## FOR 2017 ASPIRANTS
### MEDICAL AITS TEST-06
#### DATE: 11/03/2017

### ANSWER KEY

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</table>
1. Magnetic moment vectors of three bar magnets represent three side of a triangle taken in order.

2. Due to symmetry of the circuit, field will be zero at centre.

4. 
   \[ B = \frac{\mu_0 I}{2R} \times \text{number of turns} \]; so \( B \propto \frac{I}{R} \)
   
   Hence \( B_2 = \frac{I}{R} \), \( B_2 = \frac{2I}{2R} = 1 \).

5. 
   \[ B = 3 \left[ \frac{\mu_0 i}{4\pi r} (\sin 60^\circ + \sin 60^\circ) \right] \]
   
   \[ = \frac{9\mu_0 i}{2\pi a} \]

6. 
   \( f \propto \sqrt{B_H} \); \( \frac{f_2}{f_1} = \frac{B_{H_2}}{B_{H_1}} \)
   
   \[ \Rightarrow B_{H_2} = \left( \frac{f_2}{f_1} \right)^2 B_{H_1} = 32 \left( \frac{1}{0.5} \right)^2 = 128 \text{ T} \]

7. 

8. Work done by magnetic force is zero, hence kinetic energy doesn't change.

9. After collision velocity becomes \( v/2 \) so radius becomes \( a/2 \) and hence diameter is \( a \) and \( O \) will be the centre. So particle strikes at point \( N \).

10. 
    \[ B_b = \frac{\mu_0 n I}{2r}, \quad B_{b_1} = \frac{n_1}{n_2} \left( \frac{r_2}{r_1} \right), \quad n_1 = 1, n_2 = 2, \quad r_2 = \frac{r_1}{2} \]
    
    So, \( B_{b_1} = \frac{4}{1} \)

11. 
    Magnitude of torque is given by \( |\vec{T}| = MB\sin \theta \)
    
    Here, \( M = NiA = (1)(1.0)(\pi)(0.2)^2 = (0.04\pi) \text{ A-m}^2 \)
    
    and \( \theta = \text{angle between} \ M \text{ and} \ B = 90^\circ \)
    
    \[ \Rightarrow |\vec{T}| = (0.04\pi)(2)\sin 90^\circ = 0.08 \pi \text{ N-m} \]

12. 
    \[ e = L \frac{dl}{dt}; \quad 20V = L \frac{5}{0.1} \quad \Rightarrow L = \frac{2}{5} = 0.4 \text{ H} \]

13. 

\[ E = - \frac{d\phi}{dt} = \frac{d}{dt} (6t^2 - 5t + 1) = -12t + 5 \]

At \( t = 0.25 \) s, \( E = -12 \times 0.25 + 5 = -3 + 5 = 2 \) V

\[ I = \frac{E}{R} = \frac{2}{10} = 0.2 \text{ A.} \]

14. [1]

\[ q = CV = C(Bvl) = 80 \mu \text{C} = \text{constant} \]

Magnetic force on electrons of the conducting rod \( PQ \) is towards \( Q \).

Therefore, \( A \) is positively charged and \( B \) is negatively charged.

15. [1]

**Magnetic field due to the larger coil at its centre is**

\[ B = \frac{\mu_0 I}{2r_1} \]

Flux through the inner coil is \( \phi = B \times \pi r_2^2 = \frac{\mu_0 I}{2r_1} \times \pi r_2^2 \)

But \( \phi = MI \).

Therefore \( M = \frac{\mu_0 \pi r_2^2}{2r_1} \)

16. [3]
17. [3]
18. [1]
19. [3]
20. [1]
21. [1]
22. [1]
23. [2]
24. [2]
25. [3]
26. [1]
27. [3]

Using method of phasors, \( \tan \phi = \frac{I_c}{I_1} = \frac{4}{3} \)

\[ \phi = 53^0 \]

so phase difference between \( I \) and \( I_1 \) is \( 53^0 \)

\[ \therefore \]

28. [1]

\[ \frac{I_o}{I_s} = \frac{n_r}{n_p} = \frac{4}{5} \]

\[ \therefore \]

29. [3]

At steady state the given circuit will be

\[ \therefore V_{AB} = (6 \times 2) + (3 \times 4) = 24 \text{ V} \]

\[ \therefore \]

30. [4]

\[ V = V_0 \sin \omega t, \quad V = 100 \sin 50 \pi t, \quad V_{\text{rms}} = \frac{V_0}{\sqrt{2}} = \frac{100}{\sqrt{2}} \quad \text{V, } f = 25 \text{ Hz} \]
31. [3]
   \[ I = \frac{5}{4} = 1.25 \text{A} \]
   \[ \therefore \text{[3]} \]

32. [1]
   \[ Z = \frac{E_{\text{rms}}}{I_{\text{rms}}} = \frac{E_0}{I_0} = \frac{220}{10} = 22 \text{ohm} \]
   \[ \therefore \text{[1]} \]

33. [2]
   Given: Output power, \( P = 100 \text{ w} \)
   Voltage across primary, \( V_p = 220 \text{ V} \)
   Current in the primary, \( I_p = 0.5 \text{ A} \)
   Efficiency of a transformer, \( \eta = \frac{\text{output power}}{\text{input power}} \times 100 \)
   \[ \eta = \frac{P}{V_p I_p} \times 100 = \frac{100}{220 \times 0.5} \times 100 = 90\% \]

34. [3]
   Sections \( AB \) and \( DE \) produce no field at \( O \). Sections \( BC \) and \( EF \) produce equal fields at \( O \), \( B = \frac{\mu_0 I}{2\pi a} \).

35. [4]
   \[ v = \frac{1}{\sqrt{\varepsilon_0 \mu_0 E \mu}} \]
   \[ = \frac{1}{\sqrt{2.14 \times 1.3 \times 8.854 \times 10^{-12} \times 1.257 \times 10^{-6}}} \]
   \[ = 1.8 \times 10^8 \text{ m/s.} \]

36. [4]
   \[ B = \frac{E}{c} = \frac{10^4}{3 \times 10^9} = 3.3 \times 10^{-5} \text{ T.} \]

37. [1]

38. [1]

39. [3]

40. [3]
   Radiation force = momentum transferred per sec by electromagnetic wave to the mirror
   \[ = \frac{2S \varepsilon_0 A}{c} = \frac{2 \times 10 \times 20 \times 10^{-4}}{3 \times 10^9} \]
   \[ = 1.33 \times 10^{-10} \text{ N.} \]

41. [4]
42. [2]
43. [3]
44. [3]
45. [1]

CHEMISTRY
47. [4]
48. [1]
49. [4]

Sol: Bond distance is the average distance between nuclei of two bonded atoms in a molecule.

C – H bond length is 1.09 Å (109 pm) \( \approx \) (110 pm) and

C – C bond length is 1.54 Å (154 pm) (approx).

50. A

Sol: Wurtz reaction is condensation of two molecules of alkyl halides with sodium metal in the presence of dry ether.

\[ R\text{Br} + 2\text{Na} + \text{Br}R \xrightarrow{\Delta_{\text{Dry ether}}} \text{R} - \text{R} + 2\text{NaBr} \]

51. D

Sol: Compounds containing two or more carbon atoms are prepared by Wurtz reaction. Thus, methane, \( \text{CH}_4 \) cannot be prepared by Wurtz reaction.

52. A

Sol: Boiling point \( \propto \) molecular mass

\[ \propto \frac{1}{\text{branching}} \quad (\because \text{Surface area decreases}) \]

\( \therefore \) n–hexane has the highest boiling point among the given alkanes.

53. B

Sol:

\[
\begin{align*}
\text{CH}_3 & \quad \text{CH}_3 \\
\text{Cl} & \quad \text{CH}_2 \quad \text{CH}_3 & \quad \text{CH}_3 \\
\text{CH}_3 & \quad \text{C} & \quad \text{CH}_2 \quad \text{CH}_3 & \quad \text{CH}_3 \\
\text{CH}_3 & \quad \text{CH}_3 & \quad \text{CH}_3 & \quad \text{CH}_3 \\
\end{align*}
\]

(Major)

(A)

(B)

54. D

55. D

Sol: LPG is chiefly a mixture of butane and iso-butane. It is used for cooking purpose. Their molecular formula is \( \text{C}_4\text{H}_{10} \).

56. C

57. B

Sol:
\[ \text{CH}_2 \equiv \text{CHBr} \xrightarrow{\text{NaNH}_2} \text{CH} \equiv \text{CH} \xrightarrow{\text{Hg}^{2+}/\text{H}^+} \text{H}_2\text{O, 33K} \]

Tautomerism

\[ \text{CH}_3 \rightarrow \text{CHO} \]

Ethanal

58. [1]

59. B

Sol:

\[ \begin{align*}
\text{CH}_2 & \quad \text{+S}_2\text{Cl}_2 \quad \rightarrow \quad \text{S} \\
\text{CH}_2 & \quad \text{+S}_2\text{Cl}_2 \quad \rightarrow \quad \text{S} \\
\text{CH}_2 & \quad \text{Mustard gas} \\
\text{S} & \quad \text{(war gas)}
\end{align*} \]

60. B

Sol:

\[ \begin{align*}
\text{CH}_2 & - \text{COONa} \\
\text{CH}_2 & - \text{COONa} \\
\text{CH}_2 & - \text{COONa} \\
\text{CH}_2 & - \text{COONa}
\end{align*} \]

| CH2 – COONa | + 2H2O Electrolysis |
| CH2 – COONa | + 2H2O Electrolysis |

\[ \begin{align*}
\text{CH}_2 & \quad \text{+2CO}_2 \quad + 2\text{NaOH} + \text{H}_2 \\
\text{CH}_2 & \quad \text{At anode} \\
\text{CH}_2 & \quad \text{At cathode}
\end{align*} \]

61. D

Sol: *iso* word is used for those alkanes which have a methyl group attached to the second last carbon atom of the continuous chain. Hence, 2-methylpentane is a compound with an iso-propyl group. *iso*-propyl group

\[ \rightarrow \text{CH}_3 \quad \text{CH} \quad \text{CH}_2 \quad \text{CH}_2 \quad \text{CH}_3 \]

62. [4]

63. C

Sol: Acid catalysed hydration of alkenes involves formation of carbocation intermediate. Higher the stability of carbocation intermediate, more is the reactivity towards acid catalysed hydration. The order of stability of carbocation formed is

\[ (\text{CH}_3)_2 + \text{CH}_3 > \text{CH}_3\text{CHCH}_3 > \text{CH}_2 \quad \text{CH}_3 \]

Thus, the order of reactivity towards acid catalysed hydration is

\[ (\text{CH}_3)_2 \text{C} = \text{CH}_2 > \text{CH}_3\text{CH} = \text{CH}_2 > \text{CH}_2 = \text{CH}_2 \]

64. B

Sol:
65. [4]
66. C
Sol. In conjugated system, double bonds are present at alternate positions, in cumulative system, double bonds are present at adjacent positions while in isolated system, there is a large difference, between the positions of double bond.
Hence, CH$_2$ = CH – CH$_2$ – CH = CH$_2$ represents an isolated system.
67. C
Sol. The given alkene forms two types of carbocations but of same nature, i.e. both are secondary carbonations.

\[
\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3 \xrightarrow{H^+} \text{2-pentene}
\]

\[
\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{CH}_3
\]

and \( \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_2 - \text{CH}_3 \)

Hence, two different types of products are formed when Br$^-$ is added to these carbocations.
68. [1]
Sol. When alkynes are reduced with Li or Na metal in NH$_3$, at low temperature, an anti-additon of hydrogen atoms takes place and trans or 'E' product is obtained.

\[
\text{H}_3\text{C} - \equiv \text{C} - \text{CH}_3 + \text{Na} \xrightarrow{\text{Liquid NH}_3} \text{H}_3\text{C} - \equiv \text{C} - \text{CH}_3
\]

2E-butene or trans-2-butene
69. [3]
Sol. CH$_2$ = CH – CH$_2$Cl + CH$_3$MgI

Allyl chloride

\[
\text{CH}_2 = \text{CH} - \text{CH}_2\text{CH}_3 + \text{MgCl}
\]

1-butene

70. [2]
Sol. Alkylated alkenes are most stable than other. Greater the alkylation of an alkene, i.e. greater the number of alkyl groups in an alkene, greater is its stability, thus the stability order is
$R \rightarrow C = C \rightarrow R > R_2 C = CHR > RCH = CHR$

Most stable (tetra alkylated ethylene)

$\approx R_2 C = CH_2 > R - CH = CH_2 > CH_2 = CH_2$

Last stable

Higher the stability of alkene, lower will be the magnitude of heat of hydrogenation per mole.

71. [2]
Sol. Hybridisation of carbon = $sp^{3-\text{number of } \pi\text{-bonds}}$

In $CO_2$ ($O = C = O$) hybridization of carbon = $sp^{3-2} = sp$

In ethyne or acetylene, $C_2H_2$, ($H - C \equiv C - H$) hybridisation of carbon = $sp^{3-2} = sp$

72. [1]
Sol. As number of bonds increases between two carbon atoms, bond length decreases.

$C_2H_6$ – single, $C_6H_6$ – double bond and single bond $C_2H_4$ double bond $C_2H_2$ - triple bond.

$C_2H_6 > C_6H_6 > C_2H_4 > C_2H_2$

73. [2]

74. [3]
Sol. Only acetylene reacts with $AgNO_3$ and gives white precipitate of silver acetylde among the given compounds.

$H \equiv CH \xrightarrow{AgNO_3+NHOH} CAg \equiv CAg$

White ppt.

Thus, it is distinguished by $AgNO_3$.

75. [4]
Sol. Ethyne is nothing but $C_2H_2$, i.e. acetylene which can be represented by general molecular formula $C_6H_{2n-2}$ Only $C_3H_4$ tallies with the formula. Hence, $C_3H_4$ is the homologue of $C_2H_2$.

76. [2]
Sol. Calcium carbide when reacts with water, gives acetylene, IUPAC name of which is ethyne

$CaC_2 + 2H_2O \rightarrow Ca(OH)_2 + C_2H_2$

Calcium hydroxide

Ethyne

77. D
Sol. Acetylene being a terminal alkyne have

2 acidic hydrogens thus, liberates $H_2$ on reaction with Na.

$CH \equiv CH + 2Na \rightarrow NaC \equiv C \cdot Na + H_2$
Alkynes are converted into alkenes by using Lindlar's catalyst ($\text{H}_2/\text{Pd-BaSO}_4$).

\[
\begin{align*}
\text{Alkyne} & \quad \xrightarrow{\text{H}_2/\text{Pd-BaSO}_4} \quad \text{cis alkene} \\
\text{R} - \text{C} & \equiv \text{C} - \text{R} & \rightarrow & \text{R} - \text{C} & = \text{C} - \text{R} \\
& & & \quad \text{H} & \quad \text{H}
\end{align*}
\]

Ozone is mainly found in the lower portion of the stratosphere in higher concentrations within the stratosphere. It is present at about 20 km to 40 km height from the sea level.

The gases $\text{N}_2\text{O}$, $\text{CO}_2$ and $\text{CH}_4$ have the ability to trap thermal radiation but $\text{O}_2$ does not. That's why it is not a greenhouse gas.

Note $\text{O}_2$ is the gas, presence of which is essential for life and in absence of which life not possible.

Except glycine, all other naturally occurring $\alpha$-amino acids are optically active, since the $\alpha$-carbon atom is asymmetric. These exist both in 'D' and 'L' forms. Most naturally occurring amino acids have L configuration. L-amino acids are represented by writing $\text{NH}_2$ group on left hand side.

Both are correct but reason does not explain assertion.

Drug classification based on pharmacological effect is useful for doctors because it provides the whole range of drugs available for the treatment of a particular type of problem.
93. d
94. a
95. ncert
96. Gamma rays induced mutations
97. Triticale is a man made crop developed by crossing wheat and cereal rye.
98. Haploid plants are of great significance for the production of homozygous lines. Haploids can be diploidized (by duplication of chromosome) to produce homozygous plants with the help of Colchicine – inhibitor of spindle formation & induces chromosome duplication.
99. The naked protoplasts are fused by chemofusion through sodium nitrate (Kiister - 1909), Potassium nitrate (Power et al 1970) & PEG (Kao & Michayluk 1974).
100. Holandric gene – Inherits from male to male only. These are Y-linked traits e.g. – TDF, Hypertrichosis etc.
101. Wilson and Sarich choose mitochondrial DNA (mtDNA) for the study of maternal line inheritance, while Y-chromosomes were considered for the study of human evolution particularly male domain. It is possible because they are uniparental in origin and do not take part in recombination.
102. The number of linkage groups is equivalent to ‘n’ number of chromosomes. Linkage reduces the rate of recombination.
103. Huntington’s Chorea – Autosomal dominant disorder gene present on chromosome 4. Phenylketonuria – Autosomal recessive
Sickle cell Anaemia – Chromosome 11
Night Blindness – Vitamin A deficiency
104. Cross between AABBCC × aabbcc will give heterozygous $F_1$ progeny AaBbCc. No. of gametes produced by AaBbCc will be $2^3 = 8$ gametes (Trihybrid cross). No. of offsprings will be $8 \times 8 = 64$ Genotypic ratio will be $(1:2:1)^3$ $\frac{1}{64}$ will be AABBCC (homozygous dominant) $\frac{1}{64}$ will be aabbcc (homozygous recessive) $\Rightarrow \frac{2}{64} \times 100 = 3.125\%$ OR less than 5%
\[ m = \frac{30}{2} = 15 \]

111. b
112. a
113. delete Penicillin, Streptomycin & Tetracycline are antibiotics / metabolic inhibitors in Bacteria.
114. Shine Dalgarno sequence – Ribosomal Binding site in bacterial and archaeal mRNA. Generally located around 8 bases upstream of START codon AUG. It helps to recruit the ribosome to mRNA to initiate protein synthesis by aligning ribosome with the START codon.
115. Somatic embryos are used to produce synthetic/artificial seeds by encapsulating them in alginate.
116. Acidine dyes – They intercalate between DNA bases & interfere with DNA replication, producing insertion or deletion or both of single bases respectively. Induces frame shift mutations or gibberish mutation e.g., Thalassaemia.
117. Prokaryotes-Polycistronic
118. Type of Gametes = 2^n where n = no of heterozygous pair.
AAbbCCdDEe = 2^2 = 4
119. Silent mutation - Since they cause no change in their product & cannot be detected without sequencing the gene (or it mRNA)
120. delete Maternal inheritance is extranuclear inheritance or extrachromosomal inheritance. The inheritance of characters is by plasmagens (mitochondrial DNA and chloroplast DNA).
121. delete Edward’s syndrome- Trisomy of 18th chromosome.
122. delete Anaphase I – of crossing over does not take place segregation of genes takes place during Anaphase - I. If crossing over occurs segregation of genes will take place during Anaphase – II.
123. Ribozyme – Within the ribosome, ribozymes function as part of the large subunit & RNA to link amino acids during protein synthesis.
The most common activities of natural or in-vitro evolved ribozymes are the cleavage or ligation of RNA and DNA and peptide bond formation.
124. Distance between the genes is directly proportional to crossing over, when 2 genes are located very close to each other in chromosomes hardly any crossing over can be detected. The linkage is broken down due to crossing over.
125. The disease is due to base substitution of sixth codon in the gene coding for \( \beta \)-chain of haemoglobin GAG (Glutamic acid) is mutated to GUG (Valine).
126. NCERT
127. a
128. NCERT
129. UAC is a STOP codon that does not code for any specific amino acid. So before 25th codon the rest 24 codons will only code 24 amino acids. AUG is the START codon which also codes for Methionine. Beyond 25th codon there is no information about presence of another start codon in the question so the process will halt.
130. Concept of Lac Operon.
131. Test cross is a cross between \( F_1 \) hybrid individual and its recessive parent by crossing an organism having an unknown genotype with a homozygous recessive organism, it is possible to determine an unknown genotype within one breeding generation.
132. d
133. Assertion TRUE, Reason is FALSE
In Prokaryotes, RNA polymerases are complexes of 5 polypeptides (core enzyme) whereas in Eukaryotes RNA polymerases are complexes of 10-15 polypeptides. RNA polymerase is capable of transcribing DNA into RNA whereas Rho factor is required for termination of transcription in Prokaryotes.
134. d
135. delete this Assertion is TURE, Reason is FALSE.
Explanation – Populations of cross-pollinated crops are heterozygous for most of their genes. Any decrease in heterozygosity may reduce their performance.
So, homozygous genotypes can not be used as varieties in cross – pollinated crops. In case of self – pollinated species, the best homozygous genotype present in the population is selected.

ZOLOGY
136. [4]: In human genetics studies, the CHLCA ( chimpanzee human last common ancestor) is useful as an anchor points for calculating single nucleotide polymerization (SNP) rates to human populations were chimpanzees are used as an out group, that is, as the extant species most genetically similar time Homo sapiens
137. [3]: A bottle neck effect is an ecological phenomenon in which the population of a species is drastically reduced to the point where the species is still able to carry on, but the genetic diversity of the species is severely limited.
138. [2]: Devonian period (Palaeozoic era), 400 mya is regarded as period of earliest mosses and ferns. First land plants appeared during this period.
139. [4]: According to the theory of continuity of Germplasm, put forwarded by August Wiesmann; there are 2 types of components found in living entities (i) Somatoplasm and (ii) Germplasm. Changes in somatoplasm remain confined to a particular generation whereas changes in germplasm are being inherited by forthcoming generations. Hence, on the basis of this August Wiesmann has refuted the Lamarckian as well as Darwinian concept of transmission of characters during the process of evolution.
140. [3]: It represents analogy/analogous structures among species which show convergent type of evolutionary process.
141. [4]: Homo sapiens fossilis, also regarded as Cro-magnon man has emerged about 34000 years back in Holocene epoch of Quaternary period. Thus, it is regarded as most recent and closest ancestor of today’s man.
142. [2]: It pertaining to the earlier half of the Pre-cambrian era (before 2.5 billion years ago) when the only life were blue green algae (Cyanobacteria) and Eubacteria which are microscopic organisms, hence they are not visible by unaided eyes. So Archaeozoic era is also referred to as era of invisible life.
143. [2]: The Palaeozoic era, also called as era of ancient life has been catabolized into 6 periods which are as follows; Cambrian, Ordovician, Silurian, Devonian, Carboniferous and Permian.
144. [2]: According to Hardy Weinberg equation, p + q = 1 where possible = A and q = a). Allelic frequency of a = 1-0.7 = 0.3, so allelic frequency of Aa = 0.3 x 0.7 = 0.21.
According to binomial expression, AA^2 + 2Aa + aa^2, the frequency of genotype Aa will be = 2 x 0.21 = 0.42.

145. [1]: Hugo deVries believed that discontinuous variations or Mutations cause evolution and not the minor variable variations which was mentioned by Charles Darwin. According to him, New species are not formed by continuous variations as mentioned by Darwin in his theory of the natural selection.
146. [2]: Adaptive radiation is also referred to as divergent evolution. Development of different functional structures from a common ancestral form is called as Adaptive radiation. Homologous structures show adaptive radiation in evolutionary process was developed by H. F. Osborn (1902).
147. [1]: Progressive selection, also called as Stabilising selection in which the population changes towards one particular direction. It means, this type of selection favours small or large-sized individuals and more individuals of that type will be present in new generation. The mean size of population changes

151. [4]: It is also called as modern theory of origin of life.
152. [1]: It favours average sized individuals while eliminates small sized individuals. It reduces variations and hence does not promotes evolutionary changes.
157. [1]: Vinyl chloride is also known as chloroethylene is a colourless, flammable, toxic gas and used principally in making polyvinyl chloride (PVC). Vinyl chloride causes hepatic (liver) Cancer, hence, it is also called as human carcinogenic chemical.
158. [2]: Combination of IgE with allergens causes release of histamine from Basophils and mast cells thus it involves in allergic and hypersensitivity reactions as IgE is positioned over surfaces of Basophils and mast cells. Release of histamine causes marked dilation of all arteries so that there is a drastic fall in blood pressure.
159. [4]: Cancer is broadly classified into two groups; Benign or non-malignant cancer and Malignant cancer. Both types of cancerous conditions show three basic pattern such as Initiation, Progression and Promotion. But in malignant cancer Metastasis is involved in which induction of cancerous condition in cells/tissues of adjoining areas.
160. [2]: The plasma cells produce and secrete large quantities up to 100 million molecules/hour, of antibodies called as immunoglobulin (Ig) after stimulation by an antigen. Antibodies are agents of humoral immunity.
162. [1]: Amphetamines cause emotional and cognitive effects such as euphoria, increased wakefulness, fatigue resistant and decrease reaction time. Hence, it is used as a drug for postponement of sleep, thus called as anti-sleep drug.

163. [3]: IgA is the only antibody/immunoglobulin molecule which is when remains unutilized then it is excreted out through faeces, hence it is also referred to as coproantibody.

165. [2]: It is attenuation whole-agent vaccine, developed by Jonas Salk. Since it is produced by conventional method, so it belongs to the first generation vaccine.

166. [2]: Leprosy’s germ (*Mycobacterium leprae*) was discovered by Hansen, so this disease is also referred to as Hansen’s disease.

167. [1]: Mixing of suspension of B-cells (cells which produce antibodies against the injected antigen) with myeloma or cancer cells that are capable of continuous growth in culture. Fusion of these cells to from hybrid cells which proliferate into clones is called as hybridomas. The hybridomas are screened for production of desired antibody. Such antibody is called as monoclonal antibody or also referred to as magic bullets.

171. [4]: Glucocorticoid hormone along with Cyclosporine is regarded as immune suppressant chemicals that check the production of antibodies in organ transplantation or grafting process. Hence, it is given to check overactive immune system thus, transplant or graft is not rejected by body defence.

173. [1]

Bubonic plague is caused by *Yersinia pestis*, transmitted through rat flees is also called black death because the dark patches on skin caused by subcutaneous bleeding. It is regarded as greatest catastrophe ever.

174. [2]

Barbiturate is a class of sedative and sleep inducing chemical derived from barbituric acid. It acts on CNS and causes drowsiness and controls seizures.

175. [1]

Microfilariae or infective stage of *Wuchereria bancrofti* show unique pattern of movement according to the intensity of light (day-night) changes. During day hour, they remained deep seated below cutaneous part of body but during night, they migrate to lymphatic system of body.