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NEW LIGHT
INSTITUTE
Medical | Foundation

ALL INDIA

FULL SYLLABUS

TEST SERIES 2024-25

NATIONAL ELIGIBILITY-CUM-ENTRANCE TEST

SOLUTION

PHYSICS

SECTION-A

1. (2) [NCERT-XI-I-58]

By conservation of linear momentum

$0 = m_1\vec{v}_1 + m_2\vec{v}_2 + m_3\vec{v}_3$

$\vec{v}_3 = \vec{v}(\hat{i} - \hat{j})$

2. (3) [NCERT-XII-II-234]

$\mu_{air} < \mu_{lens} < \mu_{water}$

ie, $1 < \mu_{lens} < 1.33$

3. (3) [NCERT-XI-II-189]

When area of tank >> area of hole

$v = \sqrt{2gh}$

4. (3) [NCERT-XI-II-205]

$\frac{\Delta L}{L} = \alpha\Delta T = 10^{-5} \times 500$

% change $= 5 \times 10^{-3} \times 100 = .5\%$

5. (2) [NCERT-XI-II-268 Con]

$k = k_1 + k_2$

$n = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$ = $n = \frac{1}{2\pi}\sqrt{\frac{k_1 + k_2}{m}}$

6. (4) [NCERT-XII-II-281]

$\frac{dQ}{dt} = k(T - T_0)$

$\therefore$ rate of cooling $\propto \frac{1}{(T - T_0)}$

7. (3) [NCERT-XII-I-82]

$i = \frac{dq}{dt} \Rightarrow dq = (4 + 5t)\,dt$

$q = 4t + \frac{5t^2}{2}$

$q = 4\times2 + 5\times2$

$= 8 + 10 \Rightarrow = 18$ coulomb

8. (3) [NCERT-XII-I-48]

$V_0 = V_E = 0$

hence $W = e(V_E - V_0) = 0$.

9. (1) [NCERT-XII-I-82]

10. (4) [NCERT-XII-I-30]

$\Phi = \frac{q}{\varepsilon_0}$

11. (1) [NCERT-XII-I-138]

The magnetic lines of force due to current carrying straight solenoid is same as that of a bar magnet

12. (4) [NCERT-XII-I-148]

13. (4) [NCERT-XII-I-206]

A time varying electric field is source of changing magnetic field and vice versa. Hence electric and magnetic fields are coupled in em-waves.

14. (2) [NCERT-XII-II-295]

$\frac{1}{2}mv^2 = \frac{k(Ze)(2e)}{r_0}$ or $r_0 = \frac{4kZe^2}{mv^2}$

$\Rightarrow r_0 \propto \frac{1}{m}$

15. (1) [NCERT-XII-I-84]

Shape of cross-section

16. (1) [NCERT-XI-II-230]

17. (4) [NCERT-XI-II-252]

$\frac{v_1}{v_2} = \sqrt{\frac{T_1}{T_2}}$

$\frac{\sqrt{3}v}{v} = \sqrt{\frac{273 + t}{273 + 100}}$

$273 + t = 373 \times 3$

$t = 846\,^{\circ}C$

18. (3) [NCERT-XI-I-60]

$N = mg - F\sin\theta$

$m\,a = F\cos\theta - (\mu)N$

$a = \frac{F}{m}[\cos\theta + \mu\sin\theta] - \mu g$

19. (4) [NCERT-XI-I-106]

$\vec{L} = m[\vec{r} \times \vec{v}]$

$= 1\begin{vmatrix} i & j & k \\ 3 & 2 & -5 \\ 3 & -2 & 0 \end{vmatrix}$

$= -10\hat{i} + 15\hat{j} - 12\hat{k}$

20. (4) [NCERT-XI-I-114]

$I_{YY} = \frac{2}{3}MR^2 + 2\left[\frac{2}{3}MR^2 + M(2R)^2\right]$

$= 10MR^2$

21. (4) [NCERT-XI-I-128]

22. (1) [NCERT-XII-I-115]

$$B = \frac{\mu_0}{4\pi}\frac{2\pi I}{r}$$

23. (4) [NCERT-XII-I-162]

$$|e| = \frac{d\Phi}{dt} = 8t + 2$$

$$i(t=1) = \frac{e(t=1)}{R} = \frac{10}{10} = 1\,A$$

24. (2) [NCERT-XII-I-206]

25. (2) [NCERT-XII-II-312]

26. (4) [NCERT-XI-II-270]

Time period of pendulum does not depend upon amplitude

27. (2) [NCERT-XI-I-14]

Average speed = total distance/totaltime

total distance = d + d = 2d

total time = 2 + 3 = 5 hour

average speed = 2d/5

28. (3) [NCERT-XII-II-337]

$$r_i = \frac{\Delta V}{\Delta i} = \frac{0.7 - 0.5}{1.0 \times 10^{-3}}$$

29. (1) [NCERT-XII-II-300]

30. (2) [NCERT-XI-I-105]

$$\tau = I\alpha$$

$$\alpha = \frac{d^2\theta}{dt^2} = 24t - 12 = 0$$

$$t = 0.5\,s$$

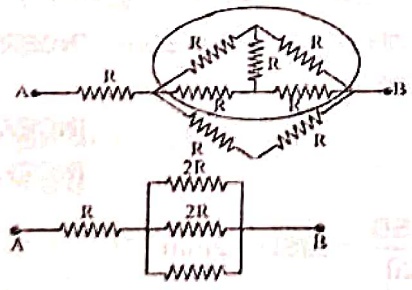
31. (1) [NCERT-XII-I-85]

$$I = neA\,V_d$$

$$t = \frac{\ell}{V_d} = \ell\left(\frac{neA}{I}\right)$$

on solving we get, $t = 2.7 \times 10^4$ sec

32. (3) [NCERT-XII-I-95]



$$R_{AB} = R + \frac{2R}{3} = \frac{5R}{3}$$

33. (2) [NCERT-XI-I-55]

$$F = 400 - 2 \times 10^5 t = 0$$

$$t = 2 \times 10^{-3}\,s$$

$$I = \int_0^{2\times10^{-3}} F\,dt = \left[400t - 10^5 t^2\right]_0^{2\times10^{-3}} = 0.4\,N-s$$

34. (1) [NCERT-XII-I-165]

$$\phi = MI \Rightarrow d\phi = M\,dI$$

$$M = \frac{d\phi}{dI} = \frac{2 \times 10^{-2}}{1 \times 10^{-2}} = 2H$$

35. (2) [NCERT-XII-II-315]

SECTION-B

36. (1) [NCERT-XI-I-14]

Slope at A = 0

Hence, V at A = 0

37. (4) [NCERT-XI-I-14]

$$u = \frac{8F^2x}{\pi^2 D^4}$$

Energy store per unit volume is $\mu \propto \frac{1}{D^4}$

$$\frac{\mu_1}{\mu_2} = \left(\frac{D_2}{D_1}\right)^4$$

$$\frac{D_2}{D_1}\left(\frac{\mu_1}{\mu_2}\right)^4 = \left(\frac{1}{4}\right)^4$$

$$\frac{D_2}{D_1} = \frac{1}{\sqrt{2}}$$

$$\frac{D_1}{D_2} = \frac{\sqrt{2}}{1}$$

38. (2) [NCERT-XI-I-14]

$$y = x - \frac{1}{20}x^2$$

Compair with $y = \tan\theta x - \frac{\tan\theta}{R}x^2$

$\tan\theta = 1$ & $R = 20$

$\theta = 45$

$$\because H = \frac{R\tan\theta}{4}$$

$$= \frac{20 \times \tan 45}{4} = 5m$$

39. (3) [NCERT-XI-I-14]

From energy conservation $E_A = E_B$

$$0 + gm \times 1 = mg \times 0.5 + \frac{1}{2}mu_B^2$$

$$0.5mg = \frac{1}{2}mV_B^2$$

$$V_B = \sqrt{10}$$

40. (2) [NCERT-XI-I-14]

Circumference $(C) = 2\pi r$

$= 2\pi \times 9$

$= 18\pi m$

Total distance D = total Revolution $\times$ C $= 120 \times 18\pi$

$= 2160\pi m$

Speed $u = \frac{D}{t} = \frac{2160\pi}{180} = 12\pi m/sec$

$$a_c = \frac{v^2}{r} = \frac{(12\pi)^2}{9} = 16\pi^2 m/sec^2$$

41. (1) [NCERT-XI-I-14]

Fundamental frequency of closed organ pipe = first overtone frequency of an open organ pipe

$$\frac{v}{4L_1} = \frac{v}{L_2}$$

$$L_2 = 4L_1$$

$$60 = 4 \times L_1$$

$$L_1 = 15cm$$

42. (1) [NCERT-XI-I-14]

$$E_1 = \frac{1}{2}CV^2$$

In first case $= \frac{1}{2} \times 2 \times V^2$

$= V^2$

$C_{eu} = C_1 + C_2$

In second case $= 2 + 2 = 4f$

Initial charge is shared between two capaciter is equally, so the potential across each capaciter $\frac{V}{2}$

$$\frac{E_1}{E_2} = \frac{v^2}{\left(\frac{v^2}{2}\right)} = \frac{2}{1}$$

Now $E_2' = \frac{1}{2} \times 4 \times \left(\frac{v}{2}\right)^2$

$$\frac{E_2}{E_1} = \frac{1}{2}$$

$$E_2 = \frac{v^2}{2}$$

43. (2) [NCERT-XI-I-14]

The capacitance of the original capacitor with air between the plates is given by:

$$C_1 = \frac{\varepsilon_0 A}{d}$$

When the metal sheet of thickness $\left(\frac{2d}{3}\right)$ is introduced

$$C_2 = \frac{\varepsilon_0 A}{d - \frac{2d}{3}}$$

$$C_2 = \frac{3\varepsilon_0 A}{d}$$

Now $\frac{C_2}{C_1} = \frac{\frac{3\varepsilon_0 A}{d}}{\frac{\varepsilon_0 A}{d}}$

$$\frac{C_2}{C_1} = 3$$

44. (1) [NCERT-XI-I-14]

$$V_L = I(\omega L) = 31.4$$

$$I = \frac{31.4}{2 \times 3.14 \times 50 \times 10 \times 10^{-3}}$$

$$I = 10A$$

45. (1) [NCERT-XI-I-14]

Width of 1st secondary maxima = $\frac{\lambda}{a}D$

Here. $= \frac{400 \times 10^{-9} \times 100 \times 10^{-2}}{0.2 \times 10^{-3}}$

$= 2mm$

46. (3) [NCERT-XI-I-14]

The shape of wave front of the light is plane.

47. (3) [NCERT-XI-I-14]

$$\lambda_0(nm) = \frac{1240}{\phi} = \frac{1240}{3} = 413.3 \approx 414nm$$

48. (3) [NCERT-XI-I-14]

49. (1) [NCERT-XI-I-14]

50. (2) [NCERT-XI-I-14]

$$0.1 = \frac{MSD}{20} \Rightarrow MSD = 2mm$$

CHEMISTRY

SECTION-A

51. (4) [NCERT-XII-II-288]

C_1 of β-galactose with C_4 of β-glucose

52. (2) [NCERT-XI-II-284]

Paper chromatography is a type of partition chromatography.

Both moving and stationary phase is liquid.

53. (3) [NCERT-XI-I-191]

54. (2) [NCERT-XII-II-251]

55. (2) [NCERT-XI-II-311, 270]

56. (3) [NCERT-XII-I-34]

$$Q=\frac{[Ni^{+2}]}{[Ag^{+}]^2}=\frac{0.16}{(0.002)^2}=4\times10^4$$

$$E=E^0-\frac{0.059}{n}\log Q=+0.914\ V$$

57. (1) [NCERT-XII-I-119]

Primary valency is ionisable and satisfied by negative ions.

58. (3) [NCERT-XII-I-126]

This will show mer – and fac – isomerism.

59. (3) [NCERT-XII-I-127, 128]

NO_2 is ambidient ligand so it will show linkage isomerism and H_2O is hydrate isomerism.

60. (2) [NCERT-XII-II-271]

Compound A is CH_3CH_2OH

Compound B is CH_3CHO

Compound C is $CH_3–CH_3$

61. (4) [NCERT-XII-II-264]

Hoffmann bromide reaction not shown by $CH_3CONHCH_3$.

62. (3) [NCERT-XII-I-129]

sp^3d^2 and paramagnetic

63. (1) [NCERT-XII-II-232]

Compound A is $CH_3–CH_2–CN$

Compound B is $CH_3–CH_2–CHO$

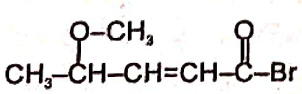
64. (3) [NCERT-XII-II-246]

A is CH_3COOH

B is CH_3CONH_2

C is CH_3CN

65. (2) [NCERT-XI-II-264]



4-methoxy pent-2-en-1-oyl bromide

66. (2) [NCERT-XII-I-102]

$\mu=\sqrt{n(n+2)}=\sqrt{4(4+2)}=2\sqrt{6}$ B.M.

67. (3) [NCERT-XII-I-79]

In IIIA on moving down the group the stability of +1 oxidation state is increase.

68. (4) [NCERT-XII-I-25]

$$I=1+\alpha\left(\frac{1}{n}-1\right)$$

69. (2) [NCERT-XII-II-274]

Compound A is $C_6H_5N_2^+Cl^-$

Compound B is C_6H_5CN

Compound C is $C_6H_5CH_2NH_2$

Compound D is $C_6H_5CH_2OH$

70. (1) [NCERT-XI-II-300]

$$-C=C-\xrightarrow[NaOH]{Raney\ Ni}-C-C-$$

71. (4) [NCERT-XII-I-87]

$t_{99\%}=2t_{90\%}$

72. (4) [NCERT-XI-I-112]

NH_3 and NF_3 molecule have pyramidal shape.

The resultant dipole moment of NH_3 is greater than that of NF_3.

73. (1) [NCERT-XI-II-310]

Compound A is $CH_2=CH_2$

Compound B is 

74. (4) [NCERT-XII-I-15]

Osmotic pressure

75. (4) [NCERT-XII-II-240]

$$CH_3CO.CH_3\xrightarrow{LiAlH_4}CH_3.CHOH.CH_3$$

This will give iodoform test.

76. (3) [NCERT-XII-I-38]

Using

$$E_{cell}=E^{\circ}_{cell}-\frac{0.059}{n}\log Q$$

77. (3) [NCERT-XII-II-318]

A= CH_4

B = CH_3Cl

C = C_2H_6

78. (2) [NCERT-XI-I-162]

Thermos flask is an example of an isolated system i.e., no exchange of energy or matter between the system and the surroundings.

Adiabatic process is a process in which there is no transfer of heat between the system and surroundings.

79. (2) [Experimental]

$(NH_4)_2Fe(SO_4)_2.6H_2O$

Mohar salt.

80. (1) [NCERT-XI-I-219]

$[H^+] = C\alpha$

$$\alpha = \frac{[H^+]}{C}$$

81. (1) [NCERT-XII-I-78]

$$K = A\, e^{-\frac{E_a}{RT}}$$

$$\log K = \log A - \frac{Ea}{RT}$$

82. (3) [NCERT-XII-I-71]

In zero order reaction rate of reaction = rate constant (k)

83. (2) [Experimental]

SO_3^{2-}

84. (2) [NCERT-XI-I-202]

$$\frac{(K_P)_{PCl_5}}{(K_P)_{N_2O_4}} = \frac{\frac{\alpha^2 P_1}{1-\alpha^2}}{\frac{4\alpha^2 P_2}{1-\alpha^2}}$$

upon solving $\frac{(K_P)_{PCl_5}}{(K_P)_{N_2O_4}} = \frac{P_1}{4P_2}$

85. (2) [NCERT-XI-I-90]

F < Cl > Br > I

SECTION-B

86. (4) [NCERT-XI-I-51]

Infinity

87. (4) [NCERT-XI-I-16]

Suppose % of heavier isotope is X

$$35.5 = \frac{37X + 35(100 - X)}{100}$$

88. (1) [NCERT-XI-I-173]

89. (2) [NCERT-XI-I-150]

Fact

90. (2) [NCERT-XI-I-18]

91. (4) [NCERT-XI-I-62]

92. (2) [NCERT-XI-I-109]

Be_2

93. (3) [NCERT-XI-I-114]

$SO_3 - sp^2$ $H_2S - sp^3$

$SO_2 - sp^2$ $S_8 - sp^3$

94. (3) [NCERT-XI-I-87]

Ionization energy increases along the period and decreases down the group.

95. (3) [Old NCERT-XII-I-204]

It is fact.

96. (1) [NCERT-XI-I-125]

97. (3) [NCERT-XII-I-102]

Spin only magnetic moment depends upon the number of unpaired electrons, more the number of unpaired electrons, greater will be the spin only magnetic moment.

$_{25}Mn = 1s^2, 2s^2\ 2p^6, 3s^2 3p^6 3d^5, 4s^2$

$Mn^{2+} = 1s^2, 2s^2\ 2p_6, 3s^2 3p^6 3d^5, 4s^0$

1	1	1	1	1

Number of unpaired electrons = 5

$_{24}Cr = 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^5, 4s^1$

$Cr^{2+} = 1s^2, 2s^2 2p^6, 3s^2 3p^6 3d^4, 4s^0$

1	1	1	1	

Number of unpaired electrons = 4

$_{22}Ti = 1s^2, 2s^2 2p^6, 3s^2 3p^6, 3s^2 3p^6 3d^2, 4s^2$

$Ti^{2+} = 1s^2, 2s^2 2p^6, 3s^2 3p^6\ 3d^2, 4s^0$

1	1			

Number of unpaired electrons = 2

So, the correct order of spin only magnetic moment is $Mn^{2+} > Cr^{2+} > Ti^{2+}$.

98. (1) [NCERT-XII-II-282]

Glucose is reducing sugar.

99. (1) [NCERT-XI-II-270]

100. (4) [NCERT-XI-I-18]

18 moles of water

BIOLOGY

PART-1 (SECTION-A)

101. (4) [NCERT-I-24 to 34]

(1) Wolffia – Smallest Angiosperm
(2) Dicotyledons – Class of angiosperm
(3) Vegetative reproduction– in mosses – Fragmentation
(4) Oogamous – Type of sexual reproduction

102. (3) [NCERT-II-157]

An example of microbial biocontrol agents that can be introduced in order to control butterfly caterpillars is the bacteria *Bacillus thuringiensis* (often written as *Bt*).

103. (1) [NC-I-245 to 248]

X may be – Peptide hormone, protein hormone, amino acid derivative Hormone

104. (2) [NMC SYLLABUS]

The time duration between infection and onset of symptoms are called Incubation period

105. (3) [NCERT-I-106, 107]

(1) Adenylic acid – Nucleotide
(2) Arachidonic acid – Lipids
(3) Glutamic acid – Amino acid
(4) Palmitic acid – Lipids

106. (4) [NCERT-I-6 to 8]

	Genus		Species
(1)	*Panthera*	–	*pardus*
(2)	*Solanum*	–	*nigrum*
(3)	*Mangifera*	–	*indica*
(4)	*Solanum*	–	*tuberosum*

107. (2) [NCERT-I-64,] [NMC Syllabus]

A.	Syngenesious	I.	Compositae
B.	Lodicule	IV.	Poaceae
C.	Monothecous anther	II.	Malvaceae
D.	$\overset{\frown}{P\ A}$	III.	Lily

108. (2) [NCERT-I-67, 68]

A.	%	II.	Zygomorphic
B.	(K)	IV.	Gamosepalous
C.	(C)	I.	Gamopetalous
D.	♀	III.	Female

109. (4) [NCERT-I-42 to 44]

(1) Tapeworm – Acoelomate – Triploblastic
(2) Hookworm – Pseudocoelom – Aschelminthes
(3) Earthworm – Coelom – segmented body
(4) Silkworm – Triploblastic – Jointed Appandages

110. (1) [NCERT-I-40 to 44]

A.	Corals	I.	Calcium carbonate
B.	Spicules	II.	Porifera
C.	Compound eye	III.	Arthropoda
D.	Lateral appendages	IV.	Parapodia

111. (2) [NCERT-I-44 to 48]

The correct statements for chordata

a. Their members are flying fish, angel fish
b. Central Nervous system is dorsal, Hollow and single
c. Heart is ventral
d. Phylum chordata is divided into three subphylum Urochordata, Vertebrata and cephalochordata

112. (1) [NCERT-I-126]

Tetrad is formed in Prophase I

113. (4) [NCERT-I-124]

Nucleolus, golgi complex and ER reform in Telophase

114. (3) [NCERT-II-225]

Seed bank, Tissue culture, Pollen bank – Ex-situ conservation

Khasi and jaintia Hills – In-situ conservation

115. (4) [NCERT-II-220]

The species area relationships are given by German Naturalist Alexander von Humboldt

116. (3) [NCERT-I-243 to 246]

A.	PTH	II.	Increases the Ca^{+2} level in the blood
B.	TCT	IV.	Decreases the Ca^{+2} level in the blood
C.	Glucagon	III.	Increases the glucose level in the blood
D.	Insulin	I.	Decreases the glucose level in the blood

117. (1) [NCERT-I-224 to 226]

A. Sacrum	II. Vertebral column
B. Temporal bone	I. Cranial bone
C. Scapula	IV. Pectoral girdle
D. Coxal bone	III. Pelvic girdle

118. (4) [NCERT-I-171]

Macronutrients and Micronutrients both are required by plants for the synthesis of protoplasm and act as source of energy

119. (4) [NCERT-I-173]

Statement I:

During differentiation, cells undergo few to major structural changes both in their cell walls and protoplasm.

Statement II :

Heterophyllous development due to environment occurs in buttercup.

120. (2) [NCERT-I-177]

Statement I:

Ethylene is largely an inhibitor of growth activities

Statement II :

Ethylene enhances the respiration rate during ripening of the fruits this rise in rate of respiration is called respiratory climactic.

121. (1) [NCERT-II-48]

GIFT – Gamete Intra Fallopian Transfer

122. (1) [NCERT-I-127]

The given diagram is Anaphase I

123. (2) [NCERT-I-124, 125]

Statement I:

The formation of the new cell wall begins with the formation of a simple precursor called the cell plate that represent the middle lamellae between the walls of two adjacent cells.

Statement II :

Mitosis usually results in the production of diploid daughter cells with identical genetic complement.

124. (4) [NCERT-I-186]

(1) A–Diaphraghm contracted

(2) B–Ribs and sternum raised

(3) C–Volume of thorax increased

125. (4) [NCERT-II-93 to 95]

Statement I:

The split - gene arrangement furthur complicates the definition of a gene in terms of a DNA segment.

Statement II :

Marshell nirenberg cell – free system for protein synthesis finally helped the code to be deciphered.

126. (4) [NCERT-II-212, 213]

(1) Pyramid of energy – Upright pyramid

(2) Pyramid of biomass – Inverted pyramid in sea

(3) Pyramid of numbers – Upright pyramid In a grassland

(4) One big tree ecosystem – inverted pyramid with reference to number

127. (4) [NC-II-83]

Distance between two base pair is 3.4 A^0 in B-DNA

Total Number of base pair $= \frac{1.1}{3.4 \times 10^{-10}}$

$= 3.3 \times 10^9$ bp

128. (4) [NMC SYLLABUS]

Syncarpous character are present in family

- Cruciferae
- Malvaceae
- Compositae

129. (4) [NMC SYLLABUS]

The symptom of Chikungunya

- High fever
- Headache
- Muscle pain

130. (4) [NMC SYLLABUS]

In malvaceae family the character of flower

- Actinomorphic
- Complete
- Bisexual

131. (1) [NMC SYLLABUS]

The genetic variation in population arises due to:

- Mutation
- Gene recombination
- Gene migration
- Genetic drift

132. (4) [NMC SYLLABUS]

The process are responsible for changes in chromosome number :

- Polyploidy
- Tetrasomy
- Trisomy

133. (2) [NC-II-63]

(1) RrYY – Yellow Round

(2) rrYy – Yellow wrinkled

(3) RRyy – Green Round

(4) rrYY – Yellow wrinkled

134. (4) [NCERT-I-218]

Statement I:

The contractile property of muscles are effectively used for locomotion and other movements by human beings and majority of multicellular organisms.

Statement II :

Cytoskeletal elements like microfilaments are also involved in Amoeboid movements.

135. (4) [NCERT-II-20]

(1) The embryo may enter a state of inactivity called dormancy

(2) The fruits may be fleshy as in guava, orange, mango

(3) The fruit may be dry, as in groundnut and mustard

PART-1 (SECTION-B)

136. (3) [NCERT-II-13]

(1) In a majority of aquatic plants such as water hyacinth, Water lily, the flowers emerge above the level of water and are pollinated by insects or wind as in most of the land plants

(2) Both wind and water pollinated flowers are not very colourful and do not produce nector

(3) In Hydrilla the pollinating agent is water

(4) In Vallisneria the pollinating agent is water

137. (3) [NCERT-II-8, 9]

a. In wheat the number of ovules in an ovary may be one

b. In water melon the number of ovules in an ovary may be many

c. The placenta is located inside the cavity of ovary

d. The cells of nucellus have abundant reserve food materials

138. (4) [NCERT-I-159]

(1) OAA, Succinic Acid, Fumaric Acid – 4 carbon containing compound.

139. (1) [NCERT-I-159, 160]

In ETS of mitochondria Cyt bc, is the complex III

140. (3) [NCERT-I-183]

Birds – Pulmonary Respiration

141. (2) [NCERT-I-236]

Amygdala is a part of Fore Brain

142. (2) [NCERT-II-134 to 137]

The correct statements for immunity

a. Immunity may be Active or Passive

b. When ready made antibodies are directly given to protect the body against foreign agents, it is called passive immunity

c. Innate immunity is non specific type of defence, that is present at the time of birth

d. The T-lymphocyte mediate CMI

143. (4) [NCERT-II-143, 144]

(1) Smoking also paves the way to hard drugs

(2) Nicotine stimulates adrenal gland to release adrenaline or noradrenaline into blood circulation

(3) Cocaine interferes with the transport of the neuro - transmitter dopamine

144. (4) [NCERT-II-195, 196]

The correct match for $\frac{dN}{dt} = rN\left(\frac{K-N}{k}\right)$

(1) N – Population density and time t

(2) r – Intrinsic rate of natural increase

(3) K – Carrying capacity

145. (4) [NCERT-II-192, 193]

(1) Natality – Increase in population density

(2) Immigration – Increase in population density

(3) Emigration – Decrease in population density

(4) Mortality – Decrease in population density

146. (4) [NCERT-II-124, 125]

(1)  – Adult human beings

(2)  – Baby chimpanzee

(3)  – Adult chimpanzee

147. (3) [NCERT-I-107 to 114]

(1) $C_6H_{12}O_6$ – Glucose

(2) $C_3H_4O_3$ – Pyruvic acid

(3) $C_2H_4O_2$ – Acetic acid

(4) H_2CO_3 – Carbonic acid

148. (4) [Old-NCERT-I]

Xylem Parenchyma, Phloem Parenchyma, Companion cell –Living

149. (1) [NCERT-I-71 to 73]

Vascular bundle – Vascular tissue system

Guard cell, Trichome, Root hair – Epidermal tissue system

150. (4) [NCERT-I-61 to 65]

(1) Racemose – Inflorescence

(2) Imbricate – Aestivation

(3) Free central – Placentation

PART-2 (SECTION-A)

151. (4) [NCERT-I-94 to 98]

Lysosome, ER – Single membrane bounded

Ribosome – Non membrane bounded

152. (4) [NCERT-I-88 to 90]

(1) Mycoplasma – 0.3 μm

(2) Virus – 0.02 to 0.2 μm

(3) PPLO –0.1 μm

(4) Eukaryotic cell – 10 to 20 μm

153. (4) [NCERT-I-247]

(1) CCK – Act on pancreas

(2) CCK – Act on gall bladder

(3) Gastrin – Act on gastric gland

(4) Secretin – Act on exocrine pancreas and stimulate secretion of digestive enzyme

154. (1) [Old-NCERT-I]

(1) Smooth – Involuntary – Blood vessel

(2) Skeletal – Voluntary – Biceps

(3) Smooth – Involuntary – Intestine

(4) Cardiac – Involuntary – Intercalated disc

155. (3) [Old-NCERT-I]

(1) Dense regular connective tissue – Collagen fiber

(2) Dense irrgular connective tissue – Collagen fiber

(3) RBC, WBC – Fluid connective tissue

(4) Hormone – Secretion of ductless gland

156. (1) [Old-NCERT-I]

(1)  – Labium

(2)  – Mandible

(3)  – Maxilla

(4)  – Hypopharynx

157. (4) [NCERT-II-96]

(4) Both (A) and (R) are true and (R) is the correct explanation of (A)

158. (1) [NCERT-II-36, 37]

Statement I:

Placenta also act as endocrine tissue and produces several hormones like hCG, hPL, estrogen, progestogen, relaxin

Statement II :

The Mitotic divisions start as the zygote moves through the isthmus of the oviduct called cleavage towards the uterus.

159. (3) [NCERT-II-33]

Statement I:

The secondary oocyte forms a new membrane called zona pellucida surrounding in it.

Statement II :

The number of chromosomes are same in secondary oocyte and ovum.

160. (4) [(Old NCERT-I)]

Tracheids are present in the xylem of gymnosperms, Pteridophytes and Angiosperms

161. (4) [NCERT-II-37]

In women hCG, hPL and Relaxin hormone are produced only during pregnancy.

162. (4) [NCERT-II-173,174]

Statement I:

In Bioreactor the stirrer facilitates even mixing and oxygen availability throughout the bioreactor.

Statement II :

In Almost all recombinant technologies, the ultimate aim is to produce a desirable protein.

163. (4) [NCERT-II-168,178]

Gel electrophoresis is not involved in tissue culture

164. (2) [NCERT-I-235,236]

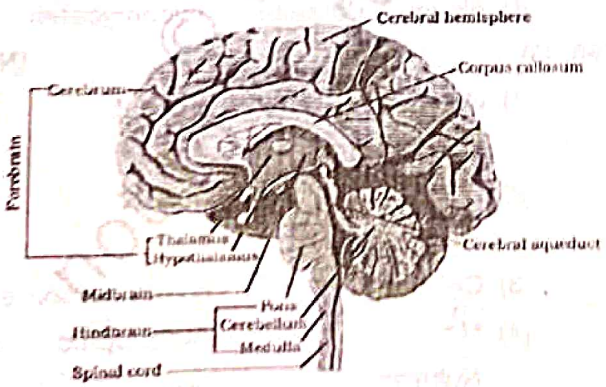


Figure 21.4 Diagram showing sagital section of the human brain

165. (3) [NCERT-II-123 to 125]

Statement I:

Therapsids and polycosaurs are extinct reptiles

Statement II :

Pre-historic cave art developed about 18000 years ago

166. (4) [NCERT-II-201]

Statement I:

Lichen and mycorrhizae are example of mutualism.

Statement II :

In lichen the fungi help the plant in the absorption of essential nutrients from the soil while the plant in turn provides the fungi with energy - yielding carbohydrates.

167. (3) [NCERT-II-47]

Trichomoniasis –STIs

168. (2) [NCERT-II-59]

In Test cross % of violet flower –50%

In Test cross % of white flower –50%

169. (1) [NCERT-II-63, 64]

RRyy – 6.25%

rryy – 6.25%

RrYy – 25%

170. (2) [NCERT-II-71]

44AA + XY is Genotype of normal male child

171. (3) [NCERT-II-76]

Gyanecomastia – Klinefelter syndrome

172. (4) [NCERT-II-207]

(1) GPP – R = NPP

(2) GPP = NPP + R

(3) GPP – NPP = R

173. (1) [NCERT-II-219]

In Amazonian rain forest 378 species – Reptiles

174. (3) [Old-NCERT-I]

In cockroach blood does not transport oxygen.

175. (3) [NCERT-I-80 to 84]

Frog – Nucleated RBC, Ureotelic and Sexual dimorphism

176. (3) [NCERT-I-106, 107]

(1) Saturated fatty acid	–	Without double bond
(2) Unsaturated fatty acid	–	One or more C = C double bond
(3) Guanylic acid	–	Nucleotide
(4) Glycerol	–	More carbon atom than glycine

177. (3) [NCERT-I-118, 119]

(1) NAD – Organic compound
(2) NADP – Organic compound
(3) Haem group in peroxidase – Organic compound
(4) Components of cell wall in plants, fungi – Polysaccharides

178. (2) [NCERT-I-93 to 95]

(1) Active transport – Energy dependent process
(2) Peroxisomes – Not a part of endomembrane system
(3) Osmosis – Movement of water by diffusion
(4) 52% protein – Membrane of erythrocyte

179. (3) [NCERT-I-197]

(1) Fishes – One Auricle
(2) Amphibians – One ventricle
(3) Crocodile – Two ventricle
(4) Mammals – Two ventricle

180. (4) [NCERT-I-194, 195]

(1) Leucocytes – Nucleated
(2) Leucocytes – Average 6000–8000 mm^{-3} of blood
(3) Eosinophills – 2–3% of WBC
(4) Monocytes – Agranulocytes

181. (2) [NCERT-II-75]

The correct statement for thalassemia

a. It is a type of mendelian disorder
b. It is a autosomal disease
c. Thalassemia can be classified according to which chain of the haemoglobin molecule is affected
d. It is a Quantitative problem of synthesising too few globin molecule

182. (1) [NCERT-II-80 to 83]

The correct statement for genetic material

a. DNA is a long polymer of deoxyribonuleotides
b. The length of DNA is usually defined as number of nucleotides present in it
c. DNA is a acidic substence
d. In some viruses the flow of information is in reverse direction, that is from RNA to DNA

183. (1) [NCERT-II-95, 96]

The correct statements for genetic code

(1) The codon is triplet
(2) 61 codons code for amino acids and 3 codons do not code for any amino acids
(3) UAA, UAG, UGA are stop codons

184. (1) [NCERT-II-99 to 101]

The correct statement for Lac operon

a. In lac operon lac refers to lactose
b. The y-gene codes for permease, which increase permeability of the cell to β-galactosides
c. Lac operon is under control of positive regulation as well
d. Lactose act as inducer for lac operon

185. (2) [NCERT-I-205, 206]

Frogs and Humans – Ureotelic

PART-2 (SECTION-B)

186. (4) [NCERT-I-213]

Skin, Lungs and Kidney are involved in Elimination of Excretory wastes in Human:

187. (2) [NCERT-I-48 to 50]

(1) Catla – Bony skeleton
(2) Cobra – Three chambered heart
(3) Frog – Cloaca
(4) Parrot – Pneumatic bone

188. (3) [NCERT-I-24 to 29]

(1) Volvox – Oogamous
(2) Ulothrix – Isogamous
(3) Polysiphonia – Oogamous
(4) Sphagnum – Oogamous

189. (4) [NCERT-I-16 to 18]

(1) Morels – Edible –Ascomycetes
(2) Trypanosoma – Parasite – Protozoans
(3) Paramoecium – Cilia – Protozoans
(4) Albugo – Parasite – Phycomycetes

190. (3) [NCERT-I-11]

(1) Nuclear membrane	Present	Present
(2) Body organisation	Cellular	Tissue/ Organ
(3) Cell wall	present in some	Present
(4) Mode of Nutrition	Autotrophic and Heterotrophic	Autotrophic

191. (1) [NCERT-II-219]

The Number of species of Birds in New York at 41° N – 56 species

192. (4) [NCERT-II-142 to 148]

C_3 plants and C_4 plants – RuBiSCO enzyme involved in CO_2 fixation

193. (4) [NCERT-I-135]

Sulphur or Sulphate are the oxidation product in green sulphur and purple sulphur bacteria:

194. (1) [NCERT-I-135]

$$6CO_2 + 12\,H_2O \xrightarrow{\text{Light}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

195. (1) [NCERT-II-172, 173]

Somaclones – tissue culture

196. (1) [NCERT-II-179]

GM plants have been useful in many ways. In golden rice Vitamin A nutrient are enhanced

197. (4) [NCERT-II-171]

Biolistic technique is used in Gene transfer process

198. (4) [NCERT-II-169]

A gene whose expression helps to identify transformed cell is known as selectable marker

199. (3) [NCERT-II-169]

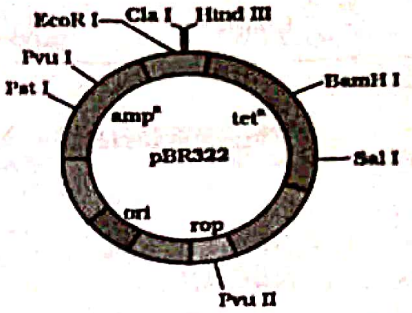


Figure 11.4 *E. coli* cloning vector pBR322 showing restriction sites (*Hind* III, *EcoR* I, *Bam*H I, *Sal* I, *Pvu* II, *Pst* I, *Cla* I), ori and antibiotic resistance genes (amp^R and tet^R). rop codes for the proteins involved in the replication of the plasmid.

200. (2) [NCERT-II-182, 183]

Conventional diagnosis methods include Serum and urine analysis

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