SOLUTIONS & ANSWERS FOR AIPMT MAINS-2010
VERSION – A

[PHYSICS, CHEMISTRY & BIOLOGY]

1. A thin circular ring of mass m and radius r is rotating about its axis with constant --------

Ans: $\frac{M\omega}{(M+2m)}$

Sol: $L = I\omega = I'\omega'$

$\Rightarrow \omega' = \frac{I\omega}{I'} = \frac{MR^2\omega}{(M+2\ m)\ R^2}$

$= \frac{M\omega}{(M+2m)}$

2. From a circular disc of radius R and mass 9 M, a small disc of mass M and radius R/3 is removed concentrically --------

Ans: $\frac{40}{9}MR^2$

Sol: $I_1 = \frac{1}{2}.(9\ M)R^2 = \frac{9\ MR^2}{2}$

$I_C = \frac{1}{2}.M\left(\frac{R}{3}\right)^2 = \frac{MR^2}{18}$

$I = I_1 - I_C = \frac{9\ MR^2}{2} - \frac{MR^2}{18}$

$= \frac{(81-1)MR^2}{18} = \frac{80}{18}MR^2$

$= \frac{40}{9}MR^2$

3. A particle of mass M starting from rest undergoes uniform acceleration--------

Ans: $\frac{1}{2}\frac{MV^2}{T}$

Sol: A_V Power $= \frac{\Delta KE}{T} = \frac{1}{2}\frac{MV^2}{T}$

Instantaneous power $= \frac{MV^2}{T}$. It is presumed that the question is for average power and not instantaneous power

4. A solid cylinder and a hollow cylinder, both of the same mass and same external diameter--------

Ans: Solid cylinder

Sol: $I_{solid} < I_{hollow}$

$\therefore a_{solid} > a_{hollow}$

$\Rightarrow$ Solid cylinder will reach bottom first.

$\left(\Theta\ a = \frac{g\sin\theta}{\left(1+\frac{K^2}{R^2}\right)}\right)$, K small for solid cylinder

K larger for hollow cylinder

5. The dependence of acceleration due to gravity `g' on the distance `r' from --------

Ans: Graph (d)

Sol: From r = 0 to r = R, $g \propto r$

From r = R to r > R, $g \propto \frac{1}{r^2}$

6. The additional kinetic energy to be provided to a satellite of mass m revolving --------

Ans: $\frac{1}{2}GmM\left(\frac{1}{R_1}-\frac{1}{R_2}\right)$

Sol: $\Delta E = -\frac{GMm}{2R_2} - \left(-\frac{GMm}{2R_1}\right)$

$= \frac{GMm}{2}\left[\frac{1}{R_1}-\frac{1}{R_2}\right]$

7. A student measures the distance traversed in free fall of a body, initially at rest in a given time----------

Ans: $e_1 + 2e_2$

Sol: $g = \frac{2\ H}{T^2}$

$\Rightarrow \frac{\Delta g}{g} = \frac{\Delta H}{H} + 2\frac{\Delta T}{T}$

$= e_1 + 2e_2$

8. The speed of a projectile at its maximum height is half of its initial speed--------

Ans: 60°

Sol: $u\cos\theta = \frac{u}{2}$

$\Rightarrow \cos\theta = \frac{1}{2} \Rightarrow \theta = 60°$

9. (a) Centre of gravity (CG) of a body is the point at which the weight of the body acts.--------

Ans: (a) and (b)

Sol: (a) and (b) are correct

10. The electric field of an electromagnetic wave in free space is given by --------

Ans: The wavelength λ is 188.4 m and the wave amplitude is 10 V/ m

Sol: $\bar{E} = 10\cos\left(10^7 t + kx\right)\hat{j}$ V/m

Amplitude = 10 V/m → (c) is correct

$c = 3 \times 10^8$ m s^{-1}

$\omega = 10^7$ rad s^{-1}

$c = \frac{\omega}{k} \Rightarrow k = \frac{\omega}{c} = \frac{10^7}{3\times10^8} = \frac{1}{30}$

= 0.03 rad $m^{-1} \Rightarrow$ (b) is wrong.

$c = f\lambda = \frac{\omega}{2\pi}\lambda$

$\Rightarrow \lambda = \frac{2\pi c}{\omega} = \frac{2\pi\times3\times10^8}{10^7}$

$= 60\pi$

= 188.5 m $\Rightarrow$ (a) is correct

$\therefore$ Answer is (3) a & c are correct

11. A particle moves in x-y plane according to rule x = a sin ωt and y = a cos ωt--------

Ans: a circular path

Sol: $x^2 + y^2 = a^2 \Rightarrow$ circular path

12. The speed of light in media M_1 and M_2 is 1.5×10^8 m/s and --------

Ans: equal to greater than $\sin^{-1}\left(\frac{3}{4}\right)$

Sol: $i \geq C$

$\sin C = \frac{1}{\mu} = \frac{1.5}{2} = \frac{3}{4}$

$\Rightarrow i \geq \sin^{-1}\left(\frac{3}{4}\right)$

13. A ray of light is incident on a 60° prism at the minimum deviation position --------

Ans: 30°

Sol: $r_1 + r_2 = A = 60°$

At minimum deviation, $r_1 = r_2 = r$

$\Rightarrow r = \frac{A}{2} = \frac{60°}{2} = 30°$

14. A monoatomic gas at pressure P_1 and volume V_1 is compressed adiabatically to --------

Ans: 32 P_1

Sol: $P_1V_1^\gamma = P_2V_2^\gamma$, $\gamma = \frac{5}{3}$ for monoatomic gas

$P_2 = P_1\left(\frac{V_1}{V_2}\right)^\gamma = P_1(8)^{5/3} = 32\ P_1$

15. If c_P and c_V denote the specific heats (Per unit mass)--------

Ans: $c_P - c_V = \frac{R}{M}$

Sol: $c_P - c_V = \frac{R}{M}$

(Θ $C_P - C_V = R$)

16. The magnetic moment of a diamagnetic atom is --------

Ans: equal to zero

Sol: M = 0 for diamagnetic atom

17. A current loop consists of two identical semicircular parts each of radius R--------

Ans: $\frac{\mu_0 i}{2\sqrt{2}\ R}$

Sol: $M = \sqrt{2}\times\left[\mu_0\frac{1}{2}\times\frac{i}{2\ R}\right] = \frac{\mu_0 i}{2\sqrt{2}\ R}$

18. Two identical bar magnets are fixed with their centres at a distance d --------

Ans: zero

Sol: $\bar{F} = q\left(\bar{v}\times\bar{B}\right) = 0\ \left(\Theta\ \bar{v} = 0\right)$

19. A closely wound solenoid of 20000 turns and area of cross - section--------

Ans: 1.5×10^{-2} N m

Sol: τ = BINA sinθ

$= 5 \times 10^{-2} \times 2 \times 2000 \times 1.5 \times 10^{-4} \sin 30°$

$= 1.5 \times 10^{-2}$ N m

20. A condenser of capacity C is charged to a potential difference of V_1. The plates of the condenser are then--------

Ans: $\left[\frac{C}{L}\left(V_1^2 - V_2^2\right)\right]^{1/2}$

Sol: $U_1 = \frac{1}{2}CV_1^2$

$U_2 = \frac{1}{2}CV_2^2$

$\frac{1}{2}i^2L = U_L = U_1 - U_2 = \frac{1}{2}C\left(V_1^2 - V_2^2\right)$

$\Rightarrow i = \left[\frac{C}{L}\left(V_1^2 - V_2^2\right)\right]^{1/2}$

21. Two parallel metal plates having charges +Q and –Q face each other at a certain distance--------

Ans: decrease

Sol: $E' = \frac{E}{K} \Rightarrow$ decreases

22. The electric field at a distance $\frac{3R}{2}$ from the centre of a charged--------

Ans: Zero

Sol: E = 0 at any point inside a charged shell.

23. The thermo emf E in volts of a certain thermocouple is found--------

Ans: 225 °C

Sol: $\frac{dE}{d\theta} = 30 - \frac{2\theta}{15} = 0$

$\Rightarrow \frac{30\times15}{2} = \theta$

i.e. θ = 225 °C

24. A particle having a mass of 10^{-2} kg carries a charge of --------

Ans: Both $\vec{B}$ and $\vec{E}$ should be along the direction of velocity.

Sol: (b) and (c) are correct.

Note (c) will be correct only if $\frac{E}{B} = v$. No other choices is correct.

25. When monochromatic radiation of intensity I falls on a metal surface, the number --------

Ans: 2 N and T

Sol: $I \propto N$

T depends only on work function and frequency.

26. The electron in the hydrogen atom jumps from excited state (n = 3) to its ground state (n = 1)----------

Ans: 7 V

Sol: $E_3 = \frac{-13.6}{3^2} = -1.51$ eV

$E = E_3 - E_1 = -1.51 - (-13.6)$

= 7 eV

$\therefore$ V = 7 V

27. The binding energy per nucleon in deuterium and helium nuclei are --------

Ans: 23.6 M eV

Sol: ${}_1^2H + {}_1^2H = {}_2^4He + Q$

$\therefore Q = (4\times7) - 4\times1.1 = 23.6$ M eV

28. The decay constant of a radio isotope is λ. If A_1 and A_2 are its activities at times t_1 and --------

Ans: $\frac{(A_1 - A_2)}{\lambda}$

Sol: $A_1 = |\lambda N_1| \Rightarrow N_1 = \frac{A_1}{\lambda}$

$A_2 = |\lambda N_2| \Rightarrow N_2 = \frac{A_2}{\lambda}$

$N = (N_1 - N_2) = \frac{(A_1 - A_2)}{\lambda}$

29. For transistor action:--------

Ans: The base region must be very thin and lightly doped.

Sol: (b) is correct

(c) is correct

30. The following figure shows a logic gate circuit with two inputs A and B and the--------

Ans: NAND GATE

Sol: Gives high output when any of the inputs are zero and a low output only when both inputs are high $\Rightarrow$ NAND GATE.

31. For vaporization of water at 1 atmospheric pressure, the values of ΔH and ΔS are--------

Ans: 373.4 K

Sol: $T = \frac{\Delta H}{\Delta S} = \frac{40.63 \times 10^3 \text{ J mol}^{-1}}{108.8 \text{ J K}^{-1} \text{ mol}^{-1}}$

$= 373.4$ K

32. A 0.66 kg ball is moving with a speed of 100 m/s--------

Ans: 1.0×10^{-35} m

Sol: $\lambda = \frac{h}{mv} = \frac{6.6 \times 10^{-34} \text{ Js}}{0.66 \text{ kg} \times 100 \text{ m s}^{-1}}$

$= 1 \times 10^{-35}$ m

33. Three moles of an ideal gas expanded spontaneously into vacuum--------

Ans: Zero

Sol: For free expansion the work done is zero.

34. The following two reactions are known:--------

Ans: +6.2 kJ

Sol: Equation (1) – 2 × Equation (2) gives required equation.
Hence –26.8 kJ – (2 × –16.5 kJ)
= +6.2 kJ

35. The reaction
2A(g) + B(g) --------

Ans: $[(0.75)^3 (0.25)] \div [(0.50)^2 (0.75)]$

Sol: $2A(g) + B(g) \rightleftharpoons 3C_{(g)} + D_{(g)}$

1 – 0.5 1 – 0.25 0.75 0.25

$K = \frac{[C]^3 [D]}{[A]^2 [B]}$

$= \frac{(0.75)^3 \times (0.25)}{(0.5)^2 \times (0.75)}$

36. The pressure exerted by 6.0 kg of methane gas in a 0.03 m^3 vessle--------

Ans: 41648 Pa

Sol: $P = \frac{nRT}{V}$

$= \frac{6 \times 8.314 \times 402}{16.05 \times 0.03} = 41647.7$ Pa

37. Which of the following expressions correctly represents the equivalent --------

Ans: $\frac{1}{3}\lambda^0_{A\lambda^{3+}} + \frac{1}{2}\lambda^0_{SO_4^{2-}}$

Sol: $\lambda^0_{eq} = \left(\lambda^0_{eq}\right)_{cation} + \left(\lambda^0_{eq}\right)_{anion}$

$= \frac{1}{3}\lambda^0_{A\lambda^{3+}} + \frac{1}{2}\lambda^0_{SO_4^{2-}}$

38. How many bridging oxygen atoms are present----------

Ans: 6

Sol: There are six bridging oxygen atoms in P_4O_{10}.

39. Among the following which one has the highest----------

Ans: CsF

Sol: Cs^+ is the biggest cation and F^- is the smallest anion.

40. Which of the following oxidation states is the most--------

Ans: 3

Sol: +3 is the most common oxidation state of Lanthanoids

41. Some of the properties of the two species--------

Ans: Dissimilar in hybridization for central atom with different structures.

Sol: NO_3^- is planar – sp^2
H_3O^+ is pyramidal – sp^3

42. The compound A on heating gives a colourless gas and residue that is --------

Ans: $CaCO_3$

Sol: $CaCO_3 \xrightarrow{\Delta} CaO + CO_2$
(A) residue gas
$CaO \xrightarrow{H_2O} Ca(OH)_2$
(B)
$\xrightarrow{CO_2} Ca(HCO_3)_2 \xrightarrow{\Delta} CaCO_3$
(C) (A)

43. Among the elements Ca, Mg, P and Cl, the order------

Ans: Cl < P < Mg < Ca

Sol: Covalent radii of Ca = 1.74 A°
Mg = 1.36 A°
P = 1.10 A°
Cl = 0.99 A°

44. Which one of the following complexes is not expected----------

Ans: $[Ni(NH_3)_2Cl_2]$

Sol: $[Ni(NH_3)_2Cl_2]$ is a tetrahedral complex.

45. Which one of the following compounds will be most --------

Ans: $CH_3COCH_2CH(OH)CH_2CH_3$

Sol: It is a β-hydroxy ketone. β-hydroxy aldehydes and ketones readily undergo dehydration.

46. Among the following four compounds--------

Ans: d > c > a > b

Sol: Order of acidity is
p-nitrophenol > m-nitrophenol > phenol > methyl phenol
Presence of electron withdrawing groups increases acidity of phenols and electron donating group decreases the acidity of phenols.

47. Fructose reduces Tollen's reagent due to--------

Ans: enolisation of fructose followed by conversion to aldehyde by base

Sol: Fructose is a ketose. In presence of base it undergoes rearrangement to form an equilibrium mixture containing glucose, fructose and mannose.

48. Which of the following conformers for ethylene glycol is--------

Ans: Gauche confirmation of ethylene glycol.

Sol: The gauche conformation of ethylene glycol is more stable due to intramolecular hydrogen bond formation.

49. The IUPAC name of the compound--------

Ans: pent – 3 – en – 1 - yne

Sol: 5 4 3 2 1
$CH_3 - CH = CH - C \equiv CH$:
pent – 3 – en – 1 - yne

50. When glycerol is treated with excess of HI--------

Ans: 2 - iodopropane

Sol: Glycerol when treated with excess of HI gives 2- iodopropane.

51. Which of the following species is not electrophilic --------

Ans: H_3O^+

Sol: H_3O^+ is not electrophilic.

52. In the following reaction
$C_6H_5CH_2Br$--------

Ans: $C_6H_5CH_3$

Sol: $C_6H_5CH_2Br \xrightarrow{Mg/ether} C_6H_5CH_2MgBr \xrightarrow{H_3O^+} C_6H_5CH_3$

53. In which of the following molecules the central atom--------

Ans: SF_4

Sol: Central atom in SF_4 is sp^3d hybridized.

54. The rate of the reaction $2NO + Cl_2 \rightarrow 2NOCl$ is given by--------

Ans: Increasing the temperature

Sol: Rate constant depend on temperature but not on concentration.

55. Match List-I (Equations) with List-II (type of processes)--------

Ans: (iv) (i) (ii) (iii)

Sol: Where $K_p > Q$ reaction is spontaneous
$\Delta G = \Delta G° + RT\ln Q$
$\Delta G = \Delta H - T\Delta S$

56. Match List-I (substances) with List-II (pocesses) employed in the manufacture of the --------

Ans: (iv) (ii) (iii) (i)

Sol: Sulphuric acid - contact process

Steel – Bessemer process
NaOH - Leblanc process
Ammonia – Haber process

57. Match the compounds given in List-I with their characteristic reactions given in List II.

Ans: (ii) (iii) (i) (iv)

Sol: (a) is a primary amine and it produces bad smell when warmed with alcoholic KOH and $CHCl_3$ (carbylamine reaction)
(b) Propyne is a terminal alkyne and it gives white ppt with ammoniacal silver nitrate
(c) is an ester and it undergoes alkaline hydrolysis
(d) is a 2° alcohol and it produces cloudiness with Lucas reagent in about 5 minutes

58. Some statements about heavy water are -----
Ans: (a) and (b)

Sol: Heavy water is less effective solvent, than ordinary water as its dielectric constant is lesser.

59. Consider the following relations for emf of a electrochemical

Ans: (b) and (d)

Sol: emf of cell = $E_{redn\ (cathode)} - E_{redn\ (anode)}$ which is the same as
$E_{oxiation(anode)} + E_{redn\ (cathode)}$ or
$E_{oxiation(anode)} - E_{oxidation\ (cathode)}$

60. Following compounds are given:

Ans: (a), (b) and (c)

Sol: Compounds containing CH_3CO or CH_3CHOH- groups will give iodoform when heated with I_2 and NaOH.

61. Given below is the diagram of a bacteriophage. In which one of the options --------

Ans: Head, sheath, collar, tail fibres

Sol: Bacteriophage consists head, collar, sheath, end plate with fibres.

62. Examine the figures A, B, C and D. In which one of the four options all

Ans: *Seleginella*, *Equisetum*, *Salvinia*, Ginkgo

Sol: *Selaginella*, *Equisetum* and *Salvinia* are pteridophytes and Ginkgo is gymnospherm.

63. In eukaryotic cell transcription, RNA splicing and RNA---------

Ans: Nucleus

Sol: Splicing and capping of hnRNA is required for the removal of introns and making the functional mRNA.

64. The figure given below shows the conversion of a substrate into product by an enzyme. ------

Ans: Transition state, Potential energy, Activation energy without enzyme, Activaton energy with enzyme.

Sol: The graph explains the concept of activation energy.

65. An elaborate network of filamentous Proteinaceous structures--------

Ans: Cytoskeleton

Sol: Cytoskeleton helps in motility, maintenance of the shape of the cell and mechanical support.

66. In *Antirrhinum* to plants with p ink flowers wer hybridized--------

Ans: Rr

Sol: In Amtirrhinum, the pink colour results due to an intermediate genotype is Rr.

67. The *lac* operon consists of --------

Ans: One regulatory gene and three structural genes.

Sol: *lac* operon means structurally different genes involved in a functional events in many ways.

68. A cross in which an organism showing a dominant phenotype in crossed--------

Ans: Test cross

Sol: Test cross is used for finding the genotype of an organism in doubt.

69. Transport of food material in higher plants takes --------

Ans: Sieve elements

Sol: Sieve elements are the components of phloem.

70. Kranz anatomy is one of the characteristics of the leaves --------

Ans: Sugarcane

Sol: Kranz anatomy is seen in C_4 plants.

71. Consider the following four statements A, B, C and D and select--------

Ans: (A) and (B)

Sol: The option B is not correct, because a mistake in the representation of ovary fusion.

72. Vegetative propagation in *Pistia* occurs by --------

Ans: Offset

Sol: Offset means short internode with and each node bearing rosette leaves and tuft of roots.

73. Which one of the following is manoecious--------

Ans: Pinus

Sol: Monoecious means bisexual and homothallic conditions.

74. The correct floral formula of soyabean--------

Ans: %⚥ $K_{(5)} C_{1+2+(2)} A_{(9)} + 1\ G_{\underline{1}}$

Sol: Soyabean belongs to the Fabaceae family.

75. Aestivation of petals in the flower of cotton is --------

Ans: (3) Diagram - refer question paper.

Sol: In twisted aestivation, marginal lobes of succeeding petals are alternately overlapped.

76. Study the pathway given below--------

Ans: Fixation, Decarboxylation, Regeneration

Sol: Pathway of Hatch-Slack scheme of C_4 – metabolism is shown.

77. Given below is the diagram of a stomatal apparatus. In which of the --------

Ans: Epidermal cell, Subsidiary cell, Stomatal aperture, Guard cell

Sol: Stomatal aperture is surrounded by guards cells, which in turn by subsidiary cells.

78. Read the following four statements A, B, C and D and select the right option having both correct statements--------

Ans: B and D

Sol: Both the statements are correct.

79. One of the commonly used plant growth hormone in tea--------

Ans: Indole – 3- acetic acid

Sol: IAA is the derivative of auxin.

80. Root development is promoted by --------

Ans: Ethylene

Sol: Ethylene promotes root growth and root hair formation.

81. Examine the figures (A-D) given below and select the right option out of 1-4, in which--------

Ans: Offset, Antheridiophore, Antipodals, Oogonium

Sol: All the diagrams are related to the reproduction.

82. Which of the following representations shows the pyramid of numbers in a forest--------

Ans: B

Sol: Pyramid of number in an ecosystem shows gradual decrease from the producers to the successive consumers.

83. Study the cycle shown below and select the option which gives correct words--------

Ans: Denitrification, Ammonification, Plants, Animals.

Sol: Schematic representation of nitrogen cycle is shown.

84. Which one of the following is a xerophytic plant in which the stem is modified--------

Ans: *Opuntia*

Sol: *Opuntia* shows phylloclade modification from the stem.

85. An example of endomycorrhiza is--------

Ans: *Glomus*

Sol: Glomus is one of the important *mycorrhizic* fungus.

86. Leguminous plants are able to fix atmospheric nitrogen through the process of --------

Ans: Nitrogenase is insensitive to oxygen.

Sol: Nitrogenase enzyme is sensitive to the molecular oxygen.

87. Black (stem) rust of wheat is caused by--------

Ans: *Puccinia graminis*

Sol: *Puccinia graminis* causes black or stem rust in wheat.

88. Which of the following are used in gene --------

Ans: Plasmids

Sol: Plasmids are used as vector for cloning genes.

89. Which one of the following can not be used for preparation of vaccines--------

Ans: Heat killed suspensions of virulent bacteria.

Sol: Vaccines are either inactivated or attenuated pathogens.

90. Which one of the following is now being commercially produced by --------

Ans: Insulin

Sol: Insulin is produced commercially as humulin.

91. Crocodile and Penguin are similar to whale and Dogfish in which --------

Ans: Have gill slits at some stage

Sol: Presence of pharyngeal gill slit is a feature of all chordates.

92. Select the correct combination of the statements (a – d) regarding the characteristics of --------

Ans: (a), (b), (d)

Sol: Chemosynthetic bacteria produce various kinds of inorganic chemical compounds.

93. Identify the components labelled A, B, C and D in the diagram below from the list (i) to (viii)--------

Ans: (v) (iv) (viii) (iii)

Sol: The diagram is the part of ER, nucleus and cytoplasm.

94. Three of the following statements about enzymes --------

Ans: Most enzymes are proteins but some are lipids.

Sol: Enzymes are either simple or conjugated proteins only.

95. Study the pedigree chart of a certain family given below--------

Ans: The female parent is heterozygous.

Sol: it is an autosomal disease.

96. The most apparent change during the evolutionary history of --------

Ans: Remarkable increase in the brain size.

97. Given below are four statements (A-D) each with one or two blanks.--------

Ans: (D) – (i) small variations, (ii) survival, (A) – (i) convergent

Sol: Vermiform appendix is vestigeal organ.

98. Fastest distribution of some injectible material / medicine and with --------

Ans: Veins

Sol: Intravenous injection of vaccines helps direct target of the cells through the bloods stream.

99. Select the answer with *correct matching* of the structure, its location and --------

Ans: Hypothalamus, Forebrain, temperature, urge for eating and drinking

Sol: Cerebellum is in the hind brain. No rods in blind spot.

100. ABO blood grouping is controlled by gene I which has three alleles--------

Ans: Four

Sol: A, B, AB and O are the four blood groups.

101. Which one of the following is the *correct description* of a certain part ---------

Ans: Parietal bone and the temporal bone of the skull are joined by fibrous joint.

Sol: These are bones of skull.

102. In which one of the following organisms its *excretory organs* are --------

Ans: Earthworm – Pharyngeal, integumentary and septal nephridia

Sol: There are 3 types of nephirida in earthworm.

103. Select the *correct* matching of a hormone, its source --------

Ans: Norepinephrine, Adrenal medulla, Increases heart beat, rate of respiration and alertness

Sol: α cells secrete glucagon; Prolactin secreted by anterior pituitary.

104. Given below are four statements (a – d) regarding human blood circulatory--------

Ans: (a) and (d)

Sol: Angina is due to reduced supply of blood to heart. AB group is universal recipient.

105. Which on**e** of the following statements about the particular entity is true--------

Ans: The gene for producing insulin is present in every body cell.

Sol: Centriole produces aster; Histones are found in nucleosome; DNA is formed of nucleotides.

106. Which one of the following pairs of structures is correctly matched with their--------

Ans: Tibia and fibula – Both form parts of knee joint

Sol: Tibia and fibula - both form parts of knee joint.

107. If for some reason the parietal cells of the gut epithelium become partially--------

Ans: Proteins will not be adequately hydrolysed by pepsin into proteoses and peptones

Sol: Parietal cells secrete HCl.

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108. In human female the *blastocyst* --------

Ans: Gets implanted in endometrium by the trophoblast cells.

Sol: It get implanted in 7^{th} day after fertilization.

109. Secretions from which one of the following are rich in fructose--------

Ans: Male accessory glands.

Sol: Semen is rich in fructose, calcium and some enzymes.

110. When domestic sewage mixes with river--------

Ans: The increased microbial activity uses up dissolved oxygen.

Sol: BOD increase due to the sewage disposal into the water body.

111. Which one of the following is *most appropriately* defined--------

Ans: *Predator* is an organism that catches and kills other organism for food.

Sol: Prey is eaten by the predator.

112. *Jaundice* is a disorder--------

Ans: Digestive system

Sol: It is due to a block in bile duct.

113. A person suffering from a disease caused by *Plasmodium*, **--------**

Ans: The parasite after its rapid multiplication inside RBCs ruptures them, releasing the stage to enter fresh RBCs.

Sol: Rupture of RBC is associated with the release of haemozoin which is responsible for high recurring fever.

114. Which one of the following techniques is safest **--------**

Ans: Magnetic resonance imaging (MRI).

Sol: MRI use strong magnetic field to avoid radiation effects.

115. The 3'-5' phosphodiester linkages inside a **--------**

Ans: One nucleotide with another nucleotide.

Sol: In DNA nucleotides are jointed by 3' – 5' phosphodiester bonds.

116. In genetic engineering, a DNA segment (gene) of **--------**

Ans: (B) and (D) only.

Sol: Plasmids and bacteriophages are commonly used as vectors.

117. The fruit fly *Drosophila melanogaster* was**--------**

Ans: It completes life cycle in about two weeks.

Sol: *Drosophila* completes life cycle in two weeks.

118. Signals from fully developed foetus and placenta ultimately **--------**

Ans: Oxytocin from maternal pituitary.

Sol: Oxytocin from maternal pituitary is need.

119. The Indian Rhinoceros is a natural inhabitant **--------**

Ans: Assam

Sol: Rhino is found in Kasiranga National Park.

120. The haemoglobin content per 100 ml of blood of a normal**--------**

Ans: 12 – 16 g

Sol: A healthy individual has 12 – 16 g of haemoglobin in every 100 ml of blood.