



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

MM : 720

FORTNIGHTLY TEST SERIES

(for NEET-2023)

Time : 3 hrs. 20 min

Test - I

Answers

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



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03/08/2022

RM-G2
CODE-A

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Test - I

Answers & Solutions

PHYSICS

SECTION-A

- | | |
|---|--|
| <p>1. Answer (4)
Gravitational force is having infinite range.</p> <p>2. Answer (3)
$1 \text{ mg} = 10^{-6} \text{ kg}$</p> <p>3. Answer (4)
TV broadcast is done using radio waves (EM waves).</p> <p>4. Answer (2)
Classical physics has concepts of nature related to macroscopic phenomenon.</p> <p>5. Answer (3)
C.V. Raman is associated with discovery of scattering of light.</p> <p>6. Answer (4)
$1^\circ = \frac{\pi}{180} \text{ radians}$ and $1^\circ = 60 \text{ minutes}$.</p> <p>7. Answer (3)
SI unit of force is newton which is represented as 'N'.</p> <p>8. Answer (2)
In 0.020 only last two digits are significant.</p> <p>9. Answer (1)
Velocity has SI unit ms^{-1} and dimensional formula at $[\text{M}^0\text{LT}^{-1}]$</p> | <p>10. Answer (1)
$(10004)^{\frac{1}{4}} = (10000 + 4)^{\frac{1}{4}}$
$= 10 \left(1 + \frac{4}{10000} \right)^{\frac{1}{4}}$
$= 10 \left(1 + \frac{0.0004}{4} \right) = (1.0001)10$
$= 10.001$</p> <p>11. Answer (4)
Smaller the least count, more will be the precision.</p> <p>12. Answer (2)
$110.32 \text{ cm} \approx 110 \text{ cm}$ upto three significant figure.
In scientific notation
$110 \text{ cm} = 1.10 \times 10^2 \text{ cm}$</p> <p>13. Answer (3)
$P = \frac{W}{t} = \frac{[\text{ML}^2 \text{T}^{-2}]}{[\text{T}]} = [\text{ML}^2 \text{T}^{-3}]$</p> <p>14. Answer (1)
$2A - B = (20.0 \pm 0.2) - (5.0 \pm 0.1)$
$= (15.0 \pm 0.3)$</p> <p>15. Answer (1)
SI unit of electric current is ampere (A)</p> |
|---|--|

16. Answer (2)

$$\frac{\Delta p}{p} \times 100 = 3 \times \frac{\Delta A}{A} \times 100 + \frac{1}{2} \times \frac{\Delta B}{B} \times 100 + \frac{1}{2} \times \frac{\Delta C}{C} \times 100$$

$$= 3 \times 1 + \frac{1}{2} \times 2 + \frac{1}{2} \times 4 = 6\%$$

17. Answer (2)

If number is less than 1, then zeros between two non-zero digits and trailing zeros are significant.

18. Answer (2)

$$1.4 + 4.24 + 7.432 = 13.072 = 13.1 \text{ g}$$

Hence, result has 3 significant figures.

19. Answer (3)

$$\Delta T = (T_2 - T_1) \pm (\Delta T_1 + \Delta T_2)$$

$$= (44 - 31) \pm (1 + 2)^\circ\text{C}$$

$$= (13 \pm 3)^\circ\text{C}$$

20. Answer (2)

Zero error is classified under systematic error.

21. Answer (1)

Distance and focal length, both have dimensional formula $[M^0L^1T^0]$.

22. Answer (3)

Magnification is a dimensionless constant.

23. Answer (4)

' kx ' and ' ωt ' both should be dimensionless

$$\therefore \text{dimensionless } [\omega] = [T^{-1}]$$

$$\text{dimensionless } [k] = [L^{-1}]$$

$$\therefore \left[\frac{\omega}{k} \right] = [LT^{-1}]$$

24. Answer (3)

$$1 \text{ J} = 10^7 \text{ ergs}$$

$$\therefore 100 \text{ J} = 10^9 \text{ ergs}$$

25. Answer (2)

$$L = (\text{velocity}) (\text{time})$$

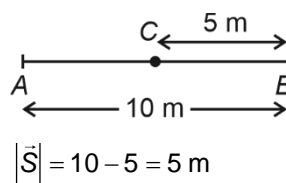
$$L = uT$$

$$\therefore [L] = [F^0uT]$$

26. Answer (2)

$$\text{Slope } \frac{dx}{dt} = v \text{ (Velocity)}$$

27. Answer (1)



28. Answer (2)

$$100 \times \frac{5}{18} = 27.78 \text{ ms}^{-1}$$

29. Answer (2)

$$y = x^3$$

$$\frac{dy}{dx} = 3x^2$$

30. Answer (4)

Slope of A i.e. velocity is constant.

\therefore Its acceleration is zero.

31. Answer (4)

$$\text{Relative velocity, } v = 70 - 70 = 0$$

32. Answer (2)

In (2), slope of $P_1 >$ slope of P_2

$$\therefore v_1 > v_2$$

33. Answer (3)

$$\langle a \rangle = \frac{\int_0^{t_0} a dt}{\int_0^{t_0} dt} = \frac{\int_0^{t_0} \alpha dt}{t_0}$$

34. Answer (2)

$$v = \frac{s}{t} = \frac{v_1 \times \frac{t}{5} + v_2 \times \frac{4t}{5}}{t}$$

$$\Rightarrow v = \frac{v_1 + 4v_2}{5}$$

35. Answer (1)

Instantaneous speed is equal to magnitude of instantaneous velocity.

SECTION-B

36. Answer (3)

$$\text{Distance travelled} = 20 + 0 + 20 = 40 \text{ m}$$

37. Answer (1)

$$S_1 + S_2 = 100 = \frac{1}{2}gt^2 + 50t - \frac{1}{2}gt^2$$

$$\Rightarrow 100 = 50t$$

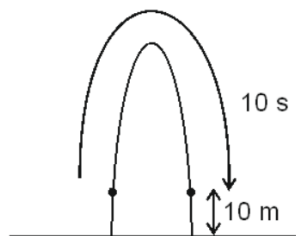
$$\Rightarrow t = 2 \text{ s}$$

38. Answer (4)

$$a = \frac{dv}{dt} = \frac{2}{5}t$$

i.e. a depends on time.

39. Answer (1)



$$h = 10 + \frac{1}{2} \times 10 \times 5^2 = 135 \text{ m}$$

$$t = \sqrt{\frac{2h}{g}} = \sqrt{\frac{2 \times 135}{10}} = \sqrt{27} = 3\sqrt{3}$$

$$T = 2t = 6\sqrt{3} \text{ s}$$

40. Answer (2)

$$S_n = u + \frac{a}{2}(2n-1)$$

$$S_5 = \frac{2}{2}(10-1) = 9 \text{ m}$$

41. Answer (1)

$$x = 2 + 12t - t^2$$

$$v = 12 - 2t$$

$$v = 0 \Rightarrow t = 6 \text{ s}$$

$$a = -2 \text{ m/s}^2$$

$$\text{Retardation} = 2 \text{ m/s}^2$$

42. Answer (2)

 x = area under the v - t curve.

$$= \frac{1}{2} \times 2 \times 4 = 4 \text{ m}$$

43. Answer (2)

$$s = 2t^3 + 3t^2 + 4t + 2$$

$$v = 6t^2 + 6t + 4$$

$$a = 12t + 6$$

$$a(t = 1 \text{ s}) = 18 \text{ m/s}^2$$

44. Answer (2)

Instantaneous velocity, $v = \frac{dx}{dt}$ = slope of x - t graph $\frac{dx}{dt}$ is negative at 'c'

45. Answer (4)

At a given time, only one value of velocity is possible.

46. Answer (3)

$$P\alpha = F\beta e^{-\beta t}$$

Exponential power are dimensionless

$$\therefore [\beta t] = [M^0 L^0 T^0]$$

$$\beta = [M^0 L^0 T^{-1}]$$

$$[P\alpha] = [F\beta]$$

$$[ML^{-1}T^{-2}]\alpha = [MLT^{-2}]\beta$$

$$\alpha = \frac{[MLT^{-2}][T^{-1}]}{[ML^{-1}T^{-2}]} = [L^2 T^{-1}]$$

$$\therefore \left[\frac{\alpha}{\beta^2} \right] = \frac{[L^2 T^{-1}]}{[T^{-1}]^2} = [L^2 T]$$

47. Answer (3)

$$\rho = \frac{M}{V} = \frac{20.0}{5.00} = 4.00 \text{ kg m}^{-3}$$

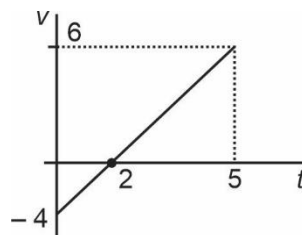
$$\frac{\Delta p}{\rho} = \frac{\Delta m}{m} + \frac{\Delta V}{V}$$

$$\frac{\Delta p}{4} = \frac{0.4}{20} + \frac{0.20}{5}$$

$$= 4 \left(\frac{4}{200} + \frac{20}{500} \right) = \frac{80 + 160}{1000}$$

$$= \frac{240}{1000} = 0.24$$

48. Answer (2)



$$\text{Distance} = \frac{1}{2}(4)(2) + \frac{1}{2}(3)(6) = 4 + 9 = 13 \text{ m}$$

49. Answer (2)

The particle acquires same speed after returning to same level

∴ Their velocity of strike will be same

But, $m_A > m_B$

∴ $(K.E)_A > (K.E)_B$

50. Answer (1)

Let length of each train be ' ℓ '

$$\text{Then, } 2\ell = \left[(72 - 90) \frac{5}{18} \right] 20 + \frac{1}{2} (2)(20)^2$$

$$2\ell = -5(20) + (20)^2$$

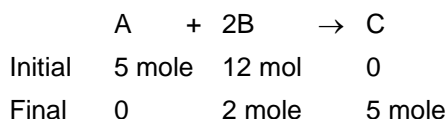
$$2\ell = -100 + 400$$

$$\ell = 150 \text{ m}$$

CHEMISTRY

SECTION-A

51. Answer (1)



A is limiting reagent

Maximum moles of C = 5 mole

52. Answer (3)

$$\text{Number of O-atoms} = N_A \times 2 \times \frac{22}{44} = N_A \text{ atoms}$$

53. Answer (2)

$$\text{Mole of H}_2\text{SO}_4 = \frac{24.5}{98}$$

Mass of solution = 100 g

$$\text{Volume of solution} = \frac{100}{1.2} \text{ mL}$$

$$\text{Molarity} = \frac{\frac{24.5}{98}}{\frac{100}{1.2}} \times 1000$$

$$= \frac{24.5}{98} \times \frac{1.2}{100} \times 1000$$

Molarity = 3 M

54. Answer (4)

$$\text{Molality} = \frac{\left(\frac{6.022 \times 10^{23}}{6.022 \times 10^{23}} \right)}{1 \text{ kg}} = 1 \text{ m}$$

55. Answer (2)

0.1308 g of zinc is present in 100 g of enzyme

1 g of zinc is present in $\frac{100}{0.1308}$ g of enzyme

65.4 g of zinc is present in $\frac{100 \times 65.4}{0.1308}$ g of enzyme

= 50000 u

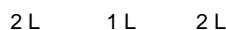
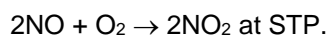
56. Answer (4)

$$\text{Mass \% of oxygen} = \frac{16 \times 3}{100} \times 100 = 48\%$$

57. Answer (1)

$N = M \times n\text{-factor}$

58. Answer (3)



59. Answer (2)

No. of P-atoms = 0.5 mol \times 4 \times N_A = 2 N_A

60. Answer (1)

$$\text{Molecules of H}_2 = \frac{4}{2} \times N_A = 2 N_A$$

$$\text{Molecules of N}_2 = \frac{28}{28} \times N_A = N_A$$

$$\text{Molecules of O}_2 = 0.5 N_A$$

$$\text{Molecules of CO}_2 = \frac{11}{44} \times N_A = \frac{N_A}{4}$$

61. Answer (4)

$$\text{Molarity of CaCl}_2 \text{ solution} = \frac{11.1 \times 1000}{111 \times 200} = 0.5$$

Molarity of chloride ions = 0.5 \times 2 = 1 M

62. Answer (4)

Zeros preceding to first non-zero digit are not significant.

63. Answer (4)

Atoms are neither created nor destroyed in a chemical reaction.

64. Answer (3)

When two different elements combine to form different compounds then law of multiple

proportions is applicable. CS_2 and CO_2 will not follow law of multiple proportions.

65. Answer (2)

$$\text{Mass of one molecule} = \frac{\text{Molar mass}}{N_A}$$

66. Answer (2)

$$\text{Mole of carbon} = \frac{80}{12} = 6.66$$

$$\text{Mole of hydrogen} = \frac{20}{1} = 20$$

$$\text{Mole ratio of C : H} = 6.66 : 20 = 1 : 3$$

$$\text{Empirical formula} = \text{CH}_3$$

67. Answer (2)

$$\text{Mole of methane} = \frac{2.24}{22.4} = 0.1 \text{ mol}$$

$$\begin{aligned} \text{Mole of atoms of methane} &= 0.1 \times 5 \times 6.02 \times 10^{23} \\ &= 3.01 \times 10^{23} \end{aligned}$$

68. Answer (1)

SI unit of mass is kg

69. Answer (2)

Gay Lussac's law of gaseous volume is applicable when reactants and products are in gas phase.

70. Answer (1)

The concentration term which does not contain volume term is independent of temperature.

71. Answer (3)

$$X_{\text{solute}} = \frac{n_{\text{solute}}}{n_{\text{solute}} + n_{\text{H}_2\text{O}}} = \frac{1}{1 + \frac{1000}{18}} = 0.018$$

72. Answer (4)

Average atomic mass

$$= \frac{(200 \times 90) + (202 \times 10)}{100} = 200.2 \text{ amu}$$

73. Answer (2)

$$\text{Volume} = \text{mass} \times \text{density} = 18 \times 1 = 18 \text{ ml}$$

74. Answer (2)

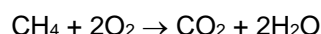
$$M_1 V_1 = M_2 V_2$$

$$0.2 \times V_1 = 0.1 \times 1000 \Rightarrow V_1 = 500 \text{ ml}$$

75. Answer (2)

$$\text{Number of electrons} = \frac{1.2}{16} \times 10 \times N_A = 0.75 N_A$$

76. Answer (2)



1 mole CH_4 requires 2 mole of O_2 for complete reaction.

$$\text{Volume of } \text{O}_2 \text{ required at STP} = 22.4 \times 2 = 44.8 \text{ L}$$

77. Answer (1)

$$\text{Mole of } \text{H}_2\text{O} \text{ in } 1 \text{ L } \text{H}_2\text{O} = \frac{1000}{18} = 55.55 \text{ mol}$$

$$\text{Molarity of } \text{H}_2\text{O} = 55.55 \text{ M}$$

78. Answer (4)

$$X_{\text{glucose}} = \frac{\frac{90}{180}}{\frac{90}{180} + \frac{180}{18}} = \frac{1}{21}$$

79. Answer (4)

$$\text{Number of Be atoms} = \frac{36}{9} = 4$$

80. Answer (4)

A given compound always contains exactly the same proportion of elements by weight. This is called law of definite proportions.

81. Answer (1)

In case of ionic compounds formula mass is preferred to molecular mass.

82. Answer (4)

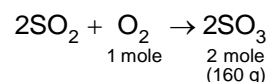
Molecular formula shows the exact number of different types of atoms present in a molecule of a compound.

83. Answer (2)

$$\text{Moles of } \text{NO}_x = \frac{30}{14 + 16x} = \frac{22.4}{22.4}$$

$$\therefore x = 1$$

84. Answer (2)



85. Answer (3)

$$\frac{n_{\text{O}_2}}{n_{\text{H}_2}} = \frac{\left(\frac{W}{32}\right)}{\left(\frac{W}{2}\right)} = \frac{1}{16}$$

SECTION-B

86. Answer (1)

Generally isotopes of an element have different relative abundance.

87. Answer (1)

$$1 \text{ amu} = 1.66 \times 10^{-27} \text{ kg}$$

88. Answer (2)

Molecular formula = $\text{CH}_3\text{COOH} = \text{C}_2\text{H}_4\text{O}_2$ Empirical formula = CH_2O

89. Answer (4)



$$\text{Mole of CaCO}_3 = \frac{50}{100} = 0.5$$

$$\text{Mole of HCl required} = 0.5 \times 2 = 1$$

$$\text{Mass of HCl required} = 36.5 \text{ g}$$

25 g HCl is present in 100 g of HCl

$$36.5 \text{ g HCl present in } \frac{100}{25} \times 36.5$$

$$= 36.5 \times 4 \text{ g}$$

90. Answer (3)

$$\text{Moles of oxygen atoms} = 0.1 \times 14 = 1.4 \text{ mol}$$

91. Answer (1)

Compound	Mass% of carbon
C_6H_6	$\frac{72}{78} \times 100 = 92.3\%$
C_2H_6	$\frac{24}{30} \times 100 = 80\%$
C_2H_4	$\frac{24}{28} \times 100 = 85.7\%$
C_3H_4	$\frac{36}{40} \times 100 = 90\%$

92. Answer (4)

$$\text{Mass of HNO}_3 \text{ in the solution} = 200 \times 3 \times 63 \times 10^{-3}$$

$$= 37.8 \text{ g}$$

70 g of HNO_3 is present in 100 g of conc. HNO_3

$$1 \text{ g of HNO}_3 \text{ is present in } \frac{100}{70}$$

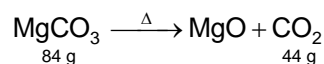
$$37.8 \text{ g of HNO}_3 \text{ is present in } \frac{100}{70} \times 37.8$$

$$= 54 \text{ g}$$

93. Answer (2)

$$\text{Molarity (M)} = \frac{\left(\frac{3.01 \times 10^{23}}{6.02 \times 10^{23}} \right)}{500 \times 10^{-3}} = 1 \text{ M}$$

94. Answer (3)

 \therefore 2.2 g CO_2 is formed by

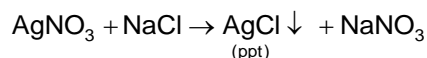
$$= \frac{84}{44} \times 2.2 = 4.2 \text{ g MgCO}_3$$

$$\therefore \text{Percentage purity} = \frac{4.2}{8.4} \times 100 = 50\%$$

95. Answer (1)

$$n_{\text{AgNO}_3} = \frac{17}{170} = 0.1 \text{ mol}$$

$$n_{\text{NaCl}} = \frac{5.85}{58.5} = 0.1 \text{ mol}$$



$$\therefore \text{Mass of AgCl formed} = 0.1 \times 143.5$$

$$= 14.35 \text{ g}$$

96. Answer (2)

$$^{\circ}\text{F} = \frac{9}{5}(^{\circ}\text{C}) + 32$$

$$150 = \frac{9}{5}(^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = (150 - 32) \times \frac{5}{9}$$

$$^{\circ}\text{C} = 65.56$$

97. Answer (4)



$$\text{Mole of HCl} = 200 \times 4 \times 10^{-3} = 8 \times 10^{-1} = 0.8$$

$$\text{Mole of CaCO}_3 \text{ reacted} = \frac{0.8}{2} = 0.4$$

$$\text{Mass of CaCO}_3 = 0.4 \times 100 = 40 \text{ g}$$

98. Answer (2)

$$1 \text{ L} = 1000 \text{ cm}^3$$

$$= (1000 \times 10^{-2} \times 10^{-2} \times 10^{-2}) \text{ m}^3$$

$$1 \text{ L} = 10^{-3} \text{ m}^3$$

$$20 \text{ L} = 20 \times 10^{-3} \text{ m}^3$$

$$= 2 \times 10^{-2} \text{ m}^3$$

99. Answer (4)

Multiple	Prefix
10^{-9}	Nano
10^{-15}	Femto
10^{-6}	Micro
10^{-12}	Pico

100. Answer (1)

- 3.004 has four significant figures

- 0.0041 has two significant figures

BOTANY

SECTION-A

101. Answer (2)

Microbodies are present in both plant and animal cells.

102. Answer (3)

Satellite chromosomes have secondary constriction while sub-metacentric chromosome has centromere slightly away from the middle of the chromosome.

103. Answer (2)

Chromatin contains DNA, some basic proteins called histones, some non-histone proteins and RNA.

104. Answer (1)

Nucleolus is the site of rRNA synthesis.

105. Answer (2)

Two centrioles are present in a centrosome.

106. Answer (1)

The basal body of cilia and flagella have centriole like arrangement of microtubules (9 + 0 arrangement)

107. Answer (2)

Cilia works like oars.

108. Answer (3)

Prokaryotic flagella is structurally different from eukaryotic flagella.

109. Answer (2)

Anton von Leeuwenhoek first saw a living cell.

110. Answer (3)

Ribosomes are non-membrane bound organelles.

111. Answer (1)

Mycoplasma are smallest cell of 0.3 μm in length.

The longest isolated single cell is the egg of ostrich.

Nerve cells are the longest cells.

112. Answer (2)

A network of filamentous proteinaceous structures present in the cytoplasm is collectively referred to as cytoskeleton.

113. Answer (3)

The cell theory states that

- All living organism are composed of cells and products of cells.
- All cells arise from pre-existing cells.

114. Answer (3)

The main constituent of fungal cell wall is chitin.

115. Answer (1)

PPLO is a prokaryotic cell.

116. Answer (3)

Those bacteria that take up the gram stain are gram positive and others that do not are called gram negative bacteria.

117. Answer (1)

Glycocalyx is a loose sheath called slime layer.

Glycocalyx may be thick and tough called capsule

118. Answer (4)

Mesosomes do not perform the function of photosynthesis.

119. Answer (2)

Chromatophores are found in cyanobacteria.

120. Answer (1)

The fimbriae are small bristle sprouting out of the cell and they are known to help attach the bacteria to rocks in streams and also to the host tissue.

121. Answer (2)

Several ribosomes may attach to a single m-RNA and form a chain called polysome.

122. Answer (2)

Inclusion bodies are non-membrane bounded structures that lie free in the cytoplasm.

123. Answer (3)

Cytoskeleton is present in eukaryotes and genetic material is organised into chromosomes in them.

124. Answer (1)

The lipid component of the membrane mainly consist of phosphoglycerides.

125. Answer (3)

Depending on the ease of extraction, membrane proteins can be classified as integral or peripheral.

126. Answer (1)

According to fluid mosaic model, the quasi fluid nature of the lipid enables lateral movement of proteins within overall bilayer. This ability to move within the membrane is measured as its fluidity.

127. Answer (2)

When molecule move across membrane along the concentration gradient it is called passive transport.

Active transport is movement of ion against concentration gradient.

Movement of water by diffusion is called osmosis.

128. Answer (3)

Regulation of transport of materials is the function of cell membrane.

129. Answer (2)

Middle lamella is mainly made up of calcium pectate.

130. Answer (4)

ER and Golgi body are the part of endomembrane system and their functions are coordinated.

131. Answer (1)

RER is involved in protein synthesis and secretion.

132. Answer (1)

Steroidal hormones are synthesized in SER.

133. Answer (3)

Centromere appear at terminal position and chromosome appear to have only one arm in telocentric chromosome.

134. Answer (4)

Microfilament help in pseudopodia formation.

135. Answer (2)

Golgi apparatus is related to the processing, packaging and transport of material.

SECTION-B

136. Answer (2)

The hydrolytic enzymes found in the isolated lysosome are optimally active at the acidic pH.

137. Answer (3)

The sap-vacuole is bound by a single membrane called tonoplast.

138. Answer (1)

Mitochondria are the site of aerobic respiration.

139. Answer (2)

Chloroplast - green coloured

Chromoplast - coloured other than green

Leucoplasts - colourless.

140. Answer (1)

Carotenoids are hydrophobic and are fat soluble pigments.

141. Answer (1)

Amyloplasts store carbohydrates, elaioplasts store oils and fats and aleuroplasts store proteins. Amyloplasts, elaioplasts, aleuroplasts are types of leucoplasts.

142. Answer (2)

The space limited by inner membrane of the chloroplast is called the stroma.

143. Answer (3)

In cilia and flagella 9 peripheral doublets and 2 microtubules are found in centre (9 + 2 arrangement)

144. Answer (2)

In *Amoeba*, the contractile vacuole is important for excretion.

145. Answer (3)

Plasmid is a small single circular chromosomal DNA present in addition to the genomic DNA

146. Answer (2)

Mesosomes are specialised differentiated form of cell membrane in prokaryotes.

147. Answer (2)

In prokaryotic cell, flagella helps in motility.

148. Answer (1)

Ribosome is found in cytoplasm but also within the cell organelle such as mitochondria and chloroplast.

149. Answer (4)

Animal cells have centrioles which are absent in almost all plant cells.

150. Answer (3)

A few chromosome have non-staining secondary constriction at a constant location. This gives the appearance of small fragment called satellite.

ZOOLOGY

SECTION-A

151. Answer (4)

When two or more organs perform a common function by their physical and/or chemical interaction, they together form an organ system e.g., digestive system, respiratory system.

152. Answer (4)

Tissues are broadly classified into four types

(i) Epithelial (ii) Connective (iii) Muscular and (iv) Neural

153. Answer (4)

Tight junctions provide a barrier which prevent leakage of substances or fluids across epithelial cells.

Adhering junctions aid to cement adjacent cells.

Gap junctions provide cytoplasmic connections to facilitate communication between adjacent cells.

Synaptic junctions help in transmission of information through chemicals.

154. Answer (1)

Bronchioles and fallopian tubes are lined with ciliated epithelium to move particles or mucus in a specific direction.

155. Answer (2)

Squamous epithelial cells closely fit like the tiles in a floor. Hence, it is also known as pavement epithelium.

156. Answer (3)

Microglial cells are mesodermal in origin. They are small in size with few feathery processes and help in phagocytosis.

157. Answer (4)

About more than 50% i.e. one half the volume of neural tissues of brain cells are neuroglial cells.

158. Answer (3)

Astrocytes help in repair of neural tissue and form blood brain barrier.

159. Answer (3)

Neurons are excitable cells which transmit nerve impulses.

160. Answer (1)

Oligodendrocytes are with a few protoplasmic processes and form myelin sheath in CNS.

161. Answer (4)

Ciliated columnar epithelium consists of columnar cells which have cilia on their free surfaces. This epithelium occurs in the inner surface of hollow organs like fallopian tube (oviducts) and most of the respiratory tract.

162. Answer (3)

Nissl's granules are large and irregular masses of ribosomes and RER.

Dendrites are short and branched processes arising from the cyton.

Axon is surrounded by a sheath called neurilemma.

163. Answer (1)

Myofibrils of non-striated muscles lack light and dark bands.

164. Answer (4)

Non-striated muscles occur in the posterior part of oesophagus, urinogenital tract, iris of eye etc.

165. Answer (2)

Osteoclasts are bone dissolving cells.

166. Answer (4)

Blood is a fluid connective tissue containing plasma, erythrocytes, leucocytes and platelets.

Osteocytes are bone cells.

167. Answer (1)

In bone, lacunae and lamellae are present.

168. Answer (2)

Compact bone is composed of many parallel, longitudinal column-like structures called Haversian system, cemented to each other. Haversian canals are connected to each other by Volkmann's canals.

169. Answer (3)

In hyaline cartilage, the matrix is apparently fibre-less and glass-like (hyaline) but translucent. It occurs in the larynx, nasal septum, tracheal rings and costal cartilage.

Yellow fibrocartilage/elastic cartilage forms the Eustachian tube, epiglottis and pinna of ear.

170. Answer (4)

Chondrocytes lie singly or in groups of two or four.

171. Answer (4)

Cartilage is not present in cranium.

Bone forms the endoskeleton of adult vertebrates.

172. Answer (1)

Each adipocyte contains a large droplet of fat that almost fills it.

173. Answer (2)

Plasma cells produce antibodies.

174. Answer (1)

Melatonin is a hormone.

175. Answer (1)

Skull bones and clavicle are membrane/investing/dermal bones.

Humerus, femur, vertebrae, ribs, girdle bones except clavicle are the examples of cartilaginous bone/endochondrial/replacing bones.

176. Answer (3)

If bone is put in HCl it gets decalcified and becomes soft and flexible but nothing happens to it, if it is put in KOH.

177. Answer (2)

Ligaments connect bone to bone while tendons join muscles to bones.

178. Answer (3)

Mast cells produce histamine which dilate the wall of blood vessels in inflammatory and allergic reaction.

179. Answer (2)

Brown fat is particularly found in new-born babies and hibernating mammals.

180. Answer (4)

In the dense regular connective tissue, the collagen fibres are present in rows between many parallel bundles of fibres. e.g. tendons and ligaments.

181. Answer (2)

Sprain is caused due to excessive pulling (stretching) of ligaments.

182. Answer (4)

Compound epithelium is made of more than one layer of cells.

183. Answer (4)

Exocrine glands secrete mucus, saliva, earwax, oil, milk, digestive enzymes and other cell products.

184. Answer (1)

All cells in epithelium are held together with little intercellular material and cell junctions.

185. Answer (2)

Goblet cells are unicellular glands which secrete mucus.

SECTION-B

186. Answer (4)

Ciliated epithelium is present in the inner surface of trachea.

187. Answer (4)

Squamous epithelium is made of a single thin layer of flattened cells with irregular boundaries.

188. Answer (1)

Hydra is an example of multicellular animal.

189. Answer (2)

In holocrine glands, the whole cell is destroyed while releasing the product.

190. Answer (1)

Transitional epithelium allows considerable expansion of the urinary bladder to accommodate urine, because stretching considerably flattens and broadens the cells of superficial and middle layers.

191. Answer (3)

Interdigitations are interfitting finger-like processes of the cell membranes of adjacent cells. They increase the surface area.

192. Answer (2)

Each segment of the myofibril from one Z line to the next, functions as a contractile unit and is called a sarcomere.

193. Answer (2)

The squamous epithelium is made of a single thin layer of flattened cells with irregular boundaries.

194. Answer (1)

The columnar epithelium is composed of a single layer of tall and slender cells.

195. Answer (1)

Unipolar neurons have only axons but no dendrites and are found in early embryos.

196. Answer (1)

Epithelium tissues are compactly packed with little intercellular matrix. Epithelium lie on the non-cellular layer called basement membrane.

197. Answer (3)

Squamous epithelium – Found in the wall of blood vessels, helps in filtration and diffusion of gases from blood to tissue.

198. Answer (2)

Haversian system is the feature of bone.

199. Answer (1)

Smooth muscle fibres taper at both end (fusiform) and non-striated. They are present in wall of hollow visceral organs like stomach, intestine, urinary bladder, *etc.*

200. Answer (4)

Loose connective tissue – Areolar and adipose

Fibroblast – Not found in blood.

Dense connective – Tendon and ligament are the example of dense regular connective tissues.

