E • Re-FST : 03 (A) • Test ID : 269 • TEST DATE : 29-June-2024

RE-NEET

NEW LIGHT
INSTITUTE
Medical | Foundation

ALL INDIA

FULL SYLLABUS

TEST SERIES 2024-25

NATIONAL ELIGIBILITY-CUM-ENTRANCE TEST

S O L U T I O N

PHYSICS

SECTION-A

1. (2) **[NCERT XI- I- 7]**

P_1=60 J/MIN=1J/SEC

$$P_2 = P_1\left[\frac{M_1}{M_2}\right]^1\left[\frac{L_1}{L_2}\right]^2\left[\frac{T_1}{T_2}\right]^{-3}$$

$$P_2 = 1\left[\frac{1000}{100}\right]^1\left[\frac{100}{100}\right]^2\left[\frac{1}{60}\right]^{-3}$$

$$P_2 = 2.16\times10^6 units$$

2. (2) **[NCERT XI- I- 4]**

As per the rule for determining the number of significant figures, there is no change in number of significant figures on changing the units.

In 4.700 m = 4700mm, there is no change in significant figures i.e. it remains same as 4.

Thus, the statement given in option (2) is incorrect,

rest are correct

3. (1) **[[NCERT XI- I- 9]**

Let the relationship can be written as

$$F = kr^a\eta^b v^c$$

$$[MLT^{-2}] = [L]^a[ML^{-1}T^{-1}]^b[LT^{-1}]^c$$
$$= [M^bL^{a-b+c}T^{-b-c}]$$

Comparing powers of M, L and T on either side of the equation, we get

$$b = 1$$
$$a - b + c = 1$$
$$-b - c = -2$$

On solving these three equations, we get

a = 1 ,b = 1 , and c = 1

Hence, the relation becomes $F = kr\eta v$

4. (1) **[NCERT XI- I- 21]**

$$t = \sqrt{\frac{2d}{g}}$$

$$t = \sqrt{\frac{2\times0.21}{9.8}} \approx 0.2\sec$$

5. (3) **[NCERT XI- I- 15]**

Since velocity is a vector quantity, having both magnitude and direction, so a change in velocity may involve change in either or both of these factors.

Acceleration, therefore may result from a change in speed (magnitude), a change in direction or changes in both

6. (2) **[NCERT XI- I- 34]**

7. (3) **[NCERT XI- I- 40]**

$$t = \sqrt{\frac{2\times490}{9.8}} = 10\sec$$

$$V_y = 0 - 9.8\times10 = -98ms^{-1}$$

$$V = \sqrt{V_x^2 + V_y^2} = \sqrt{15^2 + 98^2} \approx 99$$

8. (3) **[NCERT XI- I- 54]**

According to figure, radius of semi-circle, r = 2

Linear momentum gained = Impulse from 0 to 4 s

= Area enclosed by graph from 0 to 4 s

$$= \frac{\pi r^2}{2} = \frac{\pi(2)^2}{2} = 2\pi\ N-s$$

9. (1) **[NCERT XI- I- 60]**

When a person walks on the road, he exerts a force on floor. According to Newton's third law of motion, a reaction force exerts on the person which is being provided by the frictional force. Thus, the frictional force helps a person to walk on a rough surface.Thus, the statement given in option (1) is incorrect, rest are correct

10. (1) **[NCERT XI- I-]**

This is the case of work done by a variable force,

$$W = \int_0^5 (3x^2 - 2x + 7)dx = 135J$$

11. (3) **[NCERT XI- I- 76]**

It is given that, force acting on a body is inversely proportional to its velocity.

$$F \propto \frac{1}{v}$$

$$F = \frac{k}{v} \Rightarrow ma = \frac{k}{v}$$

$$m\frac{dv}{dt} = \frac{k}{v} \Rightarrow \int mvdv = \int kdt$$

$$m\frac{v^2}{2} = kt \Rightarrow KE \propto t$$

Kinetic energy of body starting from rest is directly proportional to time.

12. (2) **[NCERT XI- 80]**

$$F = K_1x_1 \text{ and } F = K_2x_2$$

$$K_1x_1 = K_2x_2$$

$$\Rightarrow \frac{k_1}{k_2} = \frac{x_2}{x_1} \Rightarrow \frac{(PE)_1}{(PE)_2} = \frac{k_1x_1^2}{k_2x_2^2}$$

$$\frac{(PE)_1}{(PE)_2} = \frac{k_1}{k_2}\left(\frac{k_2}{k_1}\right)^2 = \frac{k_2}{k_1} = \frac{3}{2}$$

13. (3) **[NCERT XI-I 76]**

14. (2) **[NCERT XI- I- 99]**

$$v_{cm} = \frac{m_1v_1 + m_2v_2 + m_3v_3}{m_1 + m_2 + m_3}$$

$$= \frac{5\times5 + 4\times4 + 2\times2}{5+4+2} \approx 4\,m/s$$

15. (1) **[NCERT XI- I- 114]**

Ratio of their moment of inertia

$$\frac{I_1}{I_2} = \frac{\frac{m_1r_1^2}{2}}{\frac{m_2r_2^2}{2}} = \frac{m_1}{m_2}\cdot\left(\frac{r_1}{r_2}\right)^2 = \frac{1}{2}\left(\frac{2}{1}\right)^2$$

$$\frac{I_1}{I_2} = \frac{2}{1}$$

16. (2) **[NCERT XI-I-63]**

According to theory:

$$\frac{mv^2}{R} \le \mu_s mg$$

$$v \le \sqrt{\mu_s Rg}$$

17. (1) **[NCERT XI - I-133]**

Since, acceleration due to gravity decreases above the surface of the earth and weight is directly proportional to the acceleration due to gravity, so as we go up, we feel light weighted than on the surface of the earth.

Therefore, Assertion and Reason are correct and Reason is the correct explanation of Assertion

18. (1) **[NCERT XI -II- 198]**

19. (2) **[NCERT XI -II- 168]**

$$Strain = \frac{Change\ in\ length}{Original\ length} = \frac{2L - L}{L} = 1$$

20. (2) **[NCERT XI -II- 224]**

$$\left|\frac{\Delta\rho}{\rho}\right| = \frac{\Delta V}{V} = \gamma\Delta T$$

$$\left|\frac{\Delta\rho}{\rho}\right| = 5\times10^{-4}\times40 = 0.020$$

21. (2) **[NCERT XI -II- 219**

According to Newton's law of cooling, the rate of loss of heat is directly proportional to the difference in temperature of the body and its surroundings.

22. (2) **[NCERT XI-234]**

In isothermal process of an ideal gas, $\Delta U = 0$ so

$$\Delta Q = \Delta W$$

$$\Delta W = +20J$$

$$\Delta Q = +20J$$

23. (3) **[NCERT XI-I- 248]**

In collision of a molecule of an ideal gas with the wall of container, total kinetic energy and total momentum will remain conserved, as the collisions between molecules among them selves or between molecules and the walls are elastic.

24. (4) **[NCERT - 185]**

$$U(x)=\frac{1}{2}kA^2\cos^2\omega t$$

$$at\ t=\left(\frac{T}{4}\right)$$

$$U(x)=\frac{1}{2}kA^2\cos^2\omega\left(\frac{2\pi}{T}\times\frac{T}{4}\right)$$

$$U(x)=0$$

25. (2) **[NCERT - 184]**

Transverse wave speed over a string is given by

$$v=\sqrt{\frac{T}{\mu}}$$

$$\frac{v}{\frac{v}{2}}=\sqrt{\frac{T_1}{T}}\Rightarrow T=\frac{T_1}{4}=\frac{2.016\times10^4}{4}$$

$$\Rightarrow T=5.15\times10^3\,N$$

26. (2) **[NCERT XII-I-52,53]**

27. (3) **[NCERT XII-I-76]**

28. (1) **[NCERT XII-I-60]**

29. (1) **[NCERT XII-I-106]**

30. (4) **[NCERT XII-I-80]**

31. (4) **[NCERT XII-I-77]**

32. (3) **[NCERT XII-I-105]**

33. (2) **[NCERT XII-I-106]**

34. (3) **[NCERT XII-I-88]**

35. (4) **[NCERT- XII-I-113]**

$$r=\frac{mv}{qB}=\frac{9\times10^{-31}\times3\times10^7}{1.6\times10^{-19}\times6\times10^{-4}}$$

$$r=28\times10^{-2}\,m$$

$$r=28cm$$

SECTION-B

36. (3) **[NCERT- XII-I-117]**

$$B=\frac{\mu_0 NI}{2R}=\frac{4\pi\times10^{-7}\times10^2\times1}{2\times10^{-1}}$$

$$B=2\pi\times10^{-4}=6.28\times10^{-4}T$$

37. (1) **[NCERT XII-I-152]**

$$\tau=MB\sin\theta\Rightarrow M=\frac{\tau}{B\sin\theta}$$

$$M=\frac{4.5\times10^{-2}}{0.25\sin30^0}\Rightarrow M=0.36\frac{J}{T}$$

38. (4) **[NCERT XII-I-137,138]**

39. (2) **[NCERT-XII-I-159]**

The angle θ made by the area vector of the coil with the magnetic field is 45^0. the initial magnetic flux is

$$\Phi=BA\cos\theta\Rightarrow\frac{0.1\times10^{-2}}{\sqrt{2}}$$

Final flux $\Phi_{min}=0$

The change in flux is brought about in 0.70 s. the magnitude of the induced emf is given by

$$\varepsilon=\frac{|\Delta\Phi_B|}{\Delta t}=\frac{|\Phi_B-0|}{\Delta t}=\frac{10^{-3}}{\sqrt{2}\times0.7}=1.0mV$$

And the magnitude of the current is

$$I=\frac{\varepsilon}{R}=\frac{10^{-3}}{0.5}=2mA$$

40. (1) **[NCERT-XII-I-162]**

41. (3) **[NCERT-XII-I-183]**

The inductive reactance

$$X_L=2\pi fL=2\times\pi\times50\times25\times10^{-3}\Omega$$

The rms current in the circuit is

$$I=\frac{V}{X_L}=\frac{220}{7.85}=28A$$

42. (4) **[NCERT-XII-I-214]**

$$E_o=B_oc=510\times10^{-9}\times3\times10^8=153\,N/C$$

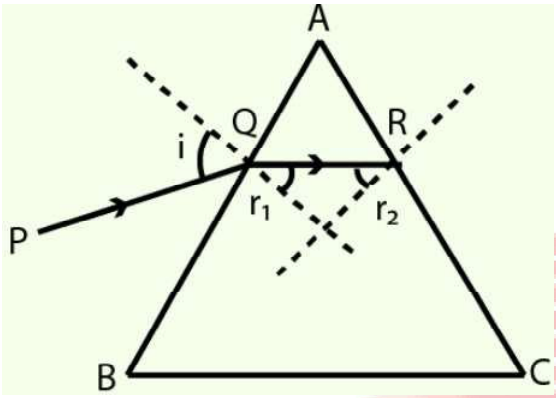
43. (2) **[NCERT-XII-II-251]**

The refracted ray QR will just suffer total internal reflection if it is incident at the critical angle i_c

$$\sin i_c = \frac{1}{\mu} = \frac{1}{1.5424} = 0.66 \Rightarrow \sin^{-1}(0.66) = 41^o$$

$$r_1 + r_2 = A \Rightarrow r_1 = A - r_2 = A - i_c$$

$$\Rightarrow r_1 = A - r_2 = A - i_c = 60^0 - 41^0 = 19^0$$



$$\mu = \frac{\sin i}{\sin r_1} \Rightarrow \sin i = \mu \times \sin r_1 = 1.524 \times \sin 19^0$$

$$\sin i = 1.524 \times 0.3256 = 0.4962$$

$$hence\ i = \sin^{-1}(0.4962) = 30^0$$

44. (4) **[NCERT-XII-II-249]**

$$\frac{1}{f} = (1.55-1)\left(\frac{1}{R} - \frac{1}{(-R)}\right)$$

$$\frac{1}{20} = (1.55-1)\left(\frac{2}{R}\right) \Rightarrow R = 22\,cm$$

45. (2) **[NCERT-XII-II-273]**

$$\lambda = \frac{1.2\times10^{-2}\times0.28\times10^{-3}}{4\times1.4} m = 600nm$$

46. (1) **[NCERT-XII-II-289]**

$$E = h(v - vo) = \frac{1}{2}mv^2$$

$$v_0 = v - \frac{mv^2}{2h}$$

$$v_0 = 7.21\times10^{14} - \frac{9.1\times10^{-31}(6\times10^5)^2}{2\times6.626\times10^{-34}}$$

$$v_o = 4.73\times10^{14}\ Hz$$

47. (3) **[NCERT-XII-II-273]**

$$\frac{1}{\lambda} = R\left(\frac{1}{1^2} - \frac{1}{4^2}\right) \Rightarrow \lambda = \frac{16}{15R} = 972A^0$$

$$\lambda = 97\,nm$$

48. (2) **[NCERT-XII-II-310]**

49. (3) **[NCERT-XII-II-332]**

50. (3) **[NCERT-XII-II-341]**

CHEMISTRY

SOLUTION

51. (3) **[NCERT-XII-II-285]**

Glucose does not form hydrogensulphite addition product with $NaHSO_3$.

52. (2) **[NCERT-XII-II-240]**

The compounds which contain ketomethyl group or which in reaction condition generate ketomethyl group will give positive iodoform test (I_2/NaOH)

Acetone and ethanol, both will give positive iodoform test hence this test can not be used to distinguish them.

53. (4) **[NCERT-XI-I-176]**

54. (1) **[NCERT-XI-II-266]**

55. (4) **[NCERT-XI-I-202, 203]**

Sodium phenoxide is salt of weak acid and strong base.

$$pH = 7 + \frac{1}{2}(pK_a + \log C)$$

$$= 7 + \frac{1}{2}(9.95 + \log 0.2)$$

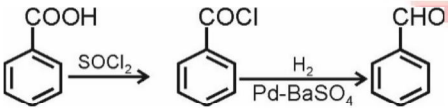
$$= 7 + \frac{1}{2}(9.95 - 0.7)$$

$$= 11.6$$

56. (3) **[NCERT-XI-I-192]**

The species which can donate its lone pair of electrons to an electron deficient species is called as Lewis base.

57. (4) **[NCERT-XII-II-232]**



58. (4) **[NCERT-XII-II-173]**

Tertiary alkyl halide react fastest by S_N1 mechanism as the carbonium ion formed by the removal of –Br is most stable.

59. (4) **[NCERT-XI-I-20]**

$N_2 + 3H_2 \rightarrow 2NH_3$

Mole of N_2 = 28/28 = 1

Mole of H_2 = 10/2 = 5

H_2 is present in excess amount therefore N_2 is limiting reagent.

Mole of ammonia produced = 2.

60. (2) **[NCERT-XII-I-5]**

Mass of urea = 60 × 5 = 300 g

Mass of water = 1000 g

Mass of solution = 1300 g

$$\text{Mass } \% = \frac{300}{1300} \times 100 = 23.1\ \%$$

61. (1) **[NCERT-XII-II-210]**

Secondary alcohol on reaction with copper gives ketone as major product.

62. (3) **[NCERT-XI-II-270]**

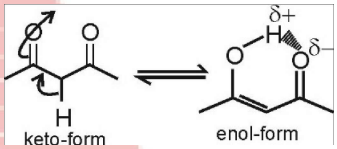
The phenomenon in which different organic compounds having same molecular formula possess different physical or chemical properties is called isomerism. In (3), the two compounds have different molecular formula.

63. (2) **[NCERT-XII-I-123]**

The correct IUPAC name of $[CuCl_2(CH_3NH_2)_2]$ is dichloro bis (methyl amine) copper (II).

64. (2) **[NCERT-XI-II-270]**

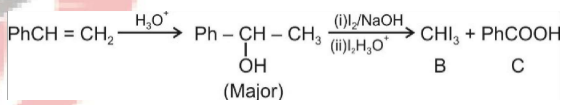
Methylene hydrogen present between two carbonyl groups are highly acidic in nature and the enol formed is stabilised by intramolecular Hydrogen bonding.



65. (2) **[NCERT-XI-II-332]**

The cyclic species in which (4n + 2)π-electrons are delocalised in the ring (n = 1, 2, 3….)

66. (1) **[NCERT-XII-II-240]**



67. (2) **[NCERT-XI-II-239]**

H_3PO_2 is hypophosphorous acid oxidation state of P in H_3PO_2 is +1.

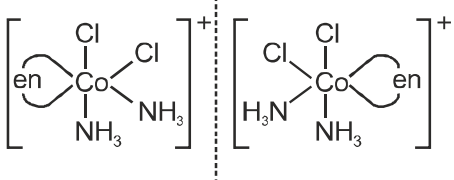
68. (4) **[Old NCERT-XII-I-186]**

Dissociation constant of H_2Te is highest hence it is the strongest acid among the given options.

69. (2) **[NCERT-XII-I-125]**

Octahedral complexes of the type $[M(AA)_2b_2]^{n\pm}$ and $[M(AA)a_2b_2]^{n\pm}$ exhibit geometrical isomerism.

Option (1), i.e., trans-$[Co(en)_2Cl_2]^+$ which belongs to the 1st category is optically inactive owing to presence of an element of symmetry. However (2), cis-$[Co(en)(NH_3)_2Cl_2]^+$ exists in optically active forms.



Option (3) and (4) are optically inactive as all the ligands are same.

70. (4) **[NCERT-XI-II-302]**

When methane gas is treated with chlorine in the presence of sunlight, one hydrogen of methane replaced by the chlorine atom and forms methyl chloride. The mechanism involved in this reaction is free radical mechanism. So it is an example of free radical substitution reaction.

71. (4) **[NCERT-XII-I-69]**

72. (1) **[NCERT-XII-I-96]**

Sc^{3+} does not contain d electron-Hence it is colourless.

73. (3) **[NCERT-XII-I-128, 129]**

All d electrons of Co in $[Co(C_2O_4)_3]^{3-}$ are paired. Hence it is diamagnetic in nature

74. (3) **[NCERT-XII-I-132]**

According to spectrochemical series the correct order of ligand field strength is

$\bar{C}N > NH_3 > \bar{O}H > O^{-}$

75. (3) **[NCERT-XI-II-249]**

$5C_2O_4^{2-} + 2MnO_4^{-} + 16H^{+} \rightarrow 2Mn^{2+} + 10CO + 8H_2O$

76. (4) **[NCERT-XII-I-111]**

Approximate percentage of lanthanoids in mischmetal is 95%.

77. (2) **[NCERT-XI-I-90]**

Element	$\Delta_{eg}H$ kJ mol^{-1}
O	–141
S	–200
Se	–195
Te	–190

Oxygen being smaller in size experience repulsion on addition of one electron in gaseous state hence electron gain enthalpy is lowest in oxygen.

78. (4) **[NCERT-XII-I-18]**

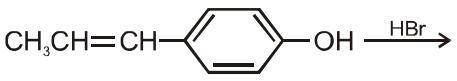
$\Delta T_f = K_f m$

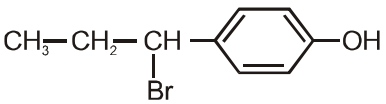
$= 1.86 \times \dfrac{\frac{18}{180}}{\frac{250}{1000}}$

$= 1.86 \times \dfrac{18}{180} \times \dfrac{1000}{250}$

$\Delta T_f = 0.74$

79. (2) **[NCERT-XI-II-165]**





80. (2) **[NCERT-XII-I-45]**

$\Lambda_m = \dfrac{1000 \times k}{C}$

$= \dfrac{1000 \times 0.0015}{0.01}$

$= 150\ S\ cm^2\ mol^{-1}$

81. (4) **[NCERT-XII-I-37]**

$E^0_{Au^{3+}/Au}$ = +ve hence it will not reduce H^+ ion of acid to hydrogen

82. (4) **[NCERT-XII-I-77]**

The reaction is first order as the unit of rate constant is s^{-1}

$t = \dfrac{1}{K} \times 2.303 \log \dfrac{a}{a-x}$

$= \dfrac{1}{4.606 \times 10^{-3}} \times 2.303 \log \dfrac{100}{100-90}$

$= 0.5 \times 10^3$

$= 500\ s$

83. (2) **[NCERT-XI-I-160]**

A Catalyst does not alter Gibbs energy of reaction.

84. (1) **[NCERT-XII-II-200]**

$RCH_2CH_2OH + PBr_3 \longrightarrow RCH_2CH_2CH_2Br$

$\xrightarrow{KCN} RCH_2CH_2CN \xrightarrow{LiAlH_4}$

$RCH_2CH_2CH_2NH_2$

85. (4) **[NCERT-XII-II-42]**

86. (2) **[NCERT-XII-II-296]**

87. (2) **[NCERT-XI-I-89]**

Enthalpy change in the addition of an electron to neutral gas atom k/a, first electron gain enthalpy or electron affinity.

88. (1) **[NCERT-XI-I-115]**

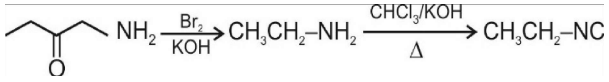
89. (2) **[NCERT-XI-I-141]**

$W_{rev} = 2.303 nRT \log V_f / V_i$

$= 2.303 \times 2 \times 8.314 \times 400 \log \dfrac{20}{2}$

$= -15.3\ kJ.$

90. (3) **[NCERT-XII-II-264, 271]**



91. (3) **[NCERT-XI-I-115]**

Molecule	Shape
BCl_3	Trigonal planar
ClF_3	T-Shape
PCl_3	Pyramidal
SF_4	See-Saw

92. (2) **[NCERT-XI-I-50]**

$$\lambda = \frac{h}{mV} = \frac{6.625 \times 10^{-34}}{500 \times 10^{-6} \times 100}$$

$\lambda = 1.325 \times 10^{-32}$ m.

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

The pair of elements which show diagonal relationship are

Li and Mg ; Be and Al ; B and Si

94. (3) **[NCERT-XI-I-62]**

d subshell contains 5 orbitals.

Maximum number of electrons = 2 × 5 = 10.

95. (2) **[NCERT-XI-I-129, 130]**

If bond order is Zero then the species will not exist

Be_2 (8 electrons)

$(s_{1s})^2 (s^*_{1s})^2 (s_{2s})^2 (s^*_{2s})^2$

B.O of $Be_2 = \frac{1}{2}(4-4)$

$= 0$

96. (3) **[NCERT-XII-I-23]**

1M H_3PO_4 = 1/3N H_3PO_4

97. (2) **[NCERT-XI-I-87, 88]**

In any period -

Lowest Δ_iH_1 = IA metal (Reactive metal)

(I) = 520 kJ = q

Highest Δ_iH_1 = nobel gases

(III) = 2372 kJ = p

so, I-q, II-s, III-p, IV-r

98. (2) **[NCERT-XII-II-170]**

The given reaction is an example of

$C_2H_5Br + KCN(aq.) \rightarrow C_2H_5CN + KBr$

Nucleophilic substitution

99. (3) **[NCERT-XII-II-271]**

Type of amine	Reaction
• 1^0 Amine	– gives isocyanide test
• 2^0 Amine	– gives yellow oily liquid with HNO_2
• 3^0 Amine	– not reacts with Hinsberg reagent

100. (3) **[NCERT-XI-I-129]**

(Molecule)	(Bond order)
• NO	– 2.5
• CO	– 3.0
• O_2^-	– 1.5
• O_2	– 2.0

BIOLOGY

SECTION–A–(PART-1)

101. (1) **[NC-I- 126]**

Chromosomes are moved to spindle equator	–	Metaphase
Centromere splits	–	Anaphase
Pairing between homologous chromosomes	–	Zygotene
Crossing over between homologous chromosomes	–	Pachytene

102. (4) **[NCERT-I-185]**

Statement I:

In Human Breathing involves two stages : Inspiration and expiration.

Statement II :

External Intercostal muscles involved in Breathing.

103. (3) **[NCERT-I-197]**

Statement I:

The complete double circulation present in human

Statement II :

The incomplete double circulation present in frog.

104. (1) **[NCERT-II-80]**

(a)	Adenine	(i)	Purine
(b)	Anthocyanin	(ii)	Pigment
(c)	Chitin	(iii)	Polysaccharide
(d)	Codeine	(iv)	Alkaloid

105. (1) **[NCERT-I-205]**

Statement I:

Ammonia is the most toxic form and requires large amount of water for its elimination.

Statement II :

aquatic amphibians, aquatic insects and many bony fishes are ammonotelic.

106. (2) **[NCERT-I-218]**

Statement I:

Movement of our limbs, Jaws Tongue etc require muscular movement.

Statement II :

Locomotion requires a perfect coordinated activity of muscular, skeletal and neural system.

107. (3) **[NCERT-I-303]**

Statement I:

Skeletal muscles are closely associated with skeletal components of the body.

Statement II :

Visceral muscles are located in the innerwalls of hollow visceral organs of the body.

108. (1) **[NCERT-II-225]**

(a)	Sacred groves	(i)	Khasi Hills in Meghalaya
(b)	Zoological park	(ii)	Ex-situ conservation
(c)	Nile perch	(iii)	Alien species
(d)	Amazon forest	(iv)	Release of large quantity of oxygen

109. (2) **[NCERT-I-12]**

110. (3) **[NMC, Old NCERT]**

Glandular epithelium	–	Goblet cells
Compound epithelium	–	Skin
Exocrine gland	–	With duct
Endocrine gland	–	Without duct
Dense regular tissue	–	Tendon

111. (3) **[NMC, Old NCERT]**

Hepatic caeca are 6-8 in number and help in digestion.

Gizzard is also called as proventriculus.

Hindgut is broader than midgut

Blood vessels are poorly developed

112. (2) **[NCERT-I-47,48]**

113. (1) **[NCERT-I-38]**

Digestive system with one opening	-	Incomplete
Digestive system with two opening	-	Complete
Closed vascular system	-	Blood vessels
Open vascular system	-	Sinuses

114. (1) **[NCERT-I-73, 64]**

Polyadelphous	–	Citrus
Epipetalous	–	Brinjal
Epiphyllous	–	Lily
Perigynous	–	Peach

115. (3) **[NMC, Old NCERT]**

→ Squamous epithelium	–	Blood vessels and air sacs of lungs.
→ Cuboidal epithelium	–	Ducts of glands

116. (3) **[NMC, Old NCERT]**

Phloem parenchyma, companion cell seive tube elements – living

- Phloem fiber is dead due to lose their protoplasm.

Xylem fibres, Tracheids, vessels – Non living

Xylem parenchyma – living

117. (2) **[NMC, Old NCERT]**

The Hypodermis in dicot stem are made up of collenchyma.

118. (4) **[NCERT-II-201]**

In amensalism on the other hand one species is harmed whereas the other is unaffected. Predation, parasitism and commensalisms share a common characteristic– the interacting species live closely together.

In mutualism both species are benefitted

119. (2) **[NCERT-I-26,30,32]**

(a)	*Chlamydomonas*	(i)	Alga
(b)	*Cycas*	(ii)	Gymnosperm
(c)	*Selaginella*	(iii)	Pteridophyte
(d)	*Sphagnum*	(iii)	Moss

120. (1) **[NCERT-II-194]**

In a population, unrestricted reproductive capacity is called as biotic potential. as ecosystem services.

Statement II :

Phosphorus is a major constituent of biological membranes, nucleic acid and cellular energy transfer systems.

121. (2) **[NCERT-I-64]**

(a)	Imbricate	(i)	*Cassia*
(b)	Valvate	(ii)	*Calotropis*
(c)	Vexillary	(iii)	*Bean*
(d)	Twisted	(iv)	*Cotton*

122. (1) **[NCERT-II-224]**

Statement I:

The ethical argument for conserving biodiversity relates to what we owe to millions of plant, animal and microbe species with whom we share this planet.

Statement II :

Philosphically or spiritually, we need to realise that every species has an Intrinsic value, even if it may not be of current or any economic value to us.

123. (4) **[NC-II-210]**

According by Lindman only 10% energy are transferred from one trophic level to other trophic level. So this pyramid is not possible.

124. (1) **[NCERT-II-193]**

An indivisual may have births and deaths but a population has birthrates and death rates another attributes characteristics of a poupulation is sex ratio. An indivisual is either a male or a female but a population has sex ratio.

125. (3) **[NCERT-II-217]**

The IUCN Red List (2004) documents the extinction of 784 species (including 338 vertebrates, 359 invertebrates and 87 plants) in the last 500 years.

126. (4) **[NCERT-II-222]**

The Evil Quartet term are related with Biodiversity loss.

Cause of Biodiversity loss – habitat loss and fragmentation, over exploitation, coextinction, alien species invasion

127. (2) **[NC-I-226]**

Pectoral girdle bone are two clavicle and two scapula.

128. (3) **[NCERT-II-41 to 45]**

(1)	Male human	–	Vasectomy
(2)	Female human	–	Tubectomy
(3)	ZIFT, GIFT	–	ART

129. (2) **[NCERT-II-44]**

Non-medicated IUDs - Lippes loop

Copper releasing IUDs - CuT, Cu7, multiload 375

Hormone releasing IUDs-progestasert, LNG-20

IUDs-emergency contraceptive

130. (4) **[NCERT-II-137]**

The exaggerated response of the immune system to certain antigens present in the environment is called allergy.

131. (4) **[NCERT-II-105]**

Satellite DNA is important because it Shows high degree of polymorphism in population and also the same degree of polymorphism in an individual, which is heritable from parents to children.The bulk DNA forms a major peak and the other small peaks are referred to as satellite DNA.

132. (3) **[NCERT-II-83]**

For prokaryotic genetic material DNA present but no histones.

In eukaryote genetic material made by DNA and histone protein.

133. (2) **[NCERT-II-96]**

Some amino acids are coded by more than one codon, hence the code is degenerate

134. (2) **[NCERT-II-100]**

In regulation of gene by lac operon, repressor bind with operator .

135. (1) **[NCERT-II-80]**

Cytidylate = Nucleotides

SECTION–B–(PART-1)

136. (2) **[NCERT-II-93]**

137. (3) **[NCERT-II-179]**

138. (4) **[NCERT-II-169]**

(1) PCR – Invitro DNA synthesis

(2) Selectable marker – Antibiotics Resistance gene

(3) Bacteria – Thermus aquaticus

139. (2) **[NCERT-II-165 to 167]**

(a) Molecular Glue – DNA Ligase

(c) Molecular scissors – Restriction endonuclease

140. (1) **[NCERT-II-165 to 167]**

(a) Natural Genetic Engineer – Agrobacterium

(c) Plasmid – Extra chromosomal DNA

(d) Alkaline pH – Required for activation of Bt Toxin

141. (4) **[NCERT-II-182]**

(a) ELi Lilly – American company

(b) ELi Lilly – Formation of insulin

(c) Pro-Insulin – C - Peptide

(d) Pro-Insulin – B - Peptide

142. (4) **[NC-II-183]**

Statement -I- Animals that have had their DNA manipulated to posses and express an extra (foreign) gene are known as transgenic animals.

Statement-II-Presence of pathogen (bacteria, viruses etc) is normally suspected only when the pathogen has produced a disease symptom.

143. (4) **[NCERT-II-174]**

Statement I:

In Downstram processing strict quality control testing for each product is also required.

Statement II :

The downstream processing and Quality control testing vary from product to product.

144. (4) **[NCERT-II-165]**

Statement I:

Restriction endonucleases are used in genetic engineering to Form recombinant molecules of DNA, which are composed of DNA from different sources/genomes

Statement II :

When cut by the same restriction enzyme, the resultant DNA fragments have the same Kind of stick-ends and these can be joined together (end to end) using DNA ligases.

145. (3) **[NCERT-I-126]**

Diplotene stage of meiosis can last for months oryears in the oocytes of some vertebrates.

146. (4) **[NC - I 220]**

In C_4 plants photorespiration does not occur. This is because they have a mechanism that increases the concentration of CO_2 at the enzyme site.

147. (4) **[NC-I-149,150]**

During photosynthesis several factors interact and simultaneously effect photosynthesis usually one factor is the major cause and limit the rate At any point the rate will be determined by the factor available at suboptimal levels

148. (3) **[NC-I-145]**

The particularly large cells around the vascular bundles of the C_4 pathway plants are called bundle sheath cells, and the leaves which have such anatomy are said to have 'Kranz' anatomy. 'Kranz' means 'wreath' and is a reflection of the arrangement of cells. The bundle sheath cells may form several layers around the vascular bundles; they are characterised by having a large number of chloroplasts, thick walls impervious to gaseous exchange and no intercellular spaces. You may like to cut a section of the leaves of C_4 plants – maize or sorghum – to observe the Kranz anatomy and the distribution of mesophyll cells.

149. (4) **[NCERT-II-19]**

The given diagram is A typical dicot embryo

150. (1) **[NCERT-II-17]**

In unisexual flowers no need of emsculation.

SECTION–A–(PART-2)

151. (2) **[NCERT-II-102]**

Some of the important goals of HGP were as follows:

(i) Identify all the approximately 20,000-25,000 genes in human DNA

(ii) Determine the sequences of the 3 billion chemical base pairs that make up human DNA.

(iiii) Store this information in databases.

(iv) Improve tools for data analysis.

(v) Transfer related technologies to other sectors, such as industries.

(vi) Address the ethical, legal, and social issues (ELSI) that may arise from the project.

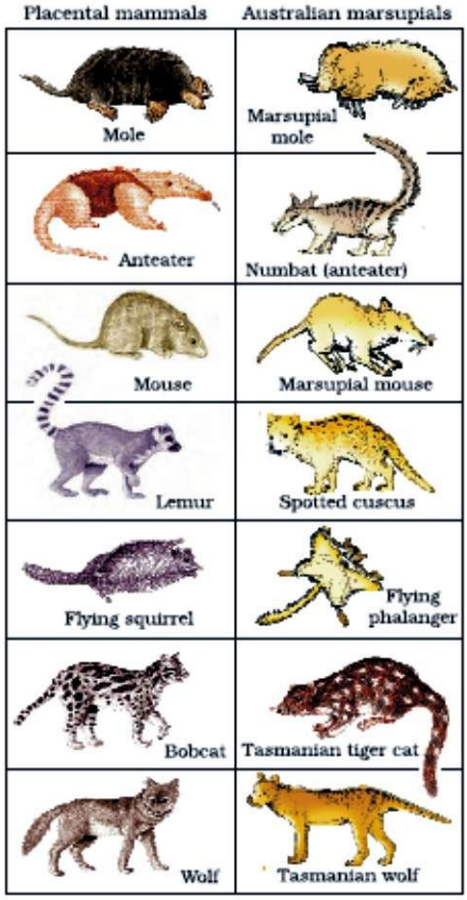
152. (4) **[NCERT-II-144]**

Smoking increases carbon monoxide in blood.

Smoking causes oxygen deficiency in body.

153. (1) **[NCERT-II-117,118]**

Placenta absent in marsupials mammals.



154. (1) **[NCERT-II-115]**

The given diagram is examples of homologous organ

155. (4) **[NCERT-I-245]**

Aldosterone hormones is not involved in sugar metabolism

156. (4) **[NCERT-II-63]**

It is a trihybrid cross

n = Heterozygous = 3

Types of gametes = $2^n = 2^3 = 8$

Type of genotypes = $3^n = 3^3 = 27$

157. (3) **[NC-II-75,76]**

Turner's Syndrome : Such a disorder is caused due to the absence of one of the X chromosomes, i.e., 45 with X0, Such females are sterile as ovaries are rudimentary besides other features including lack of other secondary sexual characters.

158. (1) **[NC-II-63]**

Among 16 ——— 1 green and wrikled

$\therefore$ 1————1/16

$\therefore$ 1600——— = $\frac{1}{16} \times 1600 = 100$

159. (3) **[NC-II-59]**

Dihybrid test cross ratio 1:1:1:1

160. (4) **[NCERT-II-75]**

The amino acid phenylalanine is converted into tyrosine with help of enzyme phenyl alanine hydroxylase.

161. (1) **[NCERT-II- 71]**

It is also evident that in each pregnancy there is always 50 per cent probability of either a male or a female child. It is unfortunate that in our society women are blamed for producing female children and have been ostracised and ill-treated because of this false notion.

162. (4) **[NCERT-I-281]**

163. (1) **[NCERT-I-283,284]**

164. (4) **[NCERT-II-35]**

Lack of menstruation is indicative of pregnancy. However it may also be caused due to some other underlying causes like stress, poor health etc.

165. (3) **[NCERT-II-31 to 34]**

Mammary lobes	-	15 - 20
Menstrual cycle	-	28 - 29 days
Menstrual flow	-	3 - 5 days
Ovulation	-	14 - 15th day

166. (2) **[NCERT-I-272]**

In tissue P_{O2} and P_{CO2} are 40 mmHg and 45 mmHg respectively.

167. (4) **[NCERT-I-290, 291]**

Uricotelic = Reptiles, Birds, land snails

168. (2) **[NCERT-II-37]**

Follicular phase = Proliferative phase

169. (1) **[NCERT-I-287]**

Parasympathetic neural signal decrease the rate of heart beat speed of conduction of action potential and thereby the cardiac output.

170. (2) **[NCERT-II-36]**

The embryo with 8 to 16 blastomeres is called a morula

171. (1) **[NCERT-II-27]**

Urethra - unpaired

Vasdeferens, epididymis, ejaculatory duct - paired.

172. (3) **[NC-I-168]**

Recombination between homologous chromo= somes is completed by the end of pachytene, leaving the chromosomes linked at the sites of crossing over.

173. (3) **[NC-I-121]**

S or synthesis phase marks the period during which DNA synthesis or replication takes place. During this time the amount of DNA per cell doubles. If the initial amount of DNA is denoted as 2C then it increases to 4C. However, there is no increase in the chromosome number; if the cell had diploid or 2n number of chromosomes at G_1, even after S phase the number of chromosomes remains the same, i.e., 2n.

174. (1) **[NC-I- 126]**

In oocytes of some vertebrates, diplot

Aromatic amino acid – Tryptophan

Acidic amino acid – Glutamic acid

175. (3) **[NCERT-I-106]**

Fatty acid – Palmitic acid

Phospholipid – Lecithin

Aromatic amino acid – Tryptophan

Acidic amino acid – Glutamic acid

176. (3) **[NCERT-I-95,96]**

Golgi apparatus is the important site of formation of glycoproteins and glycolipids.

Golgi apparatus principally perform the function of packaging materials

177. (3) **[NCERT-I-112]**

178. (3) **[NC-I-194]**

Mature erythrocytes contain no any cell organelles like mitochondria, nucleus hence DNA are not present.

Seive tube cells are ennucleated cell but other cell organelles are present like mitochondria, chloroplast. Mitochondria and chloroplast have it's own DNA besides nucleus.

179. (3) **[NCERT-I-76, NCERT-II-35]**

The coconut water and the edible part of coconut are equivalent to Endosperm.

180. (1) **[NCERT-II-16]**

Generally after fertilisation the sepals, petals and stamens of the flower wither and fall off.

181. (4) **[NMC Old NCERT]**

182. (4) **[NCERT-I- 32,33]**

Seed bearing plant are called as spermatophyta eg. Gymnosperm, angiosperm.

183. (4) **[NC-I-33]**

Marchantia – Dioecious

Pinus – Monoecious

Cycas – Dioecious

In cycas ovules are very large and megasporophyll are not associates to form female strobili or female cone.

184. (3) **[NCERT-I-32]**

Psilopsida *(Psilotum);* Lycopsida *(Selaginella, Lycopodium)*, Sphenopsida *(Equisetum)* and Pteropsida *(Dryopteris, Pteris, Adiantum)*.

185. (1) **[NCERT-I-15]**

Dinoflagellates are mostly marine and photosynthetic. They appear yellow, green, brown, blue or red depending on the main pigments present in their cells. The cell wall has stiff cellulose plates on the outer surface. Most of them have two flagella; one lies longitudinally and the other transversely in a furrow between the wall plates.

SECTION–B–(PART-2)

186. (3) **[NCERT-I-27 to 30]**

Pteridophytes, Gymnosperm, angiosperm plant body is sporophytic have true root, stem but Wolffia is root less angiosperm. Salvinia - Rootless because aquatic pteridophyte.

Pteridophytes, Gymnosperm, – Vascular tissue angiosperm

187. (2) **[NMC Old NCERT]**

188. (1) **[NCERT-II-165,182]**

(a)	Gene gun	(i)	Used for transfer of gene
(b)	Gene therapy	(ii)	Replacement of a faulty gene by a normal healthy gene
(c)	Gene cloning	(iii)	To obtain indentical copies of a particular DNA molecule
(d)	Genome	(iv)	Total DNA in the cells of an organism

189. (3) **[NCERT-II-80]**

(a)	Bacterophage ϕ ×174	(i) 5386 nucleotides
(b)	Bacteriophage lambda	(ii) 48502 base pairs
(c)	Escherichia coli of DNA	(iii) 4.6×10^6 base pairs
(d)	Haploid content human	(iv) 3.3×10^9 base pairs

190. (1) **[NCERT-I-159]**

The 5-C compound formed during TCA cycle is : α – ketoglutaric acid

191. (2) **[NCERT-II-65]**

The chromosomal theory of inheritance was proposed by : Sutton and Boveri

192. (4) **[NCERT–I–178]**

193. (4) **[NCERT-II-154]**

Secondary treatment or biological treatments : The primary effluent is passed into large aeration tanks where it is constantly agitated mechanically and air is pumped into it. This allows vigorous growth of useful aerobic microbes into flocs (masses of bacteria associated with fungal filaments to form mesh like structures).

- Sewage treatment
- Aerobic microbes
- Masses of bacteria with fungal filaments

194. (3) **[NCERT-II-152]**

Depending on the type of the raw material used for fermentation and the type of processing with or without distillation) different types of alcoholic drinks are obtained. Wine and beer are produced without distillation whereas whisky, brandy and rum are produced by distillation of the fermented broth.

195. (2) **[NC-I-62]**

In zygomorphic flower can be divided into two equal vertical halves only in one particular vertical plane.

196. (4) **[NC-I-111]**

197. (2) **[NC-I-194]**

198. (4) **[NC-I-194]**

199. (2) **[NCERT-I-209]**

The descending limb of loop of Henle is permeable to water .

200. (4) **[NC-I-95]**

The golgi apparatus principally performs the function of packaging materials, to be delivered either to the intra-cellular targets or secreted outside the cell. Materials to be packaged in the form of vesicles from the ER fuse with the *cis* face of the golgi apparatus and move towards the maturing face.

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