04/02/2025

CODE-B

Aakash
Medical | IIT-JEE | Foundations

Corporate Office : AESL, 3rd Floor, Incuspaze Campus-2, Plot-13, Sector-18, Udyog Vihar, Gurugram, Haryana-122018

MOCK TEST for NEET-2025

MM : 720 | **Test - 3** | **Time : 3 Hrs. 20 Mins.**

Answers

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

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MM : 720 **Test - 3** **Time : 3 Hrs. 20 Mins.**

Answers & Solutions

PHYSICS

1. Answer (4)

We know, $[at^2] = [b]$

$\therefore \quad \left[\frac{a}{b}\right] = \left[\frac{1}{t^2}\right] = [T^{-2}]$

2. Answer (2)

From the graph it is clear that, at $t = 4$ s

$v = 0$

$0 = u - 10(4)$

$\therefore \quad u = 40$ m/s

3. Answer (4)

We know,

Range $R = u\sqrt{\frac{2h}{g}}$

$R = 100\sqrt{\frac{2(20)}{10}} = 100\sqrt{4}$

$\therefore \quad R = 200$ m

4. Answer (1)

We know,

ω = constant

$\therefore \quad \alpha = 0$

$\Rightarrow \quad a_t = 0 \qquad [\because a_t = r\alpha]$

Hence, $\frac{a_t}{a_c} = 0$

5. Answer (4)

We know, maximum acceleration of 2 kg block

$a_{max} = \mu g$

$a_{max} = (0.4)\ (10) = 4$ m/s^2

$\therefore \quad (a_{system})_{max} = 4$ m/s^2

Thus $F = (6)\ (4) = 24$ N

6. Answer (2)

For vertical circular motion

$T_{Top} = 0$ and $T_{bottom} = 6mg = 6\ (0.2)\ (10) = 12$ N

$v_{Bottom} = \sqrt{5gr} = \sqrt{5(10)(1)} = \sqrt{50}$ m/s

$v_{Top} = \sqrt{gr} = \sqrt{10}$ m/s

7. Answer (4)

We know,

$I = mr^2 = \frac{md^2}{4}$

8. Answer (3)

We know,

$\tau = \frac{d\vec{L}}{dt}$

$\therefore \quad \Delta\vec{L} = \int \vec{\tau} \cdot dt$

9. Answer (4)

Here $\frac{1}{2}mv^2 = \frac{1}{2}kx^2$

$\therefore \quad x = v\sqrt{\frac{m}{k}} = 10\sqrt{\frac{0.25}{100}} = \frac{10}{20} = 0.5$ m

$x = 50$ cm

10. Answer (2)

Potantial inside the spherical shell is constant

$= -\frac{GM}{a}$

11. Answer (4)

Mechanical strain is a unitless quantity.

12. Answer (2)

Pressure, $P = \frac{F_\perp}{A} = \frac{20\sin 30^\circ}{40\times10^{-4}} = \frac{1}{4}\times10^4$

P = 2500 Pa

13. Answer (1)

We know, thrust experienced

$F = v\left(\frac{dm}{dt}\right)$

$F = v\left(\frac{d}{dt}v\rho\right)$

$F = v^2(a\rho)$

$F = 2gha\rho$

14. Answer (3)

For adiabatic process, $\Delta Q = 0$

$W = -\Delta U$

$= -1\times\frac{5}{2}R(-200) = 500R$

15. Answer (4)

On comparing with equation of SHM, we get

$\omega^2 = \frac{1}{16} \Rightarrow \omega = \frac{1}{4}$ rad/s

Thus $v_0 = A\omega = 0.4\left(\frac{1}{4}\right) = 0.1$ m/s

16. Answer (1)

$f_0 = \frac{1}{2L}\sqrt{\frac{T}{\mu}} = \frac{1}{2(2)}\sqrt{\frac{100\times2}{20\times10^{-3}}}$

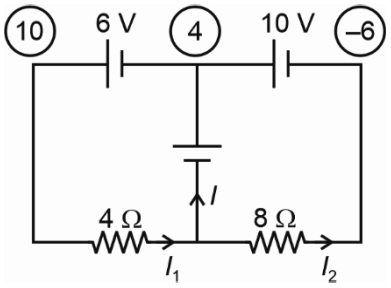
$f_0 = \frac{1}{4}\sqrt{10^4} = \frac{100}{4}$

f_0 = 25 Hz

17. Answer (1)

The given circuit can be modified as

(With potential of points encircled)



Here $I = I_1 - I_2 = \frac{10-0}{4} - \frac{0-(-6)}{8}$

$= \frac{10}{4} - \frac{3}{4} = \frac{7}{4}$ A

18. Answer (1)

$W = Fdx\cos90^\circ = 0$

$\therefore$ K.E. = constant

Hence, speed remains same but direction of velocity keeps changing. Thus, momentum too keeps changing.

19. Answer (2)

We know,

$\mu_r = 1 + \chi_m$

$\mu_r = 1 + 1000 = 1001$

20. Answer (4)

To convert a galvanometer into ammeter a low resistance is connected in parallel with galvanometer.

21. Answer (2)

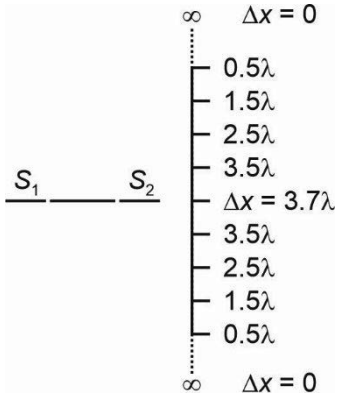
We know, power factor = $\cos\phi = \frac{R}{Z}$

For $L-R$ circuit, $Z = \sqrt{X_L^2 + R^2}$

$\therefore \cos\phi = \frac{R}{\sqrt{(2\pi fL)^2 + R^2}}$

22. Answer (2)

Respective path difference at various points are shown below.



$\therefore$ Number of minima = 4 + 4 = 8

23. Answer (3)

We know,

B.E = $\Delta m\,(c^2)$

$\therefore$ B.E. $\propto \Delta m$ i.e., mass defect

Also higher the value of B.E./A more stable is the nucleus.

24. Answer (2)

From the graph its clear that

$90° - c = 50° \Rightarrow c = 90° - 50° = 40°$

Or $180° - 2c = 100$

$\Rightarrow \quad 2c = 80$

$\therefore \quad c = 40°$

25. Answer (2)

$$\lambda_{min} = \frac{hc}{E} = \frac{hc}{eV}$$

$$\lambda_{min} = \frac{12400}{40 \times 10^3}\ \text{Å}$$

$$\lambda_{min} = 0.31\ \text{Å}$$

26. Answer (3)

$$\frac{v^2}{rg} = \frac{\left[LT^{-1}\right]^2}{\left[L \times LT^{-2}\right]}$$

$= [L^0T^0M^0]$

27. Answer (3)

$$I_{max} = \left(\sqrt{I} + \sqrt{4I}\right)^2$$

$= 9I$

$$I_{min} = \left(\sqrt{4I} - \sqrt{I}\right)^2$$

$= I$

$$\frac{I_{max} - I_{min}}{I_{max}} = \frac{9I - I}{9I}$$

$$= \frac{8}{9}$$

28. Answer (3)

$$I = \frac{M}{\text{Volume}}$$

$$\therefore \quad \text{Unit of } I \text{ is} = \frac{Am^2}{m^3}$$

$= A/m$

29. Answer (3)

Frequency of electric field and magnetic field in the EM waves will be same.

30. Answer (4)

$$C = \frac{A\varepsilon_0}{d}$$

Capacitance of the plate depends on surface area of the plate, medium between the plates and distance between the plates.

31. Answer (1)

For Normal adjustment:

$$M_\infty = \frac{f_o}{f_e}$$

$$10 = \frac{f_o}{f_e}$$

$L_\infty = f_o + f_e$

$110 = 10f_e + f_e$

$f_e = 10$ cm

For least distance of distinct vision

$$M_D = \frac{f_o}{f_e}\left(1 + \frac{f_e}{D}\right)$$

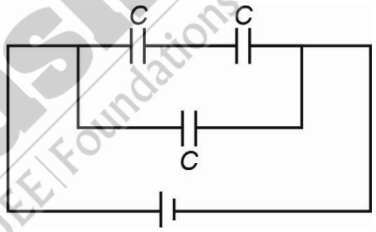
$$= 10\left(1 + \frac{10}{25}\right)$$

$$= \frac{10 \times 35}{25}$$

$$= 14$$

32. Answer (1)

Equivalent circuit diagram will be



$$C_{eff} = \frac{3\varepsilon_0 A}{2d}$$

$$= \frac{3}{2} \times 10 = 15\ \mu F$$

33. Answer (4)

$$P = \frac{V^2}{R_{eff}}$$

$$\Rightarrow \quad 300 = \frac{(20)^2}{(4R/4 + R)}$$

On solving $R = 2\ \Omega$

34. Answer (1)

$M = 0.8$ H

$\therefore$ Average induced emf in secondary

$$|e| = \frac{M.\Delta I}{\Delta t}$$

$$= 0.8 \times \frac{0.6}{0.1}$$

$= 4.8$ V

35. Answer (3)

Using Brewster's law

$\tan \theta_p = \mu$

$\Rightarrow$ Hence, $\mu = \tan 60°$

$= \sqrt{3} = 1.732$

36. Answer (4)

Focal length of a lens

$$\frac{1}{f} = (\mu - 1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$$

On increasing value of λ value of μ decreases.

37. Answer (1)

$$\lambda_0, \text{sodium} = \frac{12400}{2.0} = 6200 \text{ Å}$$

$$\lambda_0, \text{copper} = \frac{12400}{4.0} = 3100 \text{ Å}$$

Hence, for light of wavelength 4600 Å, sodium is suitable.

38. Answer (2)

$$E_n = -Rch\frac{z^2}{n^2}$$

For He^+ in ground state

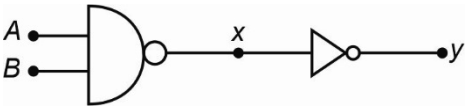
$$E_1 = -RCH\frac{2^2}{1^1} = -54.4$$

$\Rightarrow$ $RCH = 13.6$

$\therefore$ For Li^{++} in first excited state ($n = 2$)

$$E = -13.6 \times \frac{3^2}{2^2} = -30.6 \text{ eV}$$

39. Answer (4)



$X = \overline{AB}$

$y = \bar{X} = \overline{\overline{AB}}$

$= AB$

40. Answer (1)

$y = y_1 + y_2$

$= (A + \bar{A}) + A \cdot \bar{A}$

$= 1 + 0$

$= 1$

41. Answer (4)

Nuclear reactions obey the law of conservation of mass-energy, charge and momentum.

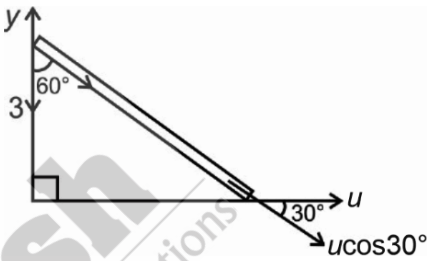
42. Answer (3)

$$\frac{5\lambda}{2} = 10$$

$\lambda = 4$ m

So $v = f\lambda \Rightarrow f = \frac{v}{\lambda} = \frac{20}{4} = 5$ Hz.

43. Answer (2)



$3\cos 60° = v\cos 30°$

$$3 \times \frac{1}{2} = v \times \frac{\sqrt{3}}{2}$$

$v = \sqrt{3}$ m/s

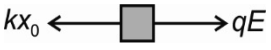
44. Answer (2)

- For open pipe, $f_0 = \frac{v}{2L}$
- For closed pipe, $f_0 = \frac{v}{4L}$

The first overtone in an open organ pipe have frequency $f = \frac{v}{L}$.

45. Answer (4)

$T = 2\pi\sqrt{\frac{m}{k}}$ remains unchanged



Mean position shifts rightward.

CHEMISTRY

46. Answer (4)

Mass of urea = 15 g

Mass of water = 85 g

$$m = \frac{\frac{15}{60}}{\frac{85}{1000}} = \frac{15}{60} \times \frac{1000}{85} = 2.94 \text{ m}$$

47. Answer (2)

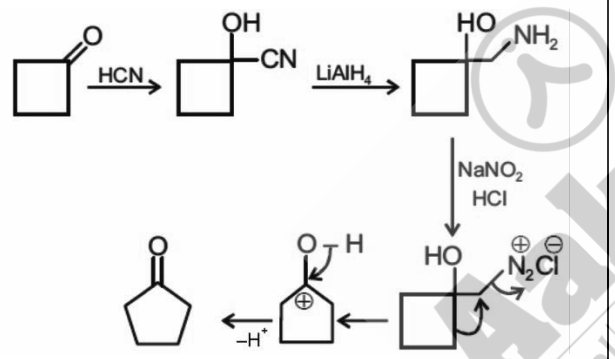
Higher is the negative electron gain enthalpy, higher is the electron affinity.

Electron affinity: Cl > F > S > O.

48. Answer (4)

Compounds which are cyclic, planar and follow Huckel's rule are aromatic in nature.

49. Answer (3)



50. Answer (1)

$K_P = K_C (RT)^{\Delta n_g}$

for $H_2(g) + Cl_2(g) \rightleftharpoons 2HCl(g)$

$\Delta n_g = 0$

$\therefore K_P = K_C$

51. Answer (3)

Q = I × t = 2 × 5 × 60 × 60 = 36000 C.

$Sn^{n+} + ne^- \rightarrow Sn$

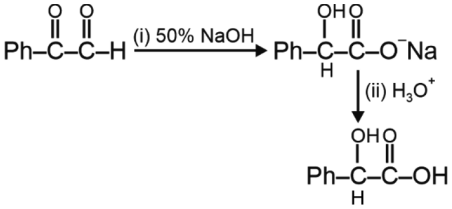
n × 96500 C 119 g $\therefore$ n = 2

36000 C 22.2 g

52. Answer (1)

Sodium acetate is a salt of weak acid and strong base.

53. Answer (2)



54. Answer (2)

Mn can show variable oxidation states ranges from +2 to +7

55. Answer (3)

For 1st order reaction,

$$k = \frac{2.303}{t} \log \frac{[A]_0}{[A]}$$

for 99% completion,

$$k = \frac{2.303}{32} \log \frac{100}{1}$$

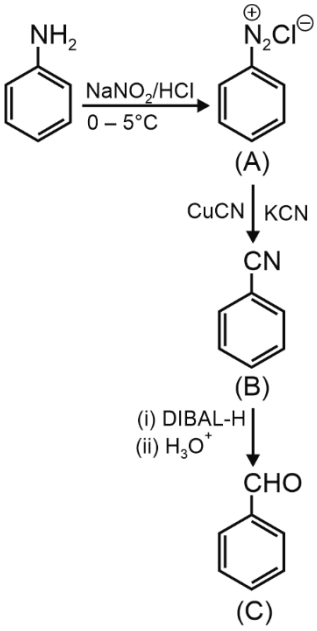
$$= \frac{2.303}{32} \times 2 = 0.144$$

for 99.9% completion,

$$0.144 = \frac{2.303}{t} \log \frac{100}{0.1}$$

$$t = \frac{2.303}{0.144} \times 3 = 47.9 \simeq 48 \text{ min}$$

56. Answer (3)



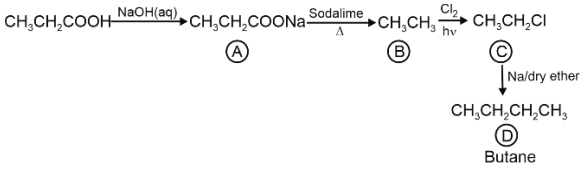
57. Answer (4)

The basic character of hydroxides of lanthanoids decreases with decrease in cationic size.

58. Answer (2)

Field strength : $CO > CN^- > en$

59. Answer (1)



60. Answer (1)

Extensive properties (Heat capacity) depends upon the size of matter present in the system.

61. Answer (4)

Reverse osmosis occurs when pressure more than osmotic pressure is applied to the solution side.

62. Answer (3)

Bond Order

$O_2^- = 1.5$

$N_2^+ = 2.5$

$NO^+ = 3$

NO = 2.5

63. Answer (4)

Platinised asbestos is used as catalyst in Ostwald's process to manufacture HNO_3.

64. Answer (1)

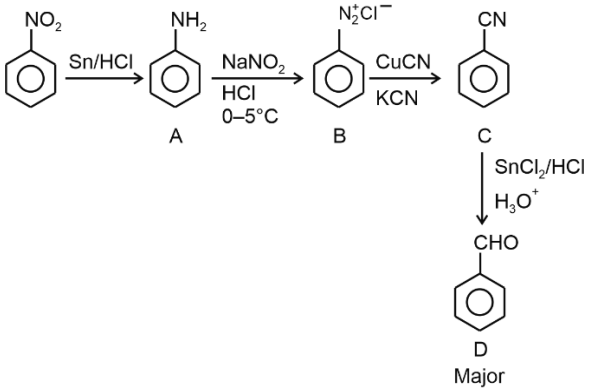
The EAN of $V(CO)_6$ is 35 and to get stable noble gas configuration it can take one electron.

65. Answer (3)

$$W = -2.303\ nRT\ \log\ \frac{V_f}{V_i}$$

(For isothermal expansion of ideal gas).

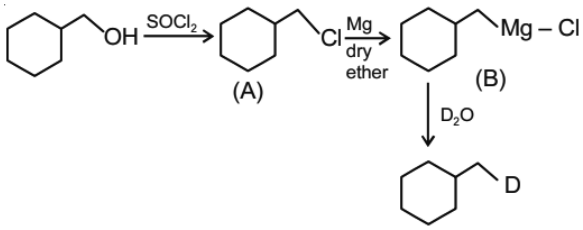
66. Answer (2)



67. Answer (4)

Methoxy group and –OH group attached to benzene ring are activating group.

68. Answer (2)



69. Answer (2)

- Keratin and myosin are fibrous proteins
- Insulin and albumins are globular proteins.

70. Answer (4)

Covalent character increases with increase in anionic size.

71. Answer (3)

$$8MnO_4^- + 3S_2O_3^{2-} + H_2O \rightarrow 8MnO_2 + 6SO_4^{2-} + 2\overline{O}H$$

72. Answer (2)

Cellulose is a polymer of β-D-glucose units.

73. Answer (3)

$AlCl_3$ dimerises through halogen bridging (eg. Al_2Cl_6) to complete its octet by accepting electron from halogen.

74. Answer (2)

$$\underset{100\ g}{CaCO_3} \longrightarrow CaO + \underset{44\ g}{CO_2}$$

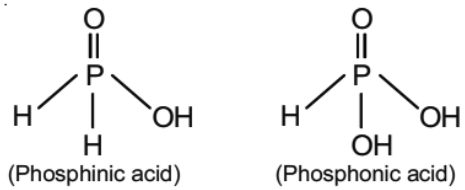
20 g of $CaCO_3$ produces $\frac{44}{100} \times 20$ g CO_2

i.e. $\frac{44}{100} \times 20$ g CO_2

Actual mass of $CO_2 = \frac{44}{5} \times \frac{75}{100} = \frac{33}{5}$ g

$\therefore$ Moles of CO_2 produced $= \frac{33}{5} \times \frac{1}{44} = \frac{3}{20}$

75. Answer (3)



76. Answer (4)

$\underset{1}{sp^2}\ \underset{2}{sp^2}\ \underset{3}{sp^2}\ \underset{4}{sp^2}\ \underset{5}{sp^2}\ \underset{6}{sp^2}$

$CH_2 = CH–NH–CH=CH–NH_2$

1 2 3 4 5 6

77. Answer (1)

Rate of S_N1 reaction $\propto$ stability of carbocation.

78. Answer (1)

Ceric ammonium nitrate is used to test alcohols.

79. Answer (4)

Uracil is present in RNA

80. Answer (1)

In pyrosilicate two units share one oxygen atom.

81. Answer (4)

For l = 2,

Orbital angular momentum = $\hbar\sqrt{l(l+1)}$

$= \hbar\sqrt{2(2+1)}$

$= \sqrt{6}\,\hbar$

For l = 3,

Orbital angular momentum = $\hbar\sqrt{3(3+1)}$

$= \hbar\sqrt{12}$

$\therefore$ Ratio = $\sqrt{6} : \sqrt{12} = 1 : \sqrt{2}$

82. Answer (4)

$6Fe^{2+} + Cr_2O_7^{2-} + 14H^+ \rightarrow 6Fe^{3+} + 2Cr^{3+} + 7H_2O$

$\because$ 1 mol $Cr_2O_7^{2-}$ can oxidise 6 mol Fe^{2+} ions

$\therefore$ 2 mol $Cr_2O_7^{2-}$ can oxidise 12 mol Fe^{2+} ions

83. Answer (3)

$Fe^{3+} + SCN^- \rightarrow [Fe(SCN)]^{2+}$

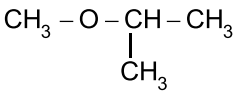
84. Answer (4)

$$\frac{w_{H_2O}}{w_{Na_2SO_4}} = \frac{55.9}{44.1} = \frac{x}{142}$$

$\therefore$ x = 180 g

$\Rightarrow$ 10 mole water

85. Answer (4)



IUPAC name is 2-methoxypropane.

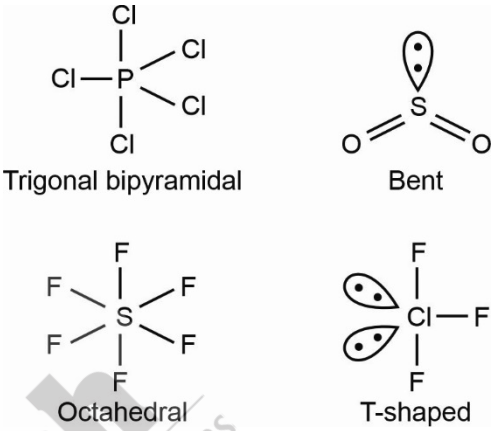
86. Answer (2)

On monochlorination 2 compounds will have chiral centres, hence 4 optically active compounds.

87. Answer (3)

Pressure does not have any significant effect on solubility of solids in liquids because solids and liquids are highly incompressible.

88. Answer (2)



89. Answer (3)

(Ions)	(Magnetic moment in BM)
Sc^{3+}	0
Ti^{3+}	1.73
Ti^{2+}	2.84
V^{2+}	3.87

90. Answer (3)

Among isomeric alkanes, with the increase in number of branched chains, the molecule attains the shape of a sphere. This results in smaller area of contact and therefore weak intermolecular forces between spherical molecules.

BOTANY

91. Answer (2)

In chloroplast, chlorophyll pigments are located within the thylakoid membrane.

92. Answer (2)

Ciliated protozoans are actively moving aquatic organisms because of presence of thousands of cilia.

It is exemplified by *Paramoecium* and it has two types of nuclei.

93. Answer (4)

Equisetum belongs to class Sphenopsida.

Adiantum belongs to class Pteropsida.

94. Answer (2)

Females afflicted with Turner's syndrome (45 with XO) are sterile as ovaries are rudimentary. Klinefelter's syndrome is caused due to the presence of an additional copy of X-chromosome resulting into a karyotype of 47, XXY.

Failure of segregation of chromatids during cell division cycle results in the gain or loss of a chromosome(s), called aneuploidy. Failure of cytokinesis after telophase stage of cell division results in an increase in a whole set of chromosomes in an organism and, this phenomenon is known as polyploidy.

Individuals afflicted with Down's syndrome exhibits many loops on finger tips. Gynaecomastia is found in individuals afflicted with Klinefelter's syndrome.

95. Answer (4)

Poales and Sapindales represent order of wheat and mango, respectively.

Hominidae and Muscidae represents family of man and housefly, respectively. Primata and Diptera represents orders of man and housefly, respectively. Insecta and Dicotyledonae represents class of housefly and mango, respectively.

96. Answer (2)

Colchicine is obtained from *Colchicum autumnale* and it belongs to Liliaceae family.

Flowers of *Colchicum* plant have perianth in valvate aestivation and ovary is superior.

97. Answer (1)

In parietal placentation, the ovules develop on the inner wall of the ovary or on the peripheral part. Ovary is one-chambered but it becomes two-chambered due to the formation of the false septum *e.g.,* mustard and *Argemone*. Pea shows marginal placentation. *Dianthus* and *Primrose* show free central placentation.

98. Answer (2)

Sclereids are commonly found in the fruit walls of nuts.

Collenchyma provides mechanical support to the growing parts of plants.

Vascular tissues are complex tissue and it is made up of a different types of cells.

Meristematic tissue has actively dividing cells.

99. Answer (4)

Ribosomes are composed of ribonucleic acid (RNA) and proteins and are not bounded by any membrane.

100. Answer (2)

Both chloroplast and mitochondria contain their own DNA.

101. Answer (2)

In liverworts, gametophyte is the main plant body.

Asexual reproduction in liverworts takes place by fragmentation of thalli, or by the formation of specialised structures called gemmae. The sporophyte is differentiated into foot, seta and capsule. After meiosis, spores are produced within the capsule. These spores germinate to form free-living gametophytes.

102. Answer (2)

For long DNA molecules, since the two strands of DNA cannot be separated in its entire length due to very high energy requirement the replication occur within a small opening of DNA helix.

103. Answer (2)

When two arms of chromosomes are not identical in length, these are said to be heterobrachial chromosomes. Sub-metacentric and acrocentric chromosomes are heterobrachial.

104. Answer (3)

RNA polymerase facilitates the opening of DNA helix during transcription.

105. Answer (2)

During S-phase, DNA replication begins in nucleus and centrioles duplicate in the cytoplasm.

106. Answer (2)

Root cap is multicellular and is made up of parenchymatous cells.

107. Answer (2)

All enzymes involved in TCA cycle are soluble in mitochondrial matrix, except succinate dehydrogenase (SDH) which is found attached to inner mitochondrial membrane.

Succinate dehydrogenase catalyses the formation of fumaric acid from succinic acid. During this reaction, FAD^+ molecules is reduced to $FADH_2$.

108. Answer (4)

In telophase, nuclear envelope develops around the chromatin clusters at each pole forming two daughter nuclei.

Condensation of chromatin material occurs in prophase.

During metaphase, chromosomes are thickest and shortest and hence it is easy to study their morphology. Anaphase is best stage to study shape of chromosome.

109. Answer (3)

Each centrosome radiates out microtubules called aster. The two asters together with spindle fibres form mitotic apparatus.

110. Answer (1)

In competition and amensalism, none of the interacting species are benefitted.

111. Answer (2)

Dikaryophase is found in members of Basidiomycetes and Ascomycetes. *Rhizopus* is the member of Zygomycetes.

112. Answer (3)

The genotype of progeny is PPQq, so the chances of its occurrence is $\frac{1}{4}\times\frac{1}{2}$ = 1/8.

113. Answer (2)

Myotonic dystrophy is an autosomal dominant disorder.

114. Answer (4)

In sickle cell anaemia the mutant haemoglobin molecules of affected individual undergoes polymerisation under low oxygen tension causing change in the shape of RBC from biconcave disc to elongated sickle cell structure.

115. Answer (2)

Two nucleotides are linked through 3′ – 5′ phosphodiester linkage to form a dinucleotide.

116. Answer (3)

The steps in the DNA fingerprinting are as follows-

Isolation of DNA

↓

Digestion of DNA by restriction endonucleases

↓

Separation of DNA fragment by electrophoresis

↓

Blotting

↓

Hybridisation using labelled VNTR probe

↓

Detection of hybridised DNA fragments by autoradiography

117. Answer (2)

Dragonflies and ladybird beetle are used to control mosquitoes and aphids respectively. Baculoviruses are pathogens that attack insects and other arthropods. *Bacillus thuringiensis* is effective against butterfly caterpillar.

118. Answer (1)

David Tilman's long term ecosystem experiments using outdoor plot showed that in his experiments, increased diversity contributed to higher productivity.

119. Answer (3)

Thylacine is not a subspecies of tiger.

120. Answer (4)

Of the incident solar radiation less than 50% of it is photosynthetically active radiation (PAR). Plants capture only 2-10% of the PAR. Each trophic level has a certain mass of living material at a particular time is called standing crop.

121. Answer (2)

Dioecy promotes xenogamy in plants.

122. Answer (3)

Round seed and inflated pod of pea plant are dominant traits. Therefore, they express in both homozygous as well as in heterozygous conditions.

123. Answer (3)

124. Answer (3)

Pericycle consists of thick walled parenchymatous cells in dicot root.

125. Answer (3)

Pollen grains are surrounded by mucilagenous covering in flowers that are pollinated by water.

Flowers pollinated by abiotic agent do not produce nectar and are not very colourful.

126. Answer (3)

Mesosome in bacteria is involved in DNA replication and distribution to daughter cell.

127. Answer (3)

Dark reaction being enzymatic are temperature controlled. For every CO_2 molecule entering into Calvin cycle, 3 molecules of ATP and two molecules of NADPH are required.

128. Answer (2)

Meiosis reduces the chromosomes number to half in the gametes, so that fertilisation restores the original diploid number in the zygote.

129. Answer (3)

Ethylene promotes root growth and root hair formation.

130. Answer (3)

Generative cell floats in the cytoplasm of vegetative cell. It divides by mitosis to form two male gametes.

It is spindle shaped with dense cytoplasm and a nucleus.

131. Answer (1)

In ETS, cytochrome *c* oxidase complex containing cytochrome *a* and a_3 and two copper centres is referred as complex IV.

132. Answer (2)

Gibberellins are composed of terpenes.

133. Answer (2)

log S = log C + Z log A represents species – area relationship on log scale.

134. Answer (4)

Equisetum is a pteridophyte. It is homosporous and produces motile male gametes. Its thalloid gametophyte is prothallus.

135. Answer (1)

Flocs are masses of aerobic bacteria associated with fungal filaments.

ZOOLOGY

136. Answer (2)

Compound epithelium is made of more than one layer of cells and thus has a limited role in secretion and absorption. Its main function is to provide protection against chemical and mechanical stresses.

137. Answer (1)

Leydig cells or interstitial cells which are present in interstitial spaces of testes produce a group of hormones called androgens, mainly testosterone.

138. Answer (2)

Tendons are dense regular connective tissues that attach skeletal muscles to bones. In dense regular connective tissue, orientation of fibres show a regular pattern.

139. Answer (3)

Element	% Weight of Earth's crust	% Weight of Human body
Hydrogen (H)	0.14	0.5
Carbon (C)	0.03	18.5
Oxygen (O)	46.6	65.0
Nitrogen (N)	very little	3.3
Sulphur (S)	0.03	0.3
Sodium (Na)	2.8	0.2
Calcium (Ca)	3.6	1.5
Magnesium (Mg)	2.1	0.1
Silicon (Si)	27.7	negligible

140. Answer (3)

Liver secretes bile that is stored in the gall bladder. Bile helps in emulsification of fat.

141. Answer (2)

JGA is a special sensitive region formed by cellular modifications of DCT and the afferent arteriole at the location of their contact.

142. Answer (3)

The lymphatic system of frogs consists of lymph, lymph channels and lymph nodes. A triangular structure called sinus venosus joins the right atrium of the heart.

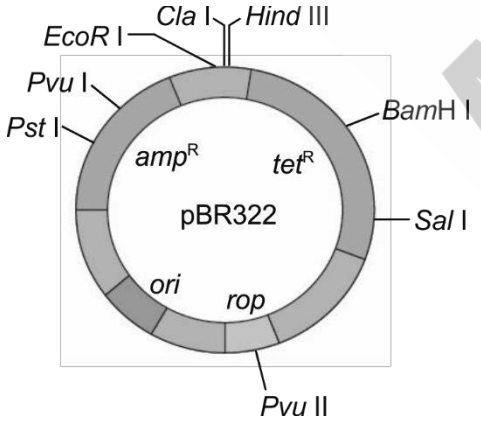
143. Answer (1)

Contraceptive methods	Examples
IUD	LNG-20
Vault	Barrier contraceptive
Chemical contraceptive	Foam
Oral contraceptive	Saheli

144. Answer (2)

Morphine is a secondary metabolite that is placed under the category of alkaloids. Gums, cellulose and rubber are polymeric substances.

145. Answer (3)



146. Answer (4)

In humans, in the tissues, low pO_2,high pCO_2, high H^+ concentration, high temperature and low pH favour the dissociation of oxygen from the oxyhaemoglobin under normal physiological conditions.

147. Answer (3)

Disturbance in genetic equilibrium or Hardy-Weinberg equilibrium *i.e.*, change of frequency of alleles in a population would lead to evolution.

148. Answer (2)

SA node is present in the right upper corner of the right atrium.

149. Answer (3)

In chordates, CNS is dorsal, hollow and single.

150. Answer (3)

The normal blood pressure in humans is 120/80 mm Hg *i.e.*, systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg.

151. Answer (4)

A ring of 6-8 blind tubules called hepatic or gastric caeca is present at the junction of foregut and midgut, which secrete digestive juice.

152. Answer (3)

Ichthyosaurs probably evolved 200 mya. About 65 mya, the dinosaurs suddenly disappeared from the Earth. Sea weeds and few plants existed probably around 320 mya.

153. Answer (2)

Agriculture came around 10,000 years back. Two mya, *Australopithecines* probably lived in East African grasslands.

154. Answer (1)

The diffusion membrane is made of two cellular and one acellular layer. The basement substance present in between the thin squamous epithelium of alveoli and the endothelium of alveolar capillaries is an acellular layer.

155. Answer (3)

Epinephrine secreted from the adrenal medulla is an amino-acid derivative hormone.

156. Answer (4)

Sertoli cells are present inside the seminiferous tubules and provide nutrition to the germ cells.

157. Answer (3)

Cannabis sativa → Cannabinoids → Effect on cardiovascular system

Erythroxylum coca → Cocaine → Sense of euphoria

158. Answer (4)

Joints are essential for all types of movements involving the bony parts of the body. Locomotory movements are no exception to this. Force generated by the muscles is used to carry out movement through joints, where joint acts as a fulcrum.

159. Answer (2)

Thermostable DNA polymerase or *Taq* polymerase is isolated from the bacterium *Thermus aquaticus*.

160. Answer (3)

Osteoporosis is an age-related disorder characterised by decreased bone mass and increased chances of fractures. Decreased levels of estrogen is a common cause.

161. Answer (3)

Zoological name		Common name
Chelone	–	Turtle
Calotes	–	Garden lizard
Clarias	–	Magur
Columba	–	Pigeon

162. Answer (2)

The inner parts of cerebral hemispheres and a group of associated deep structures like amygdala, hippocampus, *etc*., form a complex structure called the limbic lobe or limbic system.

163. Answer (3)

Electrical synapses are rare in our body.

164. Answer (1)

The PNS comprises of all the nerves of the body associated with the CNS. The PNS is divided into somatic neural system and autonomic neural system. The somatic neural system relays impulses from the CNS to skeletal muscles while the autonomic neural system transmits impulses from the CNS to the involuntary organs and smooth muscles of the body.

165. Answer (3)

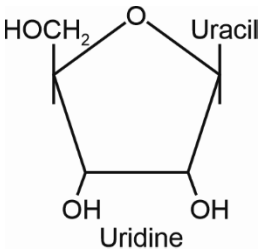
JOINT	LOCATION
Ball and socket joint	Between humerus and pectoral girdle
Pivot joint	Between atlas and axis
Gliding joint	Between carpals
Saddle joint	Between carpal and metacarpal of thumb

166. Answer (2)

Three major regions make up the brain stem *i.e*., midbrain, pons and medulla oblongata.

167. Answer (2)

Uridylic acid contains uracil, ribose sugar and phosphate group.



168. Answer (3)

Secretin acts on the exocrine pancreas and stimulates the secretion of water and bicarbonate ions. The secretion of pancreatic enzymes is stimulated by CCK.

169. Answer (3)

Volume of air that remains in the lungs even after a forcible expiration is residual volume.

FRC = ERV + RV

170. Answer (2)

Androgens play a major stimulatory role in the process of spermatogenesis.

171. Answer (4)

If we can introduce ADA gene into cells at early embryonic stages, then it could be a permanent cure for ADA deficiency.

172. Answer (3)

White muscle fibres possess less quantity of myoglobin. Number of mitochondria are also few in them. They depend on anaerobic process for energy.

173. Answer (1)

The testes are situated outside the abdominal cavity within a pouch called scrotum.

The scrotum helps in maintaining the low temperature of the testes (2-2.5°C lower than the normal internal body temperature).


Aakash
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