AITS FULL TEST-10

ANSWER KEY

PHYSICS

Q.1 (1)	**Q.2** (4)	**Q.3** (3)	**Q.4** (1)	**Q.5** (2)	**Q.6** (1)	**Q.7** (3)	**Q.8** (3)	**Q.9** (2)	**Q.10** (2)
Q.11 (4)	**Q.12** (4)	**Q.13** (3)	**Q.14** (2)	**Q.15** (1)	**Q.16** (1)	**Q.17** (4)	**Q. 18** (3)	**Q.19** (4)	**Q.20** (3)
Q.21 (4)	**Q.22** (1)	**Q.23** (1)	**Q.24** (2)	**Q.25** (1)	**Q.26** (4)	**Q.27** (1)	**Q.28** (2)	**Q.29** (2)	**Q.30** (4)
Q.31 (1)	**Q.32** (2)	**Q.33** (1)	**Q.34** (2)	**Q.35** (2)	**Q.36** (3)	**Q.37** (3)	**Q.38** (2)	**Q.39** (2)	**Q.40** (2)
Q.41 (4)	**Q.42** (1)	**Q.43** (3)	**Q.44** (3)	**Q.45** (3)	**Q.46** (3)	**Q.47** (2)	**Q.48** (3)	**Q.49** (2)	**Q.50** (1)

CHEMISTRY

Q.51 (1)	**Q.52** (3)	**Q.53** (3)	**Q.54** (2)	**Q.55** (4)	**Q.56** (3)	**Q.57** (2)	**Q.58** (4)	**Q.59** (2)	**Q.60** (4)
Q.61 (4)	**Q.62** (2)	**Q.63** (4)	**Q. 64** (4)	**Q. 65** (4)	**Q. 66** (4)	**Q.67** (3)	**Q.68** (2)	**Q.69** (1)	**Q.70** (2)
Q.71 (4)	**Q.72** (3)	**Q.73** (4)	**Q.74** (2)	**Q.75** (4)	**Q.76** (1)	**Q.77** (4)	**Q.78** (2)	**Q.79** (2)	**Q.80** (2)
Q.81 (1)	**Q.82** (2)	**Q. 83** (3)	**Q.84** (3)	**Q.85** (1)	**Q.86** (1)	**Q. 87** (3)	**Q.88** (4)	**Q.89** (2)	**Q.90** (2)
Q.91 (3)	**Q.92** (3)	**Q.93** (2)	**Q.94** (2)	**Q.95** (4)	**Q.96** (3)	**Q.97** (1)	**Q.98** (4)	**Q.99** (2)	**Q.100** (3)

BIOLOGY

Q.101 (4)	**Q.102** (3)	**Q.103** (2)	**Q.104** (2)	**Q.105** (4)	**Q.106** (3)	**Q.107** (3)	**Q.108** (4)	**Q.109** (3)	**Q.110** (3)
Q.111 (3)	**Q.112** (2)	**Q.113** (2)	**Q.114** (3)	**Q.115** (2)	**Q.116** (2)	**Q.117** (4)	**Q.118** (3)	**Q.119** (4)	**Q.120** (2)
Q.121 (3)	**Q.122** (2)	**Q.123** (4)	**Q.124** (1)	**Q.125** (3)	**Q.126** (3)	**Q.127** (3)	**Q.128** (1)	**Q.129** (1)	**Q.130** (2)
Q.131 (1)	**Q.132** (1)	**Q.133** (3)	**Q.134** (3)	**Q.135** (1)	**Q.136** (2)	**Q.137** (2)	**Q.138** (1)	**Q.139** (3)	**Q.140** (3)
Q.141 (3)	**Q.142** (2)	**Q.143** (1)	**Q.144** (4)	**Q.145** (1)	**Q.146** (2)	**Q.147** (1)	**Q. 148** (1)	**Q.149** (3)	**Q.150** (1)
Q.151 (3)	**Q.152** (4)	**Q.153** (4)	**Q.154** (4)	**Q.155** (1)	**Q.156** (4)	**Q.157** (3)	**Q.158** (4)	**Q.159** (3)	**Q.160** (3)
Q.161 (3)	**Q.162** (4)	**Q.163** (4)	**Q.164** (4)	**Q.165** (1)	**Q.166** (1)	**Q.167** (1)	**Q.168** (3)	**Q.169** (3)	**Q.170** (2)
Q.171 (2)	**Q.172** (4)	**Q.173** (4)	**Q.174** (2)	**Q.175** (3)	**Q.176** (1)	**Q.177** (2)	**Q.178** (3)	**Q.179** (3)	**Q.180** (4)
Q.181 (2)	**Q.182** (1)	**Q.183** (3)	**Q.184** (4)	**Q.185** (1)	**Q.186** (3)	**Q.187** (3)	**Q.188** (3)	**Q.189** (4)	**Q.190** (2)
Q.191 (4)	**Q.192** (4)	**Q.193** (3)	**Q.194** (1)	**Q.195** (3)	**Q.196** (4)	**Q.197** (1)	**Q.198** (1)	**Q.199** (2)	**Q.200** (2)

PHYSICS

Q.1 (1)

Torque = $[ML^2T^{-2}]$, impulse = $[MLT^{-1}]$

Tension = $[MLT^{-2}]$, surface tension = $[MT^{-2}]$

$\therefore$ (A) $\rightarrow$ (iii); (B) $\rightarrow$ (i); (C) $\rightarrow$ (iv); (D) $\rightarrow$ (ii)

Q.2 (4)

Density $\rho = \frac{M}{\pi R^2 L}$

$$\Rightarrow \frac{d\rho}{\rho} = \frac{dM}{M} + \frac{2dR}{R} + \frac{dL}{L}$$

$$= \left[\frac{0.01}{0.4} + \frac{2\times 0.03}{6} + \frac{0.04}{8}\right]\times 100$$

$= 2.5 + 1 + 0.5\%$

$= 4\%$

Q.3 (3)

Ratio of distance travelled in equal consecutive time interval is 1 : 3.

Q.4 (1)

$\vec{v} = \vec{u} + \vec{a}\,t$

$= (3\hat{i} + 4\hat{j}) + (0.4\hat{i} + 0.3\hat{j}) \times 10$

$= 7\,i + 7\,j \quad \Rightarrow |\vec{v}| = 7\sqrt{2}$

Q.5 (2)

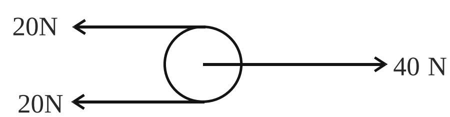
$u\cos\theta = \frac{\sqrt{3}u}{2} \Rightarrow \cos\theta = \frac{\sqrt{3}}{2}$

$\Rightarrow \theta = 30°$

$T = \frac{2u\sin 30°}{g} = \frac{u}{g}$

Option 2.

Q.6 (1)



$\boxed{2kg} \rightarrow 20N$

$a = \frac{f}{m} = \frac{20}{2} = 10\ m/s^2$

Q.7 (3)

$v = 72 km/hr = 72 \times \frac{5}{18} ms^{-1} = 20 ms^{-1}$

$\tan\theta = \frac{v^2}{Rg} = \frac{(20)^2}{100\times10} = \frac{2}{5}$

$\Rightarrow \theta = \tan^{-1}\left(\frac{2}{5}\right)$

Q.8 (3)

Hint: Power = $\vec{F}.\vec{v}$

F = tension = mg = $10 \times 10^3 \times 10 = 10^5$ N v = 0.6 m/s

Power = 6×10^4 W

= 60 kW

Q.9 (2)

Mass of square plate is greater than that of circular plate. Thus, the centre of mass is shifted towards centre of square C_2

Q.10 (2)

Apply momentum conservation

$\overrightarrow{Pi1} = \overrightarrow{Pf}$

$2(2\hat{i}+4\hat{j})+4(2\hat{i}) = 2(2\hat{i}+\hat{j})$

$m_3^{+}\overrightarrow{v_B}$

$\Rightarrow 8\hat{i}+6\hat{j} = 4(\overrightarrow{V_B})$

$\overrightarrow{V_B} = 2\hat{i}+1.5\hat{j}$

Q.11 (4)

Applying angular momentum conservation, about axis of rotation

$L_i = L_f$

$\frac{ML^2}{12}\omega_0 = \left(\frac{ML^2}{12}+m\left(\frac{L}{2}\right)^2\times2\right)\omega$

$\Rightarrow \omega = \frac{M\omega_0}{M+6m}$

Q.12 (4)

$\vec{I} = (10\hat{i}+10\hat{j})$ N/kg

Work doen aquinst gravitational field by the ecternal agent

$w = f_x(\Delta x)+f_y(\Delta y)$

$= (-10\times2)(5)+(-10\times2)(4)$

$= -180J$

Q.13 (3)

$g_e = \sqrt{\frac{4\pi}{3}\rho GR}$

$g_p = \sqrt{\frac{4\pi}{3}\rho G 2^{\frac{1}{3}} R}$

$W_p = 2^{\frac{1}{3}} W_e$

Q.14 (2)

$\frac{d^2x}{dt^2} = -\alpha x$ .... (i)

We know $a = \frac{d^2x}{dt^2} = -\omega^2 x$ .... (ii)

From Eq. (i) and (ii), we have

$\omega^2 = \alpha$

$\omega = \sqrt{\alpha}$

or $\frac{2\pi}{T} = \sqrt{\alpha} \therefore T = \frac{2\pi}{\sqrt{a}}$

Q.15 (1)

Hint. $f = \frac{n}{2l}v$

$f_3 = \frac{3}{2l}v$ v = 48m/s

$f_3 = 48$ Hz $l = 1.5$ m

$\lambda = \frac{v}{f} = 1m$

Q.16 (1)

Given $m_AC_A = m_BC_B$

or $V_A\rho_AC_A = V_B\rho_BC_B$

or $10\rho_A \times 0.2 = 20\rho_B \times 0.3$

or $\frac{\rho_A}{\rho_B} = \frac{3}{1}$

Q.17 (4)

$\lambda_m T$ = constant

$(\lambda_m)_1T_1 = (\lambda_m)_2T_2$

$(\lambda_m)_2 = \frac{(\lambda_m)_1T_1}{T_2}$

$= \frac{4000\times10^{-10}\times3}{2}$

$(\lambda_m)_2 = 6000Å$

Q. 18 (3)

$u = \frac{5}{2}pv$

$\frac{u}{v} = \frac{5}{2}p = \frac{5}{2}\times4\times10^5$

$= 10 \times 10^5 J/m^3$

Q.19 (4)

$dQ = dU + dW \Rightarrow dU = nC_v\,dT$

$dU = 0$ (for isothermal)

$\therefore$ U = constant

Also $dQ > 0$ (supplied)

Hence $dW > 0$

Q.20 (3)

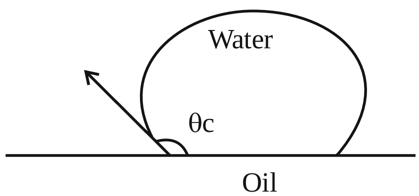
Ductile material show high plastic property.

Q.21 (4)

$(L_1 + L_2)\alpha_{eq} \times \Delta T = L_1\alpha_1\Delta T + L_2\alpha_2\Delta T$

$\Rightarrow \alpha_{eq} = \dfrac{L_1\alpha_1 + L_2\alpha_2}{(L_1 + L_2)}$

Q.22 (1)



$\theta c > 90°$

For water oil interface

Q.23 (1)

$Q_{enclosed}$ - is same for all.

Q.24 (2)

$U = -\vec{P}\cdot\vec{E}$

$= -PE\cos\theta$

$= -(10^{-29})(10^{3})\cos 45^{o}$

$= -0.707 \times 10^{-26}$ J

$= -7 \times 10^{-27}$ J

Q.25 (1)

$v = \dfrac{kq}{r} = 10v$

$27 \times \dfrac{4}{3}\pi r^3 = \dfrac{4}{3}\pi R^3$

$R = 3r$

$v' = \dfrac{k \times 27q}{3r} = 90$ volt

Q.26 (4)

$C = \dfrac{\varepsilon_0 A}{d} \propto \dfrac{A}{d}$

$\dfrac{C_2}{C_1} = \dfrac{A_2}{A_1}\cdot\dfrac{d_1}{d_2}$

$= \dfrac{\frac{A_1}{2}}{A_1}\ \dfrac{d_1}{2d_1}$

$= \dfrac{1}{4}$

$C_2 = \dfrac{12}{14} = 3\mu F$

Q.27 (1)

Low temperature coefficient of resistance ensures low vairation is resistance with temperature.

Q.28 (2)

$E = \rho J$

$\Rightarrow J = \dfrac{E}{\rho}$

Slope $= \dfrac{1}{\rho}$

As temperature increases and ρ also increases.

Slope at T_1 = Slope at T_2

$\left(\dfrac{1}{\rho_1}\right) > \dfrac{1}{\rho_2}$

$\Rightarrow \rho_1 < \rho_2$

$\Rightarrow T_1 < T_2$

Q.29 (2)

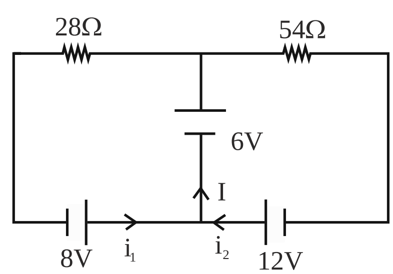
$R_1 = \dfrac{8 \times 8}{8 + 8} = 4\,\Omega$

$R_2 = 8 + 4 = 12\Omega$

$R_3 = \dfrac{12 \times 12}{12 + 12} = 6\Omega$

$R_{eq} = 8 + 6 = 14\Omega$

Q.30 (4)



$28\,i_1 = -6 - 8 \qquad \Rightarrow i_1 = -1/2$ A

$54 i_2 = -6 - 12 \qquad \Rightarrow i_2 = -1/3$ A

$I = i_1 + t_2 = -5/6$ A.

Q.31 (1)

$B = \dfrac{\mu_0}{4\pi}\dfrac{2\pi I}{R} = \dfrac{\mu_0}{2}\dfrac{I}{R}$

$\therefore \qquad \dfrac{B_A}{B_B} = \dfrac{I_A}{I_B} \times \dfrac{R_B}{R_A} = \left(\dfrac{1}{2}\right)\left(\dfrac{2}{1}\right) = 1$

Q.32 (2)

$|\vec{\tau}| = |\bar{M} \times \bar{B}|$

$\tau = NI \times A \times B \times \sin 45^o$

$\tau = 0.27\, Nm$

Q.33 (1)

Force of interaction $= I_1 \ell_1 B_{12}$

$= \dfrac{\mu_0 I_1 I_2}{2\pi r}\ell_1$

$= \dfrac{4\pi \times 10^{-7} \times 6 \times 0.5}{2\pi \times 5 \times 10^{-2}}$

$= 1.2 \times 10^{-5}$ towards X

Q.34 (2)

Due to Lenz law, it shold have a tendency to move away from the coil to decrease the flux.

Q.35 (2)

$P_{in} = V_{in} \times I_{in} = 100 \times 2 = 200\, W$

$P_{out} = \eta P_{in} = 150$

$\dfrac{v_0}{v_{in}} = 3 \Rightarrow v_0 = 300\, V$

and $I_0 = 0.5\, A$

Q.36 (3)

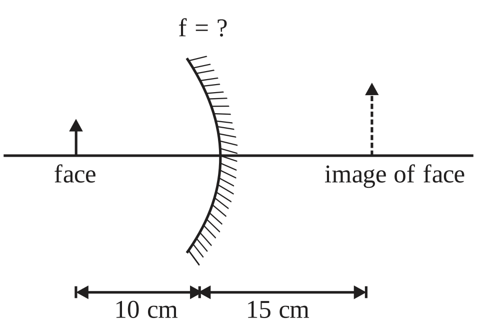
$E = \sqrt{V_R^2 + (V_L - V_C)^2}$

$= \sqrt{(80)^2 + (40 - 100)^2}$

$= \sqrt{6400 + 3600} = \sqrt{10000}$

$= 100\, V$

Q.37 (3)



$R_{mirror} = 2f$

For mirror formula we use

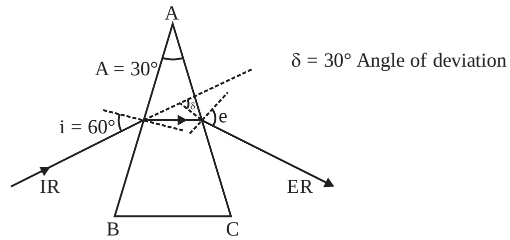
$u = -10$ cm

$v = +15$ cm

$\Rightarrow \dfrac{1}{f} = \dfrac{1}{u} + \dfrac{1}{v} \Rightarrow \dfrac{1}{f} = -\dfrac{1}{10} + \dfrac{1}{15} = -\dfrac{5}{150} = -\dfrac{1}{30}$

$\Rightarrow f = -30$ cm $\Rightarrow R = 2f = 2 \times -30 = -60$ cm.

Q.38 (2)

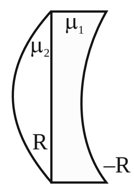


For a trihedral prism we know $\delta = i + e - A$

$\Rightarrow e = \delta + A - i = 30° + 30° - 60° = 0°$

$\Rightarrow$ emergent ray comes out of prism perpendicular to face AC.

Q.39 (2)



$\dfrac{1}{f} = \dfrac{1}{f_1} + \dfrac{1}{f_2} = \dfrac{1-\mu_1}{R} + \dfrac{\mu_2 - 1}{R}$

$\dfrac{1}{f} = \dfrac{1 - \mu_1 + \mu_2 - 1}{R} = \dfrac{\mu_2 - \mu_1}{R} \qquad f = \dfrac{R}{\mu_2 - \mu_1}$

Q.40 (2)

$\beta = \dfrac{\lambda D}{d}$

$\beta' = \dfrac{\lambda(2D)}{d/2} = 4\dfrac{\lambda D}{\alpha} = 4\beta$

Q.41 (4)

$\lambda < 5500$ Å for photoelectric emission

$\lambda_{uv} < 5500$Å

Q.42 (1)

de Broglie wavelength, $\lambda = h/p = h/\sqrt{(2mK)}$

$\therefore\ \lambda = \dfrac{h}{\sqrt{2mK}}$; where K = kinetic energy of particle

$\therefore\ \dfrac{\lambda_2}{\lambda_1} = \sqrt{\dfrac{K_1}{K_2}} = \sqrt{\dfrac{K_1}{2K_1}} = \dfrac{1}{\sqrt{2}}$

Q.43 (3)

$PE = -27.2\dfrac{z^2}{n^2} eV$

$TE = -\dfrac{13.6 z^2}{n^2} eV$

$$KE = \frac{13.6z^2}{n^2} eV$$

$$KE = \frac{13.6}{n^2} eV$$, as n decreases, KE ↑

$$PE = -\frac{27.2}{n^2} eV$$, as n decreases, PE ↓

$$TE = -\frac{13.6}{n^2} eV$$, as n decreases, TE ↓

Q.44 (3)
Statement-1 states that energy is released when heavy nuclei undergo fission and light nuclei undergo fusion is correct. Statement-2 is wrong.
The binding energy per nucleon, B/A, starts at a small value, rises to a maximum at ^{62}Ni, then decreases to 7.5 MeV for the heavy nuclei. The answer is (3).

Q.45 (3)

$$_{92}X^{234} \longrightarrow {}_{87}y^{222} + 3\,_2He^4 + {}_{-1}\beta^o$$

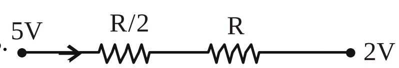
Q.46 (3)

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi r_0^3 A$$

$$\rho = \frac{M}{V} = \frac{1.67\times10^{-27} A}{\frac{4}{3}\pi r_0^3 A}$$

Q.47 (2)

Jn F.B.



$$i = \frac{5-2}{\frac{3}{2}R} = \frac{2.3}{3R} = \frac{2}{R}$$

Q.48 (3)
For 'NAND' gate (option c), output $= \overline{0.1} = \overline{0} = 1$

Q.49 (2)
The conductivity of semiconductor

$$\sigma = e\left(\eta_e\mu_e + \eta_h\mu_h\right) = 1.6\times10^{-19}$$

$$\left(5\times10^{18}\times2 + 5\times10^{19}\times0.01\right)$$

$= 1.6 \times 1.05 = 1.68\ (\Omega m)^{-1}$.

Q.50 (1)
$V_m = 2 \times 10^8$m/s $\quad \mu_r = 1 \quad \varepsilon = ?$

$$v_m = \frac{c}{\sqrt{\mu_r\varepsilon_r}} \Rightarrow 2\times10^8 = \frac{3\times10^8}{\sqrt{1.\varepsilon_r}}$$

$$\sqrt{\varepsilon_r} = \frac{3}{2} \Rightarrow \varepsilon_r = \frac{9}{4}$$

$$\boxed{\varepsilon_r = 2.25}$$

CHEMISTRY

Q.51 (1)
Q.52 (3)
Q.53 (3)
Q.54 (2)
Q.55 (4)
Q.56 (3)
Q.57 (2)
Q.58 (4)
Q.59 (2)
Q.60 (4)
Q.61 (4)
Q.62 (2)
Q.63 (4)
Q. 64 (4)
Q. 65 (4)
Q. 66 (4)
Q.67 (3)
Q.68 (2)
Q.69 (1)
Both statements are true
Q.70 (2)
Q.71 (4)
Q.72 (3)
Q.73 (4)
Q.74 (2)
Q.75 (4)
Q.76 (1)
Q.77 (4)
Q.78 (2)
Q.79 (2)
Q.80 (2)
A & R are ture but R is not correct explanation of A.
Q.81 (1)
Q.82 (2)
Q. 83 (3)
Q.84 (3)
Sc^{3+} has noble gas configuration hence only + 3 exists.
Q.85 (1)
$La(OH)_3$ is most basic in nature
Q.86 (1)
Q. 87 (3)
Q.88 (4)
Q.89 (2)
Q.90 (2)
Q.91 (3)
Q.92 (3)
Q.93 (2)
Q.94 (2)
Q.95 (4)
Q.96 (3)
Q.97 (1)
Q.98 (4)
Q.99 (2)
Q.100 (3)

BIOLOGY

Q.101 (4)

Q.102 (3)

Q.103 (2)

Q.104 (2)

Certain marine brown and red algae produce large amounts of hydrocolloids (water holding substance) e.g. align (brown algae) and carrageen (red algae) which are used commercially.

Hydrocolloids (water holding substance) like algin is produced from brown algae and carrageen is produced from red algae.

Q.105 (4)

Q.106 (3)

Q.107 (3)

Q.108 (4)

Q.109 (3)

Q.110 (3)

Q.111 (3)

Q.112 (2)

A pair of homologous chromosomes is called a bivalent.
1 chromosome = 2 chromatids
Since there are 80 chromatids, thus number of chromosomes is 40.
Number of bivalents

$$= \frac{\text{Total number of chromosome}}{2}$$

$$= \frac{40}{2} = 20$$

Q.113 (2)

Q.114 (3)

Q.115 (2)

Q.116 (2)

Ubiquinone receives reducing equivalents via $FADH_2$ (complex II) that is generated during oxidation of succinate in the Krebs' cycle.

Q.117 (4)

The balanced equation is as follows :

$$2(C_{51}H_{98}O_6) + 145O_2 \longrightarrow 102\,CO_2 + 98H_2O + \text{energy}$$

$$RQ = \frac{102\ CO_2}{145\ O_2} = 0.7$$

Q.118 (3)

Ethylene promotes growth in partially submerged plant such as rice.

Q.119 (4)

Q.120 (2)

Removal of stamens is required in female flowers.

Q.121 (3)

Q.122 (2)

Xenogamy take place in genetically different plants.

Q.123 (4)

Q.124 (1)

Q.125 (3)

In incomplete dominance, F_1 does not resemble either of the two parents

Q.126 (3)

In human, on Y-chromosome fewest genes are present i.e. 231 genes.

Q.127 (3)

S is the part of capsid proteins found in medium and not the part of DNA.

Q.128 (1)

Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
DNA fingerprinting is very well-known for its application in paternity testing as it employs the principle of DNA polymorphism. DNA fingerprinting involves the use of satellite DNA. These sequences do not code for any proteins, but show high degree of polymorphism.
These serve as the basis of DNA fingerprinting. These polymorphisms are inheritable from parents to children and thus DNA fingerprinting is the basis of paternity testing.

Q.129 (1)

Q.130 (2)

Taq polymerase extends the primers using the nucleotides provided in the reaction and genomic DNA as template.

Q.131 (1)

Q.132 (1)

Q.133 (3)

Q.134 (3)

Q.135 (1)

Q.136 (2)

Coccus	– Spherical
Bacillus	– Rod shaped
Spirillum	– Spiral
Vibrium	– Comma-shaped

Q.137 (2)

Q.138 (1)

Q.139 (3)

Q.140 (3)

Q.141 **(3)**

The exchange of genetic material between the non-sister chromatids of the homologous chromosomes occur duirng pachytene.

Q.142 (2)

Q.143 (1)

Q.144 (4)

Gibberellin induces quicker maturity in juvenile conifers.

Q.145 (1)

Q.146 (2)

Q.147 (1)

Q. 148 (1)

Q.149 (3)
The statements in option (c) is correct. Rest of the statements are incorrect and can be corrected as
- Parasites tend to coevolve with the host.
- brood parasitism is present in cuckoo.
- The life cycle of parasites is often very complex involving one or more intermediate hosts or vectors.

Q.150 (1)
Statements II and IV are correct. Statements I and III are incorrect and can be corrected as
- Decomposition is an oxygen requiring process.
- Warm and moist environment favours decomposition

Q.151 (3)

Q.152 (4)

Q.153 (4)

Q.154 (4)
NCERT Pg.# 103, Fig. 7.4 (a)

Q.155 (1)

Q.156 (4)

Q.157 (3)
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The axoneme usually has nine doublets of radially arranged peripheral microtubules, and a pair of centrally located microtubules. Such an arrangement of axonemal microtubules is referred to as the 9+2 array

The usual axonemal arrangement of microtubules is 9 doublets radially arranged at periphery with a pair of centrally located microtubules.

Q.158 (4)

Q.159 (3)

Q.160 (3)

Q.161 (3)

Q.162 (4)

Q.163 (4)

Q.164 (4)

Q.165 (3)
Osteoporosis: Age-related disorder characterised by decreased bone mass and increased chances of fractures. Decreased levels of estrogen is a common cause.

Q.166 (1)

Q.167 (1)

Q.168 (3)
Pineal gland is a small, round reddish structure located on the dorsal side of forebrain. It releases the hormone called melatonin which controls the diurnal rhythm of the body. Light reduces melatonin formation and hence maintains the normal rhythm of sleep-wake cycle.i

Q.169 (3)

Q.170 (2)
The statements II, III and IV are correct.
Statements I and V are incorrect and can be corrected as
- The uterus is single and is also called womb.
- Perimetrium of uterus is external and thin, myometrium is the middle thick layer of smooth muscles and endometrium is the inner glandular layer.

Q.171 (2)
The correct statement regarding ZIFT is option (b). The zygote or early embryo with up to 8 blastomeres is collected from a female donor and transferred into the Fallopian tube, this process is called Zygote Intra Fallopian Transfer or ZIFT. Embryo more than 8 blastomeres is transferred into the uterus by the process called Intra Uterine Transfer or IUT.
When ovum is collected from donor and transferred to Fallopian tube of other female who cannot produce ovum, this is'known as Gamete Intra Fallopian Transfer (GIFT).

Q.172 (4)

Q.173 (4)

Q.174 (2)

Q.175 (3)

Q.176 (1)

Q.177 (2)

Homologous organis are anatomically similar but are adapted to different functions. Analogous organs perform similar function but are anatomically dissimilar.

Q.178 (3)
Hint: Combat the allergic reaction
Sol.: Allergy is caused by chemicals like histamine and serotonin which are released by mast cells. Eosinophils combat the allergic reactions. The use of antihistamine, adrenaline and steroids quickly reduce the symptoms of allergy.

Q.179 (3)

Q.180 (4)

Q.181 (2)

Q.182 (1)

Q.183 (3)
Assertion is true, but Reason is false. Reason can be corrected as
RNAi (RNA interference) takes place in all eukaryotic organisms as a method of cellular defence. This method involves silencing of a specific *m*RNA due to a complementary *ds* RNA molecule that binds to and prevents translation of the *m*RNA (silencing).

Q.184 (4)
Rosie was produced for the first time in year 1997.

Q.185 (1)
Population evolve to maximise their reproductive fitness also called Darwinian fitness with high r value (biotic potential).

Q.186 (3)

Q.187 (3)

Q.188 (3)
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Dense particles by George Palade (1953). They are composed of ribonucleic acid (RNA) and proteins and are not surrounded by any membrane.
The eukaryotic ribosomes are 80S while the prokaryotic ribosomes are 70S. Each ribosome has two

Here, statement I is incorrect but statement II is correct.
I. Ribosomes are composed of ribonucleic acid (RNA) and proteins and are surrounded by single membrane.

Q.189 (4)

Q.190 (2)
Mitosis can occur in all somatic cells.

Q.191 (4)
Squamous epithelium is found at this surface.
Gaseous exchange takes place in the alveoli in lungs.

Q.192 **(4)**

Q.193 (3)

Q.194 (1)
This duct connects diocoel to metacoel.
Iter or duct of Sylvius is a part of midbrain.

Q.195 (3)

Q.196 (4)
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Q.197 (1)
Q.198 (1)
Q.199 (2)

Q.200 (2)