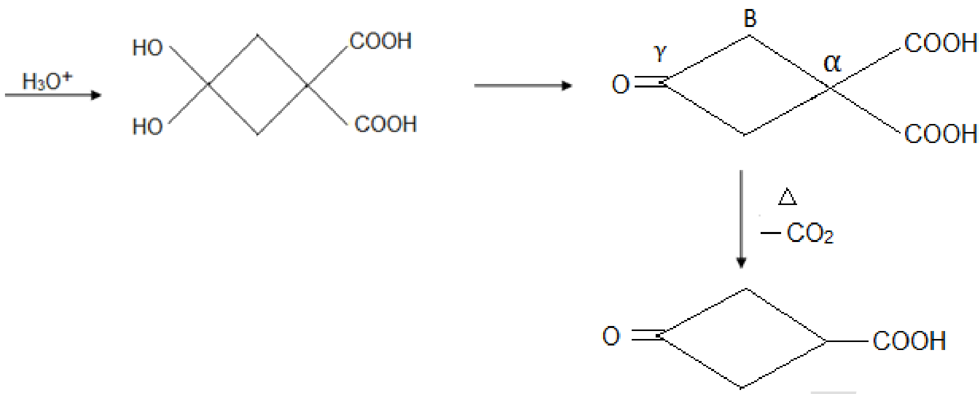
The NO_2, group can link using oxygen atom as – ONO, hence it can show linkage isomerism

76. Sol: (b)

Let 3 amino acids be ABC. Then the six sequences of arrangements are ABC, ACB, BAC, BCA, CAB, CBA.

77. Sol: (c) Conceptual

78. Sol: (b)

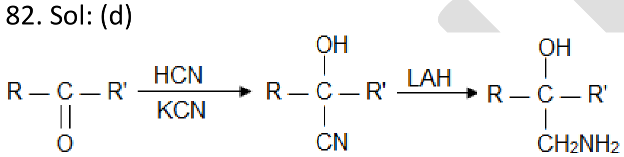


When 2 – COOH groups are at gem-position, heating eliminates CO_2
79. Sol: (d) Conceptual

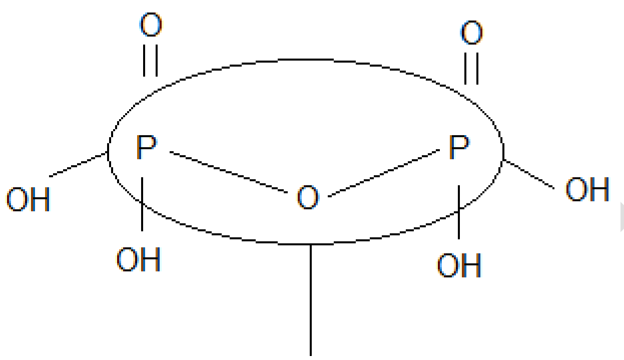
80. Sol: (c) CN^- is a strong nucleophile and causes elimination.

81. Sol: (b) Conceptual

82. Sol: (d)

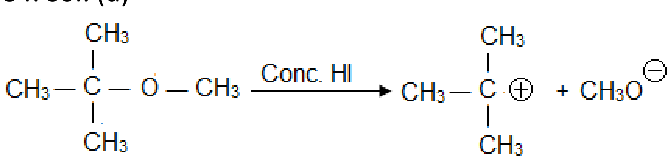


83. Sol: (c)



P – O – P bond

84. Sol: (d)



With anhyd. HI, bond cleavage takes place such that CH_3I and $(CH_3)_3$ COH

85. Sol: (d)

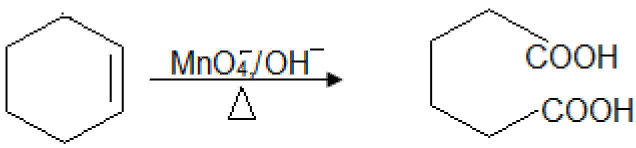
$FeS + 2HCl \rightarrow FeCl_2 + H_2S(g)$
(A) (B)

(a) $2FeCl_3 + H_2S \rightarrow 2FeCl_2 + 2HCl + S$
Yellow green

(b) $(CH_3COO)_2Pb + H_2S \rightarrow CH_3COOH + PbS$
(B) Black

(c) $FeCl_2 + K_3[Fe(CN)_6] \rightarrow Fe_3[Fe(CN)_6]_2$
blue

86. Sol: (c)



87. Sol: (b)

$\frac{1}{2}O_2 + Cl_2 \rightarrow Cl_2O \qquad \Delta G > O$

Thus backward reaction is formed

88. Sol: (c) Conceptual

89. Sol: (a)
Ar is monoatomic gas, thus its molecules can move in any direction in space, Hence, it can have 3 independent motion (translational). Thus the answer (a).

90. Sol: (b)
CrO is basic
Cr_2O_3 – amphoteric
CrO_3 – Acidic
With the increasing oxidation number acid character increases

PART – C (BIOLOGY)

91.a	**92.c**	**93.a**	**94.d**	**95.a**	**96.c**	**97.c**	**98.a**	**99.a**	**100.a**
101.b	**102.c**	**103.c**	**104.d**	**105.c**	**106.c**	**107.s**	**108.c**	**109.b**	**110.c**
111.d	**112.c**	**113.c**	**114.a**	**115.d**	**116.a**	**117.d**	**118.b**	**119.a**	**120.a**
121.a	**122.b**	**123.b**	**124.a**	**125.a**	**126.d**	**127.b**	**128.a**	**129.c**	**130.a**
131.a	**132.a**	**133.a**	**134.c**	**135.c**	**136.b**	**137.a**	**138.b**	**139.b**	**140.b**
141.d	**142.c**	**143.c**	**144.a**	**145.c**	**146.a**	**147.b**	**148.d**	**149.b**	**150.a**

151.c	**152.b**	**153.c**	**154.b**	**155.a**	**156.a**	**157.b**	**158.b**	**159.c**	**160.b**
161.c	**162.d**	**163.c**	**164.b**	**165.a**	**166.b**	**167.b**	**168.d**	**169.a**	**170.a**
171.c	**172.b**	**173.b**	**174.d**	**175.a**	**176.c**	**177.b**	**178.b**	**179.d**	**180.a**

91. Archaeocytesare amoeboid cells found in sponges. They are totipotent.

92. Fibrinogen is a glycoprotein found in the blood of vertebrates that helps in the formation of blood clots.

93. Hypoxia is deficiency in the amount of oxygen reaching the tissues.

94. A uricotelic organism excretes uric acid or its salts. Uricotelic organisms include terrestrial arthropods, lizards, snakes, and birds.

95. Kupffer cells are phagocytic cells which form the lining of the sinusoids of the liver and is involved in the breakdown of red blood cells.

96. The hypothalamus is a section of the brain responsible for hormone production. The hormones produced by this area of the brain govern body temperature, thirst, hunger, sleep, circadian rhythm, moods, sex drive, and the release of other hormones in the body.

97. Snake has a three chambered heart.

98. Ichthyophisis a limbless amphibian.

99. Tube feet is found in Echinoderms like Star fish. They help in locomotion, feeding and respiration.

100. Symmetrical arrangement of parts of an organism around a single main axis, so that the organism can be divided into similar halves by any plane that contains the main axis is called radial symmetry. Example – Jelly fish (Aurelia)

101. The ‘‘lock and key’’ model of enzyme action illustrates that a particular enzyme molecule interacts with a specific type of substrate molecule. The lock is the enzyme and the key is the substrate. Only the correctly sized key (substrate) fits into the key hole (active site) of the lock (enzyme).
102. Glycogen is a multibranched polysaccharide of glucose that serves as a form of energy storage in animals and fungi.

103. Cholesterol is a steroid.

104. A restriction enzyme or restriction endonuclease is an enzyme that cuts DNA at or near specific recognition nucleotide sequences known as restriction sites.

105. Polyethylene glycol (PEG) is used in protoplast fusion.

106. Restriction enzymes are named based on the organism in which they were discovered. For example, the enzymeEcoRI was isolated from *Escherichia coli*, strain R. The first three letters abbreviate the genus and species names of the organism. The fourth letter typically comes from the bacterial strain designation. The

Roman numeral indicates the order in which restriction enzymes were discovered in a particular strain.

107. Golden rice is a variety of rice produced through genetic engineering to biosynthesize beta-carotene, a precursor of vitamin A, in the edible parts of rice. It is intended to produce a fortified food to be grown and consumed in areas with a shortage of dietary vitamin A, a deficiency which causes irreversible blindness

108. The terminator codons begin with Uracil. They are UAA, UAG and UGA.

109. The genetic code is unambiguous.

110. The lac Z gene in the Lac operon codes for the enzyme β – Galactosidase.

111. The central dogma of molecular biology describes the flow of genetic information in cells from DNA to messenger RNA (mRNA) to protein. It states that genes specify the sequence of mRNA molecules, which in turn specify the sequence of proteins.

112. Gonadotropins are a group of hormones secreted by the pituitary which stimulate the activity of the gonads.

113. $O_2$was absent in the atmosphere at the time of origin of life.

114. Thorns of Bougainvillea and tendrils of Cucurbita are homologous structures.A homologous structure is an organ, system, or body part that shares a common ancestry in multiple organisms.

115. Egg with a calcareous shellin birds indicates their reptilian ancestry.

116. If in a genetic locus at which there are two alleles, A and a. The Hardy-Weinberg equation is expressed as: $p^2 + 2pq + q^2 = 1$. wherep is the frequency of the "A" allele and q is the frequency of the "a" allele in the population.

117. Carcinoma is a type of cancer that develops from epithelial cells.

118. An interferon is a protein released by animal cells, usually in response to the entry of a virus, which has the property of inhibiting virus replication.

119. A synapse is a junction between two nerve cells, consisting of a minute gap across which impulses pass by diffusion of a neurotransmitter.

120. The ossicles are, in order from the eardrum to the inner ear: the malleus, incus, and stapes.

121. A capsid is the protein shell of a virus.

122. Legumes have a symbiotic relationship with bacteria called Rhizobia, which create ammonia from atmospheric nitrogen and help in nitrogen fixation. Soyabean is a legume.

123. Primary spermatocytes are diploid (2N) cells containing 46 chromosomes. 44 autosomers and 2 allosomes.

124. The corpus luteum is a temporary endocrine structure in female ovaries that is involved in the production of

progesterone.

125. Saheli is a Non Hormonal oral contraceptive for females.

126. Infundibulum is the closest to the ovary.

127. Leydig cells release a class of hormones called androgens that includes testosterone.

128. Oxytocin is responsible for uterine contraction.

129. Wall of the alimentary canal contains smooth muscle

130. The diagrams A and B represent late anaphase and prophase respectively.

131. Interkinesis is a period of rest during meiosis, between meiosis I and meiosis II. No DNA replication occurs duringInterkinesis.

132. Prokaryotic DNA is "naked," meaning that it has no histones associated with it, and it is not formed into chromosomes.

133. Mitochondrion has its own DNA.

134. Smooth Endoplasmic reticulum is the site of lipid synthesis.

135. Hairs called cilia present in epithilia move back and forth to help move particles out of our body. Ciliated epithelial tissue is found in our respiratory tract and in the fallopian tubes of women.

136. SystemaNaturaewas one of the major works of the Swedish botanist, zoologist and physician Carolus Linnaeus.

137. The suffix -ales is used for the name of orders of plants, fungi, and algae.

138. An endospore is a dormant, tough, and non-reproductive structure produced by certain bacteria.

139. A heterocyst is a differentiated cyanobacterial cell that carries out nitrogen fixation.

140. Pigments chlorophyll a and c; stored food mannitol and laminarin, cell wall of cellulose and algin is found in Brown algae.

141. Gymnosperms don't require water for fertilization.

142. Haploid endosperm and Anemophily is found in Gymnosperms.

143. From the region of maturation, some of the epidermal cells form root hair.Pneumatophores are seen in Rhizophora.Adventitious roots are seen in banyan tree. Maize and sugarcane have stilt roots.

144. Having four long and two short stamens is called tetradynamous, it is characteristic of the family Cruciferae (Brassicaceae)

145. Tinospora has long, slender and hanging aerial adventitious roots that are green and photosynthetic.

146. The ground tissue of plants includes all tissues that are neither dermal nor vascular.

147. Plerome is the central core of primary meristem of a plant or plant part that according to the histogen theory gives rise to the stele.

148. Intercalary meristem is not a lateral meristem

149. Reduction division does not take place during asexual reproduction

150. Haterogametes are a pair of gametes that differ in form, size, or behaviour and occur typically as large nonmotile female gametes and small motile sperms.

151. Mesogamy is when a pollen tube that enters the embryo sac through thefuniculus or the integument.

152. Endosperm development happens after fertilization.

153. Wrinkled seed is a recessive treat.

154. A woman with two genes, one for haemophilia and one for colour blindness on one of its X-chromosomes marries a normal man. The progeny will be 50% haemophilic and colour blind sons and 50% normal sons.

155. Heterogametic sex refers to the sex of a species in which the sex chromosomes are not the same. In birds females are heterogametic.

156. Down's syndrome is formed as a result of nondisjunction of the autosomal chromosomes.

157. Microclimate is the climate of a very small or restricted area, especially when this differs from the climate of the surrounding area.

158. Stratification in the field of ecology refers to the vertical layering of a habitat; the arrangement of vegetation in layers.

159. Gause's law, is a proposition that states that two species competing for the same resource cannot coexist at constant population values, if other ecological factors remain constant.

160. An ecological pyramid is a graphical representation designed to show the biomass or bio productivity at each trophic level in a given ecosystem. In a marine ecosystem the pyramid of biomass is sinverted.

161. According to the graph the change in the two populations A and B is because population B competed more successfully for food than A and thus increased in number.

162. The sequence of communities of primary succession in water isphytoplankton, rooted submerged hydrophytes, floating hydrophytes, reed swamp, meadow and trees.

163. A biodiversity hotspot is a biogeographic region with significant levels of biodiversity that is under threat from humans.

164. Botanical garden is an ex-situ method of conservation of flora.

165. Species diversity refers to the measure of diversity in an ecological community. Species diversity takes into consideration species richness, which is the total number of different species in a community.

166. Fluoride pollution can lead to opaque white lesions on their teeth at low levels, and at higher levels it can lead to discolored and damaged teeth.

167. When chlorofluorocarbons (CFCs) are released into the atmosphere, they rise up to the Ozone layer. The ultraviolet radiation from the Sun then breaks down the CFCs to release a Chlorine radical. The Chlorine radical then reacts with Ozone (O_3) in the equation:

$Cl\bullet + O_3 \rightarrow ClO\bullet + O_2$

Then the ClO• radical reacts with another O_3 molecule:

$ClO\bullet + O_3 \rightarrow Cl\bullet + 2O_2$

This releases two oxygen molecules and the chlorine radical.

168. Acid rain is caused by a chemical reaction that begins when compounds like sulfur dioxide and nitrogen oxides are released into the air.

169. At night in some plants, root pressure causes guttation or exudation of drops of xylem sap from the tips or edges of leaves.

170. Plasmodesmata is a narrow thread of cytoplasm that passes through the cell walls of adjacent plant cells and allows communication between them.

171. Light is required for the light dependent reactions becauseit energizes electrons in the reaction centre.

172. In sugarcane, CO_2 is fixed in malic acid with the help of enzyme PEP Carboxylase.

173. Iodine is not essential for plant growth.

174. Dark reaction of photosynthesis occurs in the chloroplast stroma.

175. The water potential of pure water in an open container is zero because there is no solute and the pressure in the container is zero.

176. Phenyl mercuric acetate when applied to the leaves of plants is an antitranspirant.

177. Endosmosis takes place when plant cell is immersed in hypotonic solution.

178. Granal and Agranal chloroplast are found in C4 plants.

179. Phototropism is the growth of an organism which responds to a light stimulus. It happens as a result of uneven distribution of the plant hormone auxin.

180. Plants respond very specifically to changes in day length. This response is called photoperiodism. It was first characterised in tobacco.