CAREER POINT

NEET

PTS

SAMPLE PAPER

Physics, Chemistry & Biology

SOLUTIONS

PTS/26/MJ-6/PCB

PHYSICS

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	1	2	1	3	4	1	2	3	3	2	3	1	1	2	3	3	4	4	3	1
Ques.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Ans.	4	1	2	2	4	3	2	4	2	1	3	4	3	3	3	2	3	2	3	2
Ques.	41	42	43	44	45															
Ans.	1	4	3	4	1															

CHEMISTRY

Ques.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
Ans.	2	1	3	4	4	1	2	2	1	3	2	1	2	1	2	4	1	2	3	3
Ques.	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
Ans.	2	1	4	3	2	2	2	3	3	4	4	2	2	3	1	3	2	2	3	3
Ques.	86	87	88	89	90															
Ans.	4	2	4	3	1															

BIOLOGY

Ques.	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
Ans.	4	3	1	3	4	3	2	1	1	4	3	4	1	3	3	1	1	4	1	1
Ques.	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
Ans.	3	2	3	4	2	2	4	4	1	2	4	3	1	1	1	3	3	3	4	4
Ques.	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Ans.	4	3	3	3	1	4	2	3	4	2	3	1	4	1	2	1	2	3	1	3
Ques.	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170
Ans.	3	3	3	1	3	4	4	4	2	1	2	4	3	1	4	2	1	2	1	2
Ques.	171	172	173	174	175	176	177	178	179	180										
Ans.	3	4	4	2	1	1	3	4	3	4										

PHYSICS

1.[1] $v^2 = u^2 + 2as$

$$\left(\frac{u}{2}\right)^2 = u^2 + 2a(3)$$

$$a = -\frac{u^2}{8}$$

$$v^2 = u^2 + 2as$$

$$0 = \left(\frac{u}{2}\right)^2 + 2\left(\frac{-u^2}{8}\right)s$$

$\therefore$ s = 1 km

2.[2] speed is constant = $\sqrt{4+9} = \sqrt{13}$ m/sec

distance = $10\sqrt{13}$ m.

3.[1] 0.5 kg T ← □ T ← 0.5 kg, a ←

$a = \frac{f'\sin 37^\circ}{3}$ (f' = 15 N)

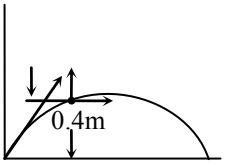
$a = 3$ m/sec^2

$T = \frac{1}{2} \times a$

$T = \frac{1}{2} \times 3$

$T = 1.5$ N

4.[3]



$v = 6\hat{i} + 2\hat{j}$

$v = v_x\hat{i} + v_y\hat{j}$

$v_x = 6, v_y = 2$

$\Rightarrow v^2 = u^2 - 2gh$

$u^2 = v^2 + 2gh$ $\quad \because (v_x = v_x)$

$u_x^2 + u_y^2 = v_x^2 + v_y^2 + 2gh$

$u_y^2 = 4 + 2 \times \frac{10 \times 0.4}{10} = 12$

$u_y = \sqrt{12} = 2\sqrt{3}$ m/s

$u_x = 6$ m/s $= v_x$

$\tan\theta = \frac{u_y}{v_x} = \frac{2\sqrt{3}}{6} = \frac{1}{\sqrt{3}}$

$\theta = 30^\circ$

5.[4] The retardation a is given by

$a = g\sin 45° + \mu g \cos 45° = \frac{g}{\sqrt{2}} + \frac{g}{2} \times \frac{1}{\sqrt{2}}$

$= \frac{g}{\sqrt{2}}\left(1 + \frac{1}{2}\right)$

6.[1]

7.[2]

$m_1g - T = m_1a_1$ [from figure Q.(ii)]

$m_2g - T = m_2a_2$ [from figure Q.(iii)]

$m_0a = 2T$ [from figure Q.(i)]

$a_1 + a_2 = 2a$

Solving we get $a_1 = \frac{[4m_1m_2 + m_0(m_1 - m_2)]g}{4m_1m_2 + m_0(m_1 + m_2)}$

8.[3] 1st method **:**

$W_{net} = \Delta K.E.$ [$\because V_{relative}$ *is always* 0]

$= 0$ [$\therefore$ no change]

2nd Method **:** Forces acting are normal mg and pseudo. But relative displacement is zero.

9.[3] **10.[2]**

11.[3] $\frac{1}{2}mu^2 = \frac{1}{2}kx^2$

$mu^2 = kx^2$

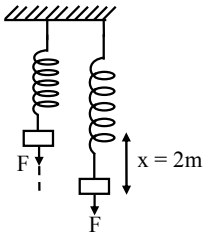
greatest range = $\frac{u^2}{g} = \frac{kx^2}{mg}$

$k = 600$ *N/m*

$m = .015$ *kg*

$x = .05$ *mt*

12.[1] At equilibrium , $mg = kx_0 \Rightarrow x_0 = \frac{mg}{k} = 1$m



$\therefore W_{ext} = U_2 - U_1$

$= \frac{1}{2} kx_2^2 - [\frac{1}{2} kx_1^2 + mgh]$

$= \frac{1}{2} k(x_2^2 - x_1^2) - mgh$

$= \frac{1}{2} \times 100 \times (3^2 - 1^2) - 10 \times 10 \times 2 = 200$ J

13.[1]

14.[2] Using $K.E._{rot} = \frac{1}{2} I\omega^2$ when

$I = \frac{MR^2}{2} = \frac{20 \times 0.25^2}{2}$

$= 0.625\ kg\ m^2$

15.[3]

16.[3] $v_1 = \frac{dy_1}{dt} = 0.1\times100\pi\cos\left(100\pi t + \frac{\pi}{3}\right)$

$v_2 = \frac{dy_2}{dt} = -0.1\times\pi\sin(\pi t)$

$= 0.1\times\pi\cos\left(\pi t + \frac{\pi}{2}\right)$

$\therefore\ \Delta\phi = \frac{\pi}{3} - \frac{\pi}{2} = -\frac{\pi}{6}$

17.[4] Kinetic energy $E = 1.5 \times 10^5$ J, volume , $V = 20\ L = 20 \times 10^{-3}\ m^3$

Pressure

$= \frac{2}{3}\frac{E}{V} = \frac{2}{3}\left(\frac{1.5\times10^5}{20\times10^{-3}}\right) = 5 \times 10^6\ N/m^2$

18.[4] $\because\ KAv^2 = vg(\rho - 0)$

$v^2 = \frac{v}{KA}g(\rho - 0)$

$v \propto \sqrt{r}$

19.[3] $W = 2[120 \times 10^{-4} - 60 \times 10^{-4}]\ 30 \times 10^{-3}$ J

$= 2 \times 60 \times 10^{-4} \times 30 \times 10^{-3}$ J

$= 3.6 \times 10^{-4}$ J

20.[1] The 80 cm mark on the aluminium rod is really at a greater distance from the zero position then indicated because of the increase in temperature $\Delta\theta = 40^oC$. The increased length is.

$\Delta L = \alpha L \Delta\theta = 0.08$ cm

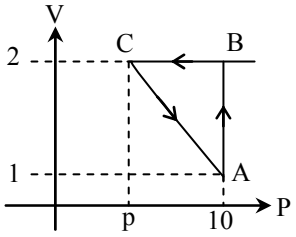
The correct length of line is

$L = 80 + 0.08 = 80.08$ cm

21.[4] $B = \frac{\mu_0 i(\pi/2)}{4\pi R} + \frac{\mu_0 i(3\pi/2)}{4\pi R'}$

$= \frac{\mu_0 i}{8}\left(\frac{1}{R} + \frac{3}{R'}\right)$

22.[1]



$dw_{ABCA} = dQ_{ABCA}$

$\frac{1}{2}(2-1)(10-P) = 5$

$5 - \frac{P}{2} = 5 \Rightarrow P = 0$

$dw_{CA} = -\frac{1}{2}[2-1][0+10] = -5$ J

23.[2] $\frac{1}{2}Li^2 = 32 \Rightarrow \frac{1}{2}L \times (4)^2 = 32$

$L = 4H$

$i^2R = 320 \Rightarrow (4)^2R = 320$

$R = 20\ \Omega$

$\tau = \frac{L}{R} = \frac{4}{20} = 0.2$ Sec

24.[2] $\tau = MB\sin\theta$

τ and B are constants

Now, $\sqrt{3}\sin\theta = 1 \times \sin(90^\circ - \theta)$

or $\tan\theta = \frac{1}{\sqrt{3}}$ or $\theta = 30^\circ$

25.[4]

26.[3] Statement I is true & Statement II is false.

27.[2] [A → Q; B → T; C → S; D → T]

$K = 2\pi a$, $\omega = 2\pi b$

28.[4] In steady state condition, the capacitor produces infinite resistance for D.C., so

$I = \frac{10}{5} = 2$ amp.

So potential drop across each arm

$= 4\times2 = 8$ volt.

So potential drop on each capacitor $= 4$ volt

Charge on each capacitor

$Q = 3 \times 10^{-6} \times 4 = 12\mu C$

29.[2] $\frac{I_1}{I_2} = \frac{1}{4}$ $I_{max} = 9$ $I_{min} = 1$

$\frac{I_{max} - I_{min}}{I_{max} + I_{min}} = \frac{9-1}{9+1} = \frac{8}{10} = \frac{4}{5} = 0.8$

30.[1] **[A → Q; B → P; C → R; D → S]**

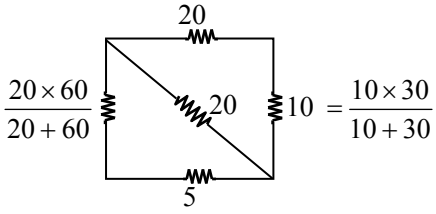
31.[3] Using Kirchoff's law :–

$V_A + \frac{Q}{C_1} - 10 + \frac{Q}{C_2} = V_B$

$Q\left(1 + \frac{1}{2}\right) = 20$

$Q = \frac{40}{3}\mu C$

32.[4]



33.[3] AB and DE do not give any magnetic field at O.

Magnetic field at O due to $BC = \frac{\mu_0 I}{4\pi a}$

It is directed 'up'. Magnetic field at O due to

$EF = \frac{\mu_0 I}{4\pi a}$

It is also directed 'up'.

So, $B = \frac{\mu_0 I}{2\pi a}$

34.[3] $\frac{1}{f} = \frac{2}{f_\ell} + \frac{1}{f_m}$

$= \frac{2}{f_\ell} + \frac{2}{R}$

$= 2\,\frac{(\mu-1)}{R} + \frac{2}{R} = \frac{2\mu}{R}$

$\therefore$ R = 2μf = 2 × 1.5 × 20 = 60cm

35.[3] $I_1 = I_0$

$\therefore$ 2x cosθ = nx

$\cos\theta = n/2 = 1/2$

θ = 60º

$\tan\theta = \frac{PO}{D} = \sqrt{3}$

$\therefore$ P.O = $D\sqrt{3}$

36.[2] ${}_yA^x \rightarrow {}_{y-2}B^{x-4} + {}_2He^4$

${}_{y-2}B^{x-4} \rightarrow {}_yC^{x-4} + 2_{-1}e^0$

A and C are isotopes as their atomic numbers are same but mass numbers are different

37.[3] $\sin\theta = \frac{n\lambda}{a}$, for n = 1, $\sin\theta = \frac{\lambda}{a}$

$\therefore a = \frac{\lambda}{\sin\theta} = \frac{6500\times10^{-10}}{\sin 30^\circ}$

$a = 13000 \times 10^{-10}$ m

$a = 1.3 \times 10^{-6}$ m

a = 1.3 micron

38.[2] $p = \frac{h}{\lambda} = \frac{E}{c} = \frac{m_e c^2}{c} = m_e c$

39.[3] Given: Radius of nucleus ${}_{13}Al^{27}(R_1) = 3.6$ fermi.
We know that mass no. of ${}_{13}Al^{27}(A_1) = 27$ and mass no. of ${}_{52}Te^{125}(A_2) = 125$.
We also know that radius of nucleus of an atom $(R) = R_0A^{1/3} \propto A^{1/3}$.

Therefore $\frac{R_1}{R_2} = \left(\frac{A_1}{A_2}\right)^{1/3} = \left(\frac{27}{125}\right)^{1/3} = \frac{3}{5}$

or $R_2 = \frac{5}{3}\times R_1 = \frac{5}{3}\times 3.6 = 6$ fermi

….(where R_2 = Radius of nucleus ${}_{52}Te^{125}$)

40.[2] Power = $\frac{V^2}{R}$

As in series R_1 = 50 R, R_2 = 49 R

$P_1 = \frac{V^2}{R_1} = \frac{V^2}{50R}$, with 50 bulbs

$P_2 = \frac{V^2}{R_2} = \frac{V^2}{49R}$, with 49 bulbs

$P_2 > P_1$

41.[1] F = IBL

42.[4] $\lambda = \frac{h}{P} = \frac{h}{\sqrt{2mE}}$ …(1)

After decreasing wavelength,

$\lambda' = \frac{h}{\sqrt{2mE'}}$ …(2)

From eqs. (1) and (2)

$\frac{\lambda'}{\lambda} = \sqrt{\frac{E}{E'}}$

Putting values of λ' and λ, we get:

$\frac{E}{E'} = \left(\frac{0.5}{1}\right)^2$

$\therefore \quad E' = \frac{E}{0.25} = 4E$

43.[3] h/e = slope of the st. line = $\frac{1.7}{(5.9-1.8)\times10^{14}}$

$= 4.15 \times 10^{-15}$ Vs

Work function $\phi_0 = \frac{h\nu_0}{e}$

$= (4.15 \times 10^{-15}) \times (1.8 \times 10^{14}) = 0.747$ eV

44.[4] Energy of thermal neutrons

$= \frac{3}{2}KT = \frac{3}{2}\times1.38\times10^{-23}\times300J = 0.04$ eV

45.[1]

X	Y	Z	Z'
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	1	0	0
1	0	1	0
1	1	1	1

CHEMISTRY

46.[2] $M(OH)_x \rightleftharpoons M^{+x} + xOH^-$

s mol /lit 0 0

s xs

$K_{sp} = [M^{+x}][OH^-]^x$

$K_{sp} = (s)(xs)^x$

$4 \times 10^{-9} = (10^{-3})(x \times 10^{-3})^x$

If we put x = 2

then $4 \times 10^{-9} = (10^{-3})(2 \times 10^{-3})^2$

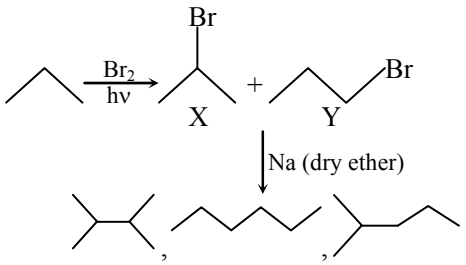
47.[1] Enantiomers are defined as a pair of stereoisomers that are non-superimposable mirror image of one another.

48.[3] $C_2H_5OH \xrightarrow{PBr_3} C_2H_5Br \xrightarrow[-HBr]{\text{alc. KOH}}$

$H_2C = CH_2 \xrightarrow{Br_2} CH_2(Br) - CH_2(Br)$

49.[4] Rate of ESR $\propto$ e^- density in ring

50.[4]



51.[1]

52.[2] $v = 2.188 \times 10^8 \times \frac{z}{n}$

$1.093 \times 10^8 = 2.188 \times 10^8 \times \frac{1}{n}$

$n = \frac{2.188}{1.093} = 2$

$r = 0.529 \times \frac{n^2}{z}$

$r = 0.529 \times \frac{4}{1}$

circumference $= 2\pi r$

$= 2 \times \frac{22}{7} \times 0.529 \times 4$

= 13.3 Å

53.[2]

54.[1] $R-NH_2$ $R-\overset{\overset{O}{\|}}{C}-NH_2$

→ Amines → Amides

→ More basic → Less basic

→ L.P. available to donate → Delocalisation of l.p. occurs

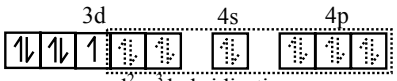
E.N. O > N so, N has better donor.

55.[3] Via Rosenmounds

56.[2] Option (2) is incorrect according to IUPAC nomenclature.

Ni is in +1 oxidation state and CN^- is strong field ligand. SO,

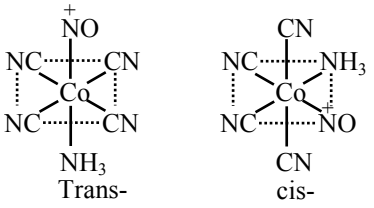
$[Cr(NO^+)(NH_3)(CN)_4]^{2-}$



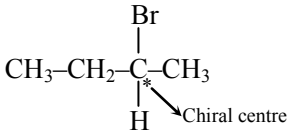
d^2sp^3 hybridisation

One electron is unpaired in 3d subshell, so magnetic moment = $\sqrt{1(1+2)} = \sqrt{3}$ B.M

It can exist in two geometrical isomers as given below.

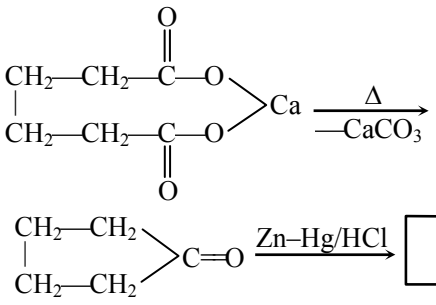


57.[1] $CH_3-CH_2-CH=CH_2 + HBr \xrightarrow{HBr}$



It will give two optical isomers.

58.[2]



59.[1]

60.[2] Order of π-bond character :

$B(NR_2)_3 < BH(NR_2)_2 < BH_2NR_2$

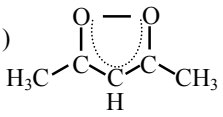
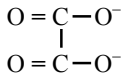
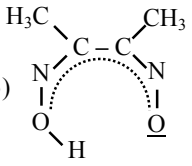
61.[4] $\Delta S = 50 - \left(\frac{1}{2} \times 60 + \frac{3}{2} \times 40\right)$

= 50 – (30 + 60) = –40 J/mol K

$T = \frac{-30000}{-40} = 750$ K

62.[1]

63.[2]

(1)  (2)  (3) 

64.[3] $r_f = r_b$

65.[3] Due to zero order reaction

66.[2] **67.[1]**

68.[4] IUPAC rules

69.[3]

70.[2] In case of very dilute solution of NaCl, electrolysis brings in the following changes.

Anode : $2OH^- \longrightarrow H_2O + \frac{1}{2} O_2 + 2e$

Cathode : $2H^+ + 2e \longrightarrow H_2$

71.[2] **72.[2]**

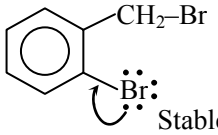
73.[3] Acc. to no of α–H

74.[3] Colour → Light Green

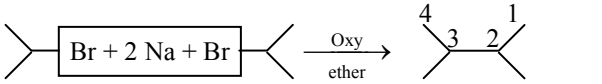
75.[4] $y_A = \frac{P_A^0 x_A}{P_A^0 x_A + P_B^0 x_B}$

$= \frac{120 \times 0.6}{120 \times 0.6 + 180 \times 0.4}$

$\Rightarrow \frac{72}{72+72} = 0.5$

76.[4]  Stable by resonance

77.[2]



2, 3 dimethyl butane

78.[2]

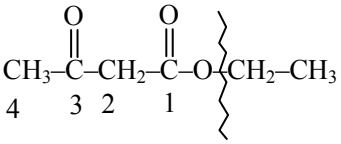
79.[3] due to meso

80.[1] Both have same empirical formula CH_2O.

81.[3] Different bulky group attach with orthoposition.

82.[2]

83.[2]

84.[3] 

Ethyl-3-oxo butanoate

85.[3]

86.[4] conductivity of ion $\propto \frac{1}{\text{size of hydrated ion}}$

Size of hydrated ion

$Ba^{2+} < Sr^{2+} < Ca^{2+} < Mg^{2+} < Be^{2+}$

So conductivity order

$Ba^{2+} > Sr^{2+} > Ca^{2+} > Mg^{2+} > Be^{2+}$

87.[2] Work (W) $= -P\Delta V = -3 \text{ atm} \times (6-4) \text{ dm}^3$

$= -6 \text{ atm. L}$

$= -6 \times 101.32 \text{ J}$

$(\because 1\text{L atm} = 101.32 \text{ J})$

$= -608 \text{ J}$

88.[4]

89.[3] $Ba(H_2PO_2)_2 \rightarrow +2 + 4(+1) + 2x + 4(-2) = 0$

$x = +1$

90.[1] $i = \frac{\text{Theo. } M_W}{\text{Obs. } M_W} = \frac{58.5}{31.8} = 1.84$

$\alpha = \frac{i-1}{n-1} = \frac{1.84-1}{2-1} = 84\%$

BIOLOGY

91.[4] NCERT XI, Pg # 35 2nd para and Pg # 38, 1st para

92.[3] The mouth parts of a cockroach are said to be of biting and chewing type because they are used for masticating the food.

93.[1] NCERT, Pg # 36

94.[3] NCERT XI, Pg # 23,24,25

95.[4]

96.[3] 11th NCERT PAGE NO. 19

97.[2] NCERT Pg No 270

98.[1] 99.[1] 100.[4]

101.[3] The fluid mosaic model explains both structural and functional aspects of cell membrane. It can explain the presence of different types of permeability and retentivity of various cell membranes. The model explains the passage of both electrolytes and non-electrolytes through the biomembranes. Because of the structural peculiarities of the membrane surfaces, the cells can show various types of interactions including recognition, attachment, antigen, information receptors, etc.

102.[4] Collenchyma consiste of cells, which are much thickened at the corners due to the deposition of cellulose, hemicellulose and pectin.
[स्थूलकोण ऊतक ऐसी कोशिकाओं के बने होते हैं, जिनके किनारे मोटे होते हैं, क्योंकि इन पर सेलुलोस, हेमीसेलुलोस व पैक्टिन जमा होता है।]

103.[1] Chrysophytes are found in freshwater as well as in marine environment. They are microscopic and float passively in water current, i.e., they are plankton. Most of them are photosynthetic.

104.[3] In a bacterial cell, membrane bound cell organelles as found in eukaryotes are absent. Vaious structures present in the cytoplasm of a prokaryotic cell include mesosomes, 70S ribosomes, nucleoid, plasmids, gas vacuoles, food reserve, etc.
जीवाणु कोशिका में, यूकैरियोट्स में पाए जाने वाले झिल्ली आबद्ध कोशिकीय अंगक अनुपस्थित होते हैं। प्रोकैरियोटिक कोशिका के कोशिका द्रव्य में उपस्थित विभिन्न संरचनाओं में शामिल हैं – मीजोसोम्स, 70S राइबोसोम्स, न्यूक्लिऑइड, प्लाज्मिड्स, गैसीय रिक्तिकाएँ, खाद्य रिजर्व आदि।

105.[3] NCERT XI Pg.# 101, 103

106.[1] Leech possesses a ventral central nervous system. Scorpion has a dorsal heart. Pharyngeal gill slits and post – anal tail are characteristic features of chordates. Chameleon is a chordate, so it possesses pharyngeal gill- slits in embryonic stage. Octopus is a non-chordate.

107.[1] The law of independent assortment applies only to factor or genes present on different pairs or distantly on the same chromosome or pairs of homologous chromosomes. The principle or law of independent assortment can be studied by means of dihybrid cross, e.g., between pure breeding pea plants having yellow round seeds (YYRR) and pure breeding pea plants having green wrinkled seeds (yyrr).

108.[4]

109.[1] Sometimes, a few epidermal cells, in the vicinity of the guard cells become specialised in their shape and size and are known as subsidiary cells.

110.[1] NCERT Pg. # 152

111.[3]

112.[2] Chromosomes are moved to spindle equator and get aligned through spindle fibres to both poles in metaphase of mitotic cell division. Chromosomes cluster at opposite spindle poles and their identity is lost as discrete elements in telophase of mitotic cell division.

113.[3] Action spectrum is the curve depicting the relative rate of photosynthesis at different wavelength of light. It shows that the maximum photosynthesis occurs at the blue and red region.

114.[4] Cleistogamous flowers are intersexual. They remain closed causing self pollination. Cleistogamy occurs late in the flowering season in some plants, e.g., Commelina, balsam, Oxalish, Viola, These plants possess both chasmogamous and cleistogamous flowers. In cleistogamous flowers, the anthers dehisce inside closed flowers. Growth of style brings the pollen grains in contact with stigma. Cleistogamy ensures self-pollination

115.[2] Mendel did not have any knowledge about linkage and incomplete dominance.

116.[2] In glycolytic pathway, 3PGAL is converted into 1,3-diphosphoglyceric acid by an oxidation and phosphorylation reaction, which occurs in the presence of H_3PO_4 and coenzyme NAD.
3-phosphoglyceraldehyde + NAD^+ + Pi $\rightarrow$ 3-phosphoglyceraldehyde dehydrogenase I, 3-diphosphoglyceric acid NADH + H^+.

117.[4]

118.[4] 11th NCERT PAGE NO. 22

119.[1]

120.[2] Secondary treatment is also called biological treatment or microbial degradation. It is mainly a biological process.
Biogas is a mixture of gases, containing predominantly methane (50-70%), CO_2 (30-40%) and traces of hydrogen, H_2S and Nitrogen

121.[4] The first cytokinin was discovered as kinetin (a modified form of adenine). Kinetin does not occur naturally. Search for natural substances with cytokinin like activity led to the isolation of zeatin from corn-kernels and coconut milk.

122.[3]

123.[1] There are 4 main blood groups (types of blood) – A, B, AB and O. They include –
Blood group A contains antigen A and antibody B
Blood group B contains antigen B and antibody A
Blood group AB contains both the antigens A and B, but no antibody.
Blood group O contains no antigen but has both the antibodies A and B.

124.[1] Insects have a network of tubes (tracheal tubes) to transport atmospheric air within the body. These openings lead to trachea. The cells exchange O_2/CO_2 directly with the air in the spiracles present on insects body.

125.[1]

126.[3] NCERT XII, Pg # 73

127.[3] Semilunar valve are of two types.
Pumonary Valve Controls the flow from the right ventricles into the pulmonary artery which carry the blood to the lungs for oxygenation.
Aortic Valve It opens on the left side and opens the way for the oxygenated blood to pass from the left ventricles into aorta (Body's largest artery).

128.[3] In a person suffering from diabetes mellitus, degradation of fat increases resulting in the production of ketone bodies. These are acidic and poisonous and get excreted out in urine. Therefore, presence of ketone bodies in rune is an indicator of diabetes mellitus. pH of urine is 6. On an average, 25-30 gm of urea of the bladder and simultaneous relaxation of the urethral sphincter causes release of urine

129.[4] Humus is derk brown amorphous gummy substance formed by partial decomposition of plant and animal matter. It constitutes the organic component of soil and is rich in lignin and cellulose. Humus is formed from organic remains through the activity of decomposer microorganisms. Process of formation of humus from raw organic remains is called humification. Humus is quite resistant to microbial action. It is a reservoir of nutrients and is helpful in maintenance of soil moisture as well as aeration. It is colloidal in nature. Nutrients are released slowly as the humus is the decomposed slowly. Humus is further degraded by some microbes and release of inorganic nutrients occur by the process of mineralisation.

130.[4] NCERT XI, Pg # 92

131.[4]

132.[3] NCERT XI, Pg # 87, Para 6.1.2.2

133.[3] NCERT, Pg # 249

134.[3] Myosin constitutes 55% of muscle protein by weight. The thick filaments consist mainly of myosin protein. A myosin molecule consists of six polypeptide chains, two identical heavy chains and four light chains.

135.[1] NCERT-XI, Pg # 61

136.[4] NCERT, Pg. # 138, 141

137.[2]

138.[3] NCERT XII Page No. # 13

139.[4] NCERT XI, Pg # 321

140.[2] NCERT XI, Pg # 59

141.[3] NCERT XI, Pg # 283

142.[1] NCERT XI (E), Pg # 300

143.[4] Ca^{2+} level in the body is controlled by both thyroid gland and parathyroid gland. Thyroid gland secretes a hormone, thyrocalcitonin which checks the excess blood calcium levels. Parathyroid gland secretes hormone called parathyroid hormone or parathormone which increases the Ca^{2+} levels in the blood.

144.[1] NCERT XII Page No. # 12

145.[2] NCERT XI, Pg # 272

146.[1] NCERT Pg # 208

147.[2] The development of the male gametophyte in angiosperms is called as microgametogenesis. Pollen grain is the first cell of a male gametophyte. This cell undergoes only two division, with the result of first division two cell are formed – a large vegetative cell and a small generative cell. The second division is concerned with generative cell only. This division may take place either in pollen grain or in the pollen tube and gives rise to two male gametes.

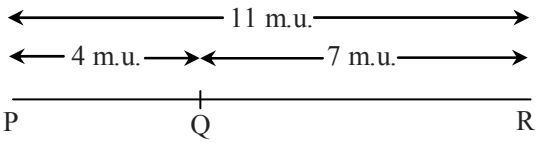
148.[3] NCERT XII, Pg # 47

149.[1] Zona pellucida layer of the ovum prevents polyspermy. Relaxin facilitates parturition by softening the connective tissue of pubic symphysis

150.[3] NCERT, Pg.# 202

151.[3] NCERT, Pg # 152 (E)

152.[3]



m.u. = map units

153.[3] NCERT XII, Pg # 131/141 (H), Para 7.2

154.[1]

155.[3] NCERT XII, Pg # 141 (E)

156.[4] Presence of uracil at place of thymine in RNA makes it less stable.

157.[4] NCERT, Pg # 279

158.[4] NCERT, Pg # 234, 233

159.[2] NCERT XI, Pg # 293

160.[1] NCERT XII, Pg # 212 (E), 231 (H)

161.[2] NCERT Pg. # 37

162.[4] Darwin explained that divergent evolution gave rise to a variety of marsupials (pouched mammals) in Australia.

163.[3] NCERT XII, Pg # 213 (E), 232 (H)

164.[1] Skin and mucous membrane are the physical barriers that provide the first line of defence or the external defence. These barriers prevent the entry of microorganisms into the body. Outer tough layer of the entry of microorganisms into the body. Outer tough layer of the skin, the stratum corneum prevents the entry of bacteria and viruses. Mucus secreted by mucous membrane traps the microorganisms and immobilises them.

165.[4] NCERT XII, Pg # 208

166.[2] Biofertilisers are microorganisms which bring about nutrient enrichment of soil by enhancing the availability of nutrients to crops. Microorganisms which act as biofertilisers are bacteria, cyanobacteria (blue green algae) and mycoorrhizal fungi. Bacteria and cyanobacteria have the property of nitrogen fixation while mycorrhizal fungi preferentially withdraw from organic matter for the plant with which they are associated. They maximize ecological benefits and minimize environmental hazards.

167.[1] A group of cells having common origin generally perform same function, e.g. meristematic tissue either primary or secondary in origin, divide repeatitively, to increase the number of cells.
[कोशिकाओं का एक ऐसा समूह, जिनका उद्‌भव एक ही बार होता है तथा उनके कार्य भी प्रायः समान होते हैं, जैसे – विभज्योतक ऊतक, जो उत्पति में प्राथमिक या द्वितीयक हो सकती है, ये लगातार विभाजित होकर कोशिकाओं में विभाजित होते हैं।]

168.[2] NCERT-XI, Pg. # 188, 189

169.[1]

170.[2] In *EcoRI*, capital letter *E* comes from the genus *Escherichia*. The letter *co* are from the species *coli*. The letter R is from RY13 (strain). The Roman number I indicates that it was the first enzymes isolated from the bacterium *E.Coli*RY 13.

171.[3] NCERT, Pg # 320, Point 21.4.1 & .2 & .3

172.[4] In 1983, Eli Lilly an American company, first prepared two DNA sequences corresponding to A and B chains of human insulin and introduced then in plasmids in *Escherichia coli* to produce insulin chains. Chains A and B were produced separately, extracted and combined by creating disulphide bonds to form human insulin (humulin)

173.[4] NCERT XI, Pg # 294, 298 (Hindi)

174.[2] Population density is the number of individuals present per unit area or volume at a given time. If the total number of individuals is represented by letter N and the number of units of space (area for land organisms and volume for water organisms) by letter S, then the population density D can be represented as D = N/S. For instance, number of animals per square kilometer, number of trees per acre in a forest, etc.

175.[1] Primary detritivores constitute the first trophic level of a detritus food chain.

176.[1] NCERT XII, Pg # 48/52 (H), Para 3.3

177.[3] NCERT XII, Pg # 135, Para 7.6 (E)
NCERT XII, Pg # 146, Para 7.6 (H)

178.[4]

179.[3] Nile Perch (a predator fish) was introduced in lake Victoria of East Africa. It killed and eliminated ecologically unique assemblage of over 200 native species of small cichlid fish.

180.[4]