11/04/2022

RM_CODE-A

Corporate Office : Aakash Tower, 8, Pusa Road, New Delhi-110005, Phone : 011-47623456

MM : 720

REVISION TEST SERIES

Time : 3 Hrs. 20 Min.

(*for* NEET-2022)

Test - 4

Answers

1. (3)	41. (1)	81. (4)	121. (1)	161. (2)
2. (1)	42. (1)	82. (1)	122. (1)	162. (2)
3. (1)	43. (1)	83. (2)	123. (2)	163. (2)
4. (3)	44. (3)	84. (1)	124. (4)	164. (3)
5. (4)	45. (4)	85. (2)	125. (3)	165. (4)
6. (3)	46. (2)	86. (4)	126. (3)	166. (4)
7. (1)	47. (4)	87. (3)	127. (2)	167. (4)
8. (3)	48. (2)	88. (3)	128. (1)	168. (1)
9. (2)	49. (2)	89. (3)	129. (4)	169. (3)
10. (4)	50. (4)	90. (3)	130. (1)	170. (2)
11. (3)	51. (3)	91. (2)	131. (1)	171. (2)
12. (1)	52. (2)	92. (3)	132. (2)	172. (2)
13. (4)	53. (4)	93. (3)	133. (2)	173. (2)
14. (2)	54. (1)	94. (4)	134. (3)	174. (4)
15. (1)	55. (2)	95. (2)	135. (1)	175. (2)
16. (4)	56. (1)	96. (1)	136. (4)	176. (4)
17. (3)	57. (4)	97. (2)	137. (1)	177. (4)
18. (1)	58. (1)	98. (3)	138. (3)	178. (4)
19. (1)	59. (1)	99. (4)	139. (2)	179. (3)
20. (4)	60. (2)	100. (1)	140. (3)	180. (1)
21. (4)	61. (1)	101. (2)	141. (4)	181. (3)
22. (3)	62. (2)	102. (1)	142. (1)	182. (2)
23. (3)	63. (1)	103. (4)	143. (2)	183. (4)
24. (2)	64. (1)	104. (2)	144. (4)	184. (3)
25. (2)	65. (1)	105. (1)	145. (3)	185. (3)
26. (3)	66. (2)	106. (4)	146. (4)	186. (1)
27. (3)	67. (3)	107. (1)	147. (4)	187. (4)
28. (3)	68. (3)	108. (1)	148. (2)	188. (2)
29. (3)	69. (1)	109. (4)	149. (3)	189. (2)
30. (3)	70. (1)	110. (1)	150. (2)	190. (4)
31. (2)	71. (2)	111. (3)	151. (1)	191. (2)
32. (3)	72. (3)	112. (2)	152. (3)	192. (2)
33. (3)	73. (1)	113. (4)	153. (2)	193. (3)
34. (2)	74. (3)	114. (3)	154. (1)	194. (2)
35. (3)	75. (2)	115. (3)	155. (2)	195. (2)
36. (1)	76. (2)	116. (4)	156. (3)	196. (3)
37. (2)	77. (2)	117. (3)	157. (1)	197. (1)
38. (2)	78. (2)	118. (2)	158. (2)	198. (2)
39. (4)	79. (1)	119. (2)	159. (4)	199. (3)
40. (3)	80. (3)	120. (3)	160. (2)	200. (1)

Aakash BYJU'S

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Test - 4

Answers & Solutions

PHYSICS

SECTION-A

1. Answer (3)

   Initially right end of solenoid is N-pole, later it will be *S*-pole.

2. Answer (1)

   Circuit behaves like pure resistive at resonance.

3. Answer (1)

   $$i = \frac{50}{R} \quad \text{... (i)}$$

   $$\Rightarrow \quad i' = \frac{50}{R\sqrt{2}} \quad \text{... (ii)}$$

   $$V = i' R$$

   $$\Rightarrow \quad V = 25\sqrt{2} \text{ volt}$$

4. Answer (3)

   $\omega = 80\pi$

   $$T = \frac{2\pi}{80\pi} = \frac{1}{40} = s$$

   In $\frac{1}{40}$s , current becomes zero two times

   In 2 s current will become zero 160 times.

5. Answer (4)

   $$8 = 0.2\left|\frac{di}{dt}\right| \Rightarrow \left|\frac{di}{dt}\right| = \frac{80}{2} = 40 \text{ A/s}$$

6. Answer (3)

   $\phi = Li = 2 \times 4 = 8$ Wb

7. Answer (1)

   $$e = -\frac{d\phi}{dt}$$

   $$\Rightarrow \quad e = -4t$$

8. Answer (3)

   In ideal transformer,

   $P_{input} = P_{output}$ and transformer does not change frequency.

9. Answer (2)

   $$\phi_m = \vec{B}\cdot\vec{A}$$

   $= 4 \times 0.04 = 0.16$ weber

10. Answer (4)

    $$L \propto N^2 A$$

11. Answer (3)

    $$e_{square} = Bvl$$

    E_{ring} = varies as ring enters the field.

12. Answer (1)

    $$\oint \vec{B}.d\vec{A} = 0$$

    (Gauss's law in magnetism)

13. Answer (4)

    $$\phi = NBA = \text{constant}$$

    $$\Rightarrow e = \frac{d\phi}{dt} = 0$$

14. Answer (2)

$\because i_{rms} = \sqrt{i_1^2 + \frac{i_2^2}{2}}$

15. Answer (1)

$\because P_{average} = \frac{E_0 i_0}{2}\cos\phi$

$P_{average} = \frac{E_0^2 R}{2z^2} = \frac{E_0^2 R}{2\left[\frac{1}{\omega^2 C^2} + R^2\right]}$

16. Answer (4)

For step up transformers

Ns > Np

17. Answer (3)

$V_0^2 = V_{L0}^2 + V_{R0}^2$

V_{R0} = 60 V & $V_{R0} = i_0 R$

i_0 = 4 A & i_{rms} = 2.8 A

18. Answer (1)

$Q = \frac{1}{R}\sqrt{\frac{L}{C}}$

19. Answer (1)

To move with constant velocity

$F_{required} = F_{magnetic}$

$F_{required} = iBl = \frac{B^2 l^2 v}{R}$

20. Answer (4)

Effective circuit is

$\therefore V_M - V_N = -L\left|\frac{\Delta I}{\Delta t}\right|$

21. Answer (4)

$\because e_0 = NBA\omega = \phi\omega$

22. Answer (3)

$L = \frac{\mu_0}{2R} l^2$

23. Answer (3)

$Q = \frac{\Delta\phi}{R}$

24. Answer (2)

$V = -L\frac{di}{dt}$

25. Answer (2)

Transformer does not work on DC.

26. Answer (3)

$P = V_{rms}\ i_{rms}\cos\phi$

27. Answer (3)

$i_{rms} = \frac{V_{rms}}{R} = 8\text{A}$

$V_L = i_{rms} \times X_L = 8 \times 50$

= 400 V

28. Answer (3)

$V_{rms} = \sqrt{V_0^2 \frac{\frac{T}{2}}{T}}$

$= \frac{V_0}{\sqrt{2}}$

29. Answer (3)

Lenz's law

30. Answer (3)

$B_0 = \frac{E_0}{c}$

Direction of propagation will be along $\vec{E} \times \vec{B}$

31. Answer (2)

The direction of EM wave is along the direction of $\vec{E} \times \vec{B}$.

32. Answer (3)

$\eta = \frac{\text{Power out}}{\text{Power in}} = \frac{140}{(240 \times 0.7)} = 0.8333$

33. Answer (3)

$i_d = \varepsilon_0 \frac{d\phi}{dt}$

$\phi = \frac{A}{2} E$

$E = \frac{q}{A\varepsilon_0}$

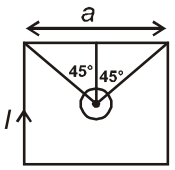
$i_d = \varepsilon_0 \frac{A}{2} \times \frac{1}{A\varepsilon_0}\frac{dq}{dt}$

$= \frac{1}{2}\frac{dq}{dt}$

34. Answer (2)

From 0 to t_1 emf is zero because ϕ is constant and from t_1 to t_2 emf is positive constant because $\frac{d\phi}{dt}$ is negative constant.

35. Answer (3)



$$B = \left[\frac{\mu_0 I}{4\pi d}\left(\sin 45^\circ + \sin 45^\circ\right)\right] \times 4$$

$$B = \frac{\mu_0 I}{4\pi\left(\frac{a}{2}\right)} \times \frac{8}{\sqrt{2}}$$

$$B = \frac{\mu_0 I 2\sqrt{2}}{\pi a}$$

$\phi = BA$

$$\phi = \frac{\mu_0 I 2\sqrt{2}}{\pi a} \times \pi r^2$$

$\phi = MI$

$$MI = \frac{\mu_0 I 2\sqrt{2} r^2}{a}$$

$$M = \frac{2\sqrt{2}\mu_0 r^2}{a}$$

SECTION-B

36. Answer (1)

$$\varepsilon = -\frac{d\phi}{dt}$$

$$\varepsilon = -\frac{d}{dt}\left(4t^2 \pi r_0^2\right)$$

$\varepsilon = -8t\pi r_0^2$

$|\varepsilon| = 16\pi r_0^2$ [at t = 2 s)

$$I = \frac{16\pi r_0^2}{R}$$

37. Answer (2)

$$V_P - V_Q = 10 + 4\,(2t + 3) + 2\,\frac{dI}{dt}$$

$V_P - V_Q = 10 + 4 \times 7 + 2 \times 2$

$V_P - V_Q = 10 + 28 + 4$

= 42 V

38. Answer (2)

$$\mu = \frac{1}{2}\varepsilon_0 E_0^2$$

39. Answer (4)

Electromagnetic wave is combination of electric and magnetic field only therefore, it can be produced only by the accelerating charge.

40. Answer (3)

Flux at any time (t)

$\phi = BA\cos\theta$

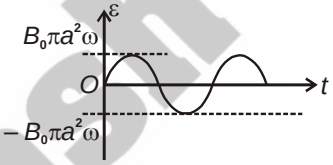
$= BA\cos\omega t$

$\phi = B_0 \pi a^2 \cos\omega t$

$$\varepsilon = -\frac{d\phi}{dt}$$

$\varepsilon = -B_0\pi a^2\omega(-\sin\omega t)$

$\varepsilon = B_0\pi a^2\omega\sin\omega t$



41. Answer (1)

$$\frac{E_0}{B_0} = c$$

$$B_0 = \frac{E_0}{c} = \frac{10^3}{3 \times 10^8}$$

$= 0.33 \times 10^{-5}$ T

$\vec{B_0} = 0.33 \times 10^{-5}\hat{k}$ T

42. Answer (1)

$$B_0 = \frac{E_0}{c}$$

$$c = \frac{\omega}{k}$$

$B_0\omega = E_0 k$

43. Answer (1)

$$E 2\pi(2r) = \pi(2r)^2 \frac{dB}{dt}$$

$$E = \frac{4\pi r^2 x}{4\pi r}$$

$= rx$

44. Answer (3)

The core of transformer is laminated to reduce eddy current.

45. Answer (4)

As per Lenz's law, initially normal reaction decreases. As current in solenoid increases to attain constant-value, then normal reaction also becomes constant.

46. Answer (2)

Transformer works on principle of mutual inductions.

47. Answer (4)

Impedance of circuit

$$Z = \sqrt{R^2 + X_L^2} = \sqrt{(8)^2 + (6)^2} = 10\ \Omega$$

Peak applied voltage $= 36\sqrt{2}$ volt

Peak current $I_0 = \frac{V_0}{z} = \frac{36\sqrt{2}}{10} = 5.1$ A

48. Answer (2)

Impedance is purely resistive phase differences between voltage and current is zero. So power factor: cos0 = 1, average power will be equal to apparent power.

49. Answer (2)

Voltage leads current by $\frac{\pi}{2}$ rad in pure inductor connected to A.C.

Inductive reactance is proportional to source frequency $X_L = \omega L$.

50. Answer (4)

Microwaves are used for cooling food.

CHEMISTRY

SECTION-A

51. Answer (3)

Solubility order: $BeSO_4 > MgSO_4 > CaSO_4 > BaSO_4$.

52. Answer (2)

Order of density; Li < K < Na.

53. Answer (4)

Concentrated solution of alkali metals in liquid ammonia is bronze in colour and diamagnetic in nature.

54. Answer (1)

$LiHCO_3$ does not exist in solid state.

55. Answer (2)

Barium shows apple green colour in flame test.

56. Answer (1)

$$\underset{\text{Gypsum}}{CaSO_4.2H_2O} \longrightarrow \underset{\text{Plaster of paris}}{CaSO_4 \cdot \tfrac{1}{2}H_2O} \longrightarrow \underset{\text{Dead burnt plaster}}{CaSO_4}$$

57. Answer (4)

Highest oxidation state of Os is + 8

58. Answer (1)

IUPAC name of $[Cu(NH_3)_4][NiCl_4]$ is tetraamminecopper(II) tetrachloridonickelate(II).

59. Answer (1)

$[Pt(NH_3)_6]Cl_4 \rightarrow [Pt(NH_3)_6]^{4+} + 4Cl^-$

Its aqueous solution will have highest number of ions in the solution.

60. Answer (2)

$$[Co(NH_3)_5Cl]Cl_2 + \underset{\text{(excess)}}{2AgNO_3} \longrightarrow [Co(NH_3)_5Cl](NO_3)_2 + 2AgCl$$

61. Answer (1)

Compound	**Chemical nature**
Cr_2O_3	Amphoteric
Mn_2O_7	Acidic
CrO	Basic
Cl_2O_7	Acidic

62. Answer (2)

The given splitting pattern is observed in tetrahedral complexes.

63. Answer (1)

$$3MnO_4^{2-} + 4H^+ \longrightarrow 2MnO_4^- + MnO_2 + 2H_2O$$

1 mole MnO_4^{2-} will give $\frac{2}{3}$ mole MnO_4^- and $\frac{1}{3}$ mole MnO_2

64. Answer (1)

$$2KMnO_4 \longrightarrow K_2MnO_4 + MnO_2 + O_2(g)\uparrow$$

65. Answer (1)

Higher is the number of unpaired electrons higher is the spin only magnetic moment.

Species	Unpaired electron (s)
$[Ni(CO)_4]$	0
$[Ti(H_2O)_6]^{2+}$	2
$[V(H_2O)_6]^{2+}$	3
$[Fe(H_2O)_6]^{2+}$	4

66. Answer (2)

Complexes in which a metal is bound to more than one kind of donor groups, are known as heteroleptic complexes.

67. Answer (3)

For repeating bidentate ligand bis term is introduced in naming of complexes.

68. Answer (3)

In $K_4[Fe(CN)_6]$, Fe does not exist as free Fe^{2+} ion.

69. Answer (1)

For low spin complex, splitting energy is large ($\Delta_0 > P$) as compared to pairing energy.

70. Answer (1)

For the same metal, the same ligands and metal-ligand distances, it can be shown that $\Delta_t = \left(\frac{4}{9}\right)\Delta_0$.

71. Answer (2)

VBT predicts the geometry of a complex on the basis of its magnetic behaviour.

VBT does not deal with stability of complexes. It cannot explain the colour exhibited by coordination compounds and it makes predictions of geometry by means of magnetic nature.

72. Answer (3)

$[(Ph_3P)_3RhCl]$ is Wilkinson catalyst which is used for the hydrogenation of alkenes.

73. Answer (1)

Gd^{3+} : $[Xe]4f^7$

74. Answer (3)

$[MnCl_6]^{3-}$ is an outer orbital complex having sp^3d^2 hybridisation.

75. Answer (2)

$2MnO_4^- + H_2O + I^- \longrightarrow 2MnO_2 + 2OH^- + IO_3^-$

76. Answer (2)

Ions	$\Delta_{hyd}H°$ (M^{2+}) (kJ mol^{-1})
Cu^{2+}	–2121
Ti^{2+}	–1866
Ni^{2+}	–2121
Cr^{2+}	–1925

77. Answer (2)

Most common oxidation state of Ti and V are + 4 and + 5 respectively.

78. Answer (2)

Species	Colour
CrO_4^{2-}	Yellow
$Cr_2O_7^{2-}$	Orange
$[Ti(H_2O)_6]^{3+}$	Purple
MnO_4^{2-}	Green

79. Answer (1)

Element	Enthalpy of atomization (kJ mol^{-1})
Co	425
Mn	281
Cu	339
Sc	326

80. Answer (3)

Back donation of electron from metal to vacant π^* orbital of ligand in $[Mn(CO)_6]^+$ is weak hence C – O bond order is more and the bond length is shorter.

81. Answer (4)

In Castner Kellner cell, cathode is made up of mercury.

82. Answer (1)

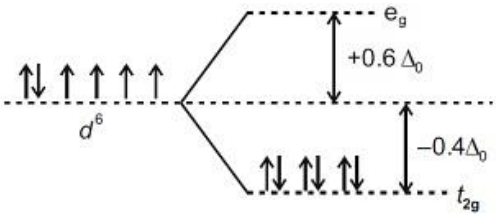
Be^{2+} has the greatest enthalpy of hydration among all.

83. Answer (2)

Ti has the highest value of $E^{\circ}_{M/M^{2+}}$.

84. Answer (1)

$$CFSE = \left[-0.4\left(n_{t_{2g}}\right) + 0.6\left(n_{e_g}\right)\right]\Delta_0$$



$CFSE = -6 \times 0.4\,\Delta_0 + 0 = -2.4\,\Delta_0$

85. Answer (2)

In$[Fe(H_2O)_6]^{2+}$, e_g level is symmetrically filled.

SECTION-B

86. Answer (4)

Li^+ is most heavily hydrated among all alkali metal ions. Effective size of Li^+ in aq solution is therefore, largest. So, moves slowest under electric field.

87. Answer (3)

Potassium trioxalatoaluminate (III)

88. Answer (3)

Observed oxidation states for cobalt are +2, +3, +4.

89. Answer (3)

With increase in oxidation state of central metal, acidic nature increases.

90. Answer (3)

$$2LiNO_3 \rightarrow Li_2O + 2NO_2 + \frac{1}{2}O_2$$

91. Answer (2)

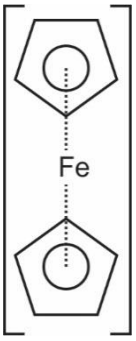
Oxalate ion is a bidentate chelating ligand.

92. Answer (3)

Ionization isomers produced different ions on ionization.

93. Answer (3)

- Wilkinson's catalyst is $[(Ph_3P)_3\,RhCl]$.
- Organometallic compounds contain at least one chemical bond between metal and carbon atom of an organic molecule.
- Grignard reagent: RMgBr
- Tetracarbonyl nickel: $[Ni(CO)_4]$
- Ferrocene $[Fe(\eta^5 - C_5H_5)_2]$



94. Answer (4)

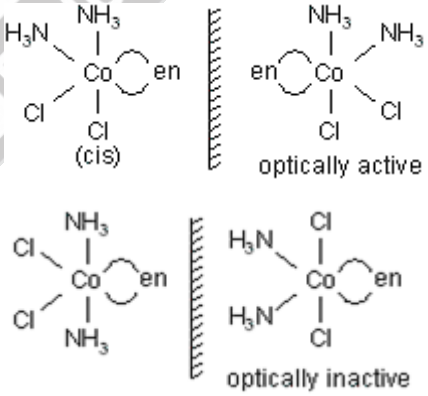
Among alkali metal carbonates, only Li_2CO_3 decompose on heating and thermal stability increases down the group.

95. Answer (2)

Melting point : Cr > V > Ti >> Mn

96. Answer (1)

$[Co(en)(NH_3)_2Cl_2]^+$ exists as cis-trans isomers. Trans-isomer is optically inactive.



97. Answer (2)

$$2Cu^{2+} + 4I^- \longrightarrow Cu_2I_2 + I_2$$

$$E^{\circ}_{Cu^{2+}/Cu} = 0.34\ V$$

$$2Cu^{+}(aq) \rightarrow Cu^{2+}(aq) + Cu(s)$$

$$\Delta E_{IE_2},\ Cu = 1958\ kJ/mol$$

$$\Delta Hyd,\ Cu^{2+} = -2121\,kJ/mol$$

98. Answer (3)

$[Fe(CN)_6]^{3-}$ is an inner orbital complex and hybridisation of Fe is d^2sp^3.

$Co^{3+}(d^6)$ with Weak Field Ligand (WFL) like F it forms sp^3d^2 and with ammonia it forms d^2sp^3 complex.

$Ni^0(d^{10})$ in presence of a strong field ligand CO forms tetrahedral complex.

99. Answer (4)

Zr^{+4} and Hf^{+4} has similar ionic radii due to lanthanoid contraction.

100. Answer (1)

Actinoid contraction is more than lanthanoid contraction.

BOTANY

SECTION-A

101. Answer (2)

Micropropagation is the method of production of large number of plants in very short duration.

102. Answer (1)

'Sonalika' and 'Kalyan Sona' are the varieties of wheat.

103. Answer (4)

Pusa Sadabhar, Pusa Shubhra and Himgiri are the disease resistant varieties of chilli, cauliflower and wheat respectively.

104. Answer (2)

Himgiri is bred by hybridisation and selection for resistance to leaf and stripe rust, hill bunt. Pusa shubhra is bred by hybridisation and selection for resistance to black rot and curl blight black rot.

105. Answer (1)

Gene responsible for dwarfing in rice, dee-geo-woo-gen was reported in Taiwan.

106. Answer (4)

In tissue culture, the optimum pH should be 5.7.

107. Answer (1)

Tomato, bitter gourd, bathua are vitamin C enriched vegetable crop developed by IARI, New Delhi.

108. Answer (1)

Somatic hybridisation is the fusion of protoplast of two plants belonging to different varieties, species and even genera.

109. Answer (4)

The crucial step for the success of the breeding experiment is the selection and testing of superior recombinants.

110. Answer (1)

Somaclones are those plants which are genetically identical to the original plant produced during tissue culture.

111. Answer (3)

Cereals are commonly deficient in lysine and tryptophan.

112. Answer (2)

Resistance to yellow mosaic virus was incorporated in *Abelmoschus esculentus* from a wild species A*belmoschus manihot*. The new resistant variety is called '*Parbhani Kranti*'.

113. Answer (4)

High aspartic acid, low nitrogen and sugar content in maize leads to resistance to maize stem borers.

114. Answer (3)

Tropical canes grown in South India *Saccharum officinarum* had thicker stem and higher sugar content.

115. Answer (3)

Pusa Sawani is resistant to shoot and fruit borer.

116. Answer (4)

Both IARI and KVIC have developed the technology of biogas production in India.

117. Answer (3)

Statins are produced by the yeast-*Monascus purpureus*. Statins have been commercialised as blood-cholesterol lowering agent. Statins resemble mevalonate and is competitive inhibitor of HMG CoA reductase.

118. Answer (2)

Propionibacterium sharmanii is responsible for production of large holes in swiss cheese.

119. Answer (2)

Acetobacter aceti produces acetic acid which can be further used in preparation of vinegar. While, citric acid produced by *Aspergillus niger* is employed in dyeing, inks, medicines, flavouring and preservation of food

120. Answer (3)

Statin is used as blood-cholesterol lowering agents. Lipases are used in detergent formulations and help in removing oil stains from laundry.

121. Answer (1)

Major component of biogas in methane (50-70%) which is highly inflammable, other gases are CO_2 (30-40%) and mixture of other gases H_2, H_2S etc. (10%).

122. Answer (1)

Primary treatment in sewage treatment is a physical process. The particles are physically removed through filtration and sedimentation.

123. Answer (2)

Trichoderma species are effective biocontrol agent of several plant pathogens.

124. Answer (4)

The given figure is of bacteriophage.

125. Answer (3)

Biofertilisers are used in organic farming.

126. Answer (3)

In anaerobic sludge digester, anaerobic methanogenic bacteria digest the bacteria and fungi present in sludge.

127. Answer (2)

Dragonflies are useful to get rid of mosquitoes.

128. Answer (1)

During primary treatment, all solids that settle down form the primary sludge and the supernatant form primary effluent.

129. Answer (4)

Dosa is prepared by using bacteria like *Leuconostoc* and *Streptococcus* sp.

130. Answer (1)

Puffed-up appearance of dough is due to production of CO_2 during fermentation.

131. Answer (1)

Pectinases and proteases help in clarifying fruit juices.

Lipases are used in detergent formulations. Amylases degrade starch, streptokinase is used as clot buster.

132. Answer (2)

Natural predator, biological method are the common measures used by organic farmer to manage pest/pathogen.

133. Answer (2)

Meristem is free from viruses and it is used for recovery of healthy plants from diseased plant.

134. Answer (3)

ABA inhibits growth.

135. Answer (1)

Antibiotics are obtained from bacteria and fungi.

SECTION-B

136. Answer (4)

SCP is rich in good quality of protein and poor in fats.

137. Answer (1)

Himgiri and Pusa shubhra are developed through conventional method of plant breeding.

138. Answer (3)

IARI, New Delhi has developed spinach which is rich in Vitamin A, Calcium and iron.

139. Answer (2)

LAB partially digest milk protein, produce acid at specific temperature.

140. Answer (3)

Filtration occurs at primary step in water treatment plant. Chlorination occurs in tertiary treatment w.r.t. waste water treatment.

141. Answer (4)

Methanogens are present in gut of ruminants and marshy area.

142. Answer (1)

Classical plant breeding involves crossing pure lines.

143. Answer (2)

The entire collection of plants or seeds having all the diverse alleles for all genes in a given crop is called germplasm collection.

144. Answer (4)

Bacteria, fungi and cyanobacteria are main source of biofertilizer

145. Answer (3)

Pusa Sem 2 and Pusa Sem 3 are resistant to Jassids, aphids and fruit borer.

146. Answer (4)

Bacteria such as *Azospirillum* and *Azotobacter* can fix atmospheric nitrogen while free-living in the soil.

147. Answer (4)

Bt-cotton plant with Bt toxin can control the butterfly caterpillars easily.

148. Answer (2)

Wine and beer are produced without distillation.

149. Answer (3)

Pusa Swarnim is a variety of *Brassica*.

150. Answer (2)

Citric acid is mainly produced by a fungus named *Aspergillus niger*

ZOOLOGY

SECTION-A

151. Answer (1)

Muscular dystrophy is a genetic disorder.

152. Answer (3)

Female *Culex* mosquito is vector of filariasis.

153. Answer (2)

IgA is mainly present in body secretions like colostrum.

154. Answer (1)

Parasite reproduces asexually within RBCs of human.

155. Answer (2)

Blood mixed stool with mucus is characteristic finding in amoebic dysentery.

156. Answer (3)

Cancer cells do not show contact inhibition.

157. Answer (1)

Carcinomas – Cancer of epithelial tissues

Melanoma – Skin cancer

158. Answer (2)

Extract of morphine is obtained from *Papaver somniferum*.

159. Answer (4)

Transmission of HIV infection generally occurs by sharing infected needles as in the case of intravenous drug abusers.

160. Answer (2)

Cannabinoids are obtained from plant *Cannabis sativa*.

161. Answer (2)

Opioids are used as analgesics. Amphetamine is a synthetic stimulant.

162. Answer (2)

Macrophages act as HIV factory.

163. Answer (2)

Pap smear is for cancer of cervix.

164. Answer (3)

Vinyl chloride causes liver cancer.

165. Answer (4)

Alcohol is a diuretic substance.

166. Answer (4)

Adolescence is a very vulnerable phase of mental and psychological development of an individual.

167. Answer (4)

Withdrawal syndrome is characterized by anxiety, shakiness, nausea and vomiting.

168. Answer (1)

Nicotine increases blood pressure and heart rate.

169. Answer (3)

Secondary lymphoid organs are Peyer's patches, appendix, spleen and lymph nodes.

170. Answer (2)

Immunotherapy is for the treatment of cancer.

171. Answer (2)

Several genes called c-onc or proto-oncogenes have been identified in normal cells. Activation of these genes under certain conditions could lead to oncogenic transformation of the cells.

172. Answer (2)

AIDS is an immuno deficiency syndrome. HIV can pass from mother to her child but AIDS occurs when the immune system of a person is compromised *i.e.,* when T-lymphocyte count falls below 200/mm^3 of blood.

173. Answer (2)

Breast enlargement occurs in males, as steroids are converted into estrogen in body which cause men to develop unwanted breast tissue (adipose).

174. Answer (4)

LSD (Lysergic acid diethyl amide) is an extract of fruiting body of fungus *Claviceps purpurea.* Coke is another name for cocaine and is obtained from *Erythroxylum coca.* Marijuana is a hallucinogen obtained from plant *Cannabis sativa*. Heroin is an opiate narcotic obtained from acetylation of morphine.

175. Answer (2)

Cancer cells show high telomerase activity. High telomerase activity in cancer cells prevents senescence and ageing. Depletion of ozone layer causes increased penetration by UV rays which causes DNA damage and neoplastic transformation of normal cells. Metastasis is shown by malignant tumors.

176. Answer (4)

Person suffering from insomnia has difficulty in falling asleep at night. Drugs that suppress the activity of CNS are used to treat insomnia. Cocaine is a stimulant, which makes a person more wakeful and alert.

177. Answer (4)

Anti-cancer drugs inhibit the proliferation of hair follicle cells leading to hair loss. Alcohol addicts are more prone to liver cirrhosis. UV rays and X-rays are physical carcinogens. Cancer is a non-infectious disease.

178. Answer (4)

Crack or cocaine is obtained from *Erythroxylum coca*.

179. Answer (3)

Typhoid is caused by *Salmonella typhi*. *Wuchereria* is responsible for causing filariasis.

180. Answer (1)

Skin and mucous membrane are parts of physical barriers of innate immunity.

181. Answer (3)

Dengue is a viral disease which spreads via bite of *Aedes* mosquito. Filariasis a helminthic disease that spreads via bite of *Culex* mosquito and malaria is a protozoan disease that spreads by bite of *Anopheles* mosquito.

182. Answer (2)

B-lymphocytes produce antibodies. These antibodies participate in humoral mediated immunity also known as antibody mediated immunity. T-lymphocytes participate in cell mediated immunity. Macrophages and neutrophils are phagocytic cells of the body.

183. Answer (4)

Acquired immunity is pathogen specific. Colostrum is an example of natural passive immunity. Interferons are glycoproteins.

184. Answer (3)

MRI uses strong magnetic fields and non-ionising radiations to accurately detect pathological and physiological changes in the living tissue.

185. Answer (3)

Viral DNA produced by enzyme reverse transcriptase is incorporated into host DNA.

SECTION-B

186. Answer (1)

Wuchereria bancrofti causes filariasis

187. Answer (4)

Interferons are secreted by virus infected cells of the body to protect the non-infected cells.

188. Answer (2)

Vaccination is an example of artificially acquired active immunity.

189. Answer (2)

Secondary/anamnestic response is always vigorous due to memory cells.

190. Answer (4)

γ-globulins which participate in immune response of the body are called Immunoglobulins

191. Answer (2)

Morphine is extracted from the latex of poppy plant. (*Papaver somniferum*) and is a very effective sedative and pain killer for those, who have undergone surgery.

192. Answer (2)

Radiowaves are not carcinogenic.

193. Answer (3)

T-lymphocytes are responsible for graft rejection which is included in cell mediated immunity.

194. Answer (2)

Diphtheria is caused by *Corynebacterium diphtheriae*.

195. Answer (2)

Humoral immunity includes antibodies produced by B-cells.

196. Answer (3)

Ringworms are caused by fungi belonging to the genera *Microsporum, Trichophyton* and *Epidermophyton*.

Typhoid → *Salmonella typhi*
Pneumonia → *Steptococcus pneumoniae*, *Haemophilus influenzae*
Plague → *Yersinia pestis*
} Bacterial diseases

197. Answer (1)

Ascaris, an intestinal parasite causes ascariasis.

198. Answer (2)

Yeast is used in the production of recombinant Hepatitis-B vaccine.

199. Answer (3)

IgG can cross the placenta and confer immunity to the fetus.

200. Answer (1)

In pneumonia, the alveoli get filled with fluid leading the severe problems in respiration.

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