NTA NEET MOCK TEST – 5 PHYSICS

- 1. Two bodies of masses 10 kg and 100 kg are separated by a distance of 2m. The gravitational potential at the mid-point of the line joining the two bodies is:
 - 1) $-7.3 \times 10^{-7} J / kg$ 2) $-7.3 \times 10^{-8} J / kg$ 3) $-7.3 \times 10^{-9} J / kg$ 4) $-7.3 \times 10^{-6} J / kg$
- A convec lens is immersed in a liquid, whose refractive index is equal to the refractive index of the material of the lens. Then its focal length will
 1) Decrease 2) Become zero 3) Become infinite 4) Remain the same
- 3. After a perfectly inelastic collision between two identical particles which were moving with the same speed in different directions, the speed of the particles become half the initial speed. The angle between the velocities of the two particles before collision is $1)60^{\circ}$ 2) 45° 3)120^{\circ} 4)30°
- 4. The wavelength corresponding to the maximum energy, released during an atomic explosion was $2.93 \times 10^{-10} m$. Given that the wien's constant $b = 2.93 \times 10^{-3} m$ K, then the maximum temperature attained must be of the order of
- 1) 10⁻⁷ K
 2) 10⁷ K
 3) 10⁻³ K
 4) 5.86×10⁷ K
 5. A bob of mass m is tied with a thread and is made to move in a circular path on a horizontal frictionless table about point O as shown in the figure. A hypothetical electric field exists in the radial direction along the surface of the table. In this condition, the bob is uncharged and the tension in the threads is T. If now the bob is given some charge, then



- 2) Tension in thread may increase or decrease
- 3) Tension in thread will remain unchanged
 4) Tension in thread must decrease
 6. Consider the situation show in the figure. The wall is smooth but the surfaces of blocks A and
 - B in contact are rough. The friction on A due to B in equilibrium



1) Is upward

3) Is zero

4) The system cannot remain in equilibrium for any value of F

2) Is downward

7. An engine is attached to a wagon through a shock absorber of length 1.5m. The entire system with a total mass of 5000 kg was moving with a speed of 36 kmh^{-1} , when the brakes are applied to bring it to rest. In this process, the spring of the shock absorber gets compressed by 1.0m, if 90% of the energy of the wagon is lost due to friction, the spring constant is

1) $5.0 \times 10^5 N / m$ **2)** $4.0 \times 10^5 N / m$ **3)** $1.0 \times 10^5 N / m$ **4)** $2.0 \times 10^5 N / m$



16.	An intense stream of water of cross section area A strikes a wall at an angle θ with the n to the wall and rebounds elastically. If the density of water is ρ and its velocity is v , the			gle θ with the normal elocity is v , then the
	force exerted on the	e wall will be		
	1) 2 $Av^2\rho$	2) $Av^{2}\rho$	3) $2Av^2\rho\sin\theta$	4) $2 A v^2 \rho \cos \theta$
17.	A sound wave of fr wall which is movin of the reflected way	equency f propagating throng away from the stationar re, measured by the observ	ough the air with a velocity ry source with a constant sp rer at the position of the sou	y c, is reflected from a beed v. The frequency urceis
	1) $\frac{f(c-v)}{c+v}$	$2) \ \frac{f(c+v)}{c-v}$	3) $\frac{f(c+2v)}{c+v}$	$4) \ \frac{f(c-v)}{c-2v}$
18.	A boy and a man ca 1/4 th of the load. If is	arry a uniform rod of lengt the boy is at one end of the	h L, horizontally in such a e rod, the distance of the m	way that the boy gets an from the other end
	1) $\frac{L}{3}$	2) <u><i>L</i></u>	3) $\frac{2L}{3}$	4) $\frac{3L}{4}$
19.	A body is dropped amount of its poten	from a certain height abov tial energy, it acquires a ve	e the surface of the earth. Nelocity v. The mass of the b	When it Ioses U ody is
	1) $2U/v^2$	2) 2 v/U^2	3) $2v/U$	4) $U^2 / 2v$
20.	The dimensional fo	rmula for the magnetic fiel	d is	1) 1 - 2-
	1) $[ML^{-2}A^{-1}]$	2) $[ML^2T^{-1}A^{-2}]$	3) $[MT^{-2}A^{-2}]$	4) $[MT^{-1}A^{-2}]$
21.	with different speed seen by the other is 1) a vertical line	ds and at different angles v 2) a parabola	the same vertical plane, fro vith horizontal. The path fo 3) a hyperbola	om the same point, but bliowed by one, as
22.	The diagram of a lo	gic circuits is given below.	The output A of the circui	t is represented by
23.	A fully charged cap resistance wire emb m. If the temperatu	pacitor has a capacitance C. bedded in a thermally insu re of the block is raised by	It is discharged through a lated block of specific heat ΔT , the potential difference	small coil of capacity s and mass ce V across the
24.	1) $\sqrt{\frac{2mC\Delta T}{s}}$ The instantaneous of $i = 10\sin(314t)A$ and V	2) $\frac{mC\Delta T}{s}$ current and voltage of an A = 100 sin(314t)V	3) $\frac{ms\Delta T}{C}$ AC circuit are given by	4) $\sqrt{\frac{2ms\Delta T}{C}}$
	what is the power (1) 100 W	2) 500 W	3) 300 W	4) 200 W

25. An object is approaching a thin convex lens of focal length 0.3 m with a speed of 0.01 m/s. The magnitude of the rate of change of lateral magnification of image when the object is at a distance of 0.4m from the lens is
1) 0.3 2) 0.6 3) 0.15 4) -0.3
26. A bimetallic is made of two strips A and B having coefficients of linear expansion
$$\alpha_{x}$$
 and α_{x} , if $\alpha_{x} < \alpha_{x}$, then on heating, the strip will
1) Bend with A on outer side 2) Bend with B on outer side
3) Not bend at all 4) None of the above
27. A wire of natural length *i*, Young's modulus Y and area of cross-section A is extended by *x*. Then the energy stored in the wire is given by
1) $\frac{1}{2} \frac{YA}{t} x^{2}$ 2) $\frac{1}{3} \frac{YA}{t} x^{2}$ 3) $\frac{1}{2} \frac{Y}{4} x^{2}$ 4) $\frac{1}{2} \frac{A}{t} x^{2}$
28. A copper disc of the radius 0.1m is rotated about its centre with 20 revolutions pre second in a uniform magnetic field of 0.1 T with its plane perpendicular to the field. The per second in a uniform magnetic field of 0.1 T with its plane perpendicular to the field. The emf induced across the radius 0 the disc is-
1) $\frac{\pi}{2}$ wolt 2) $\frac{\pi}{10}$ wolt 3) 20π millivolt 4) 100 π millivolt
29. Figure shows the acceleration – time graphs of a particle. Which of the following represents the corresponding velocitly time graph?
10 $\frac{1}{2} \frac{1}{t} x^{2}$ 2) $\frac{1}{2} \frac{1}{t} x^{2}$ 3) $\frac{1}{2} \frac{\pi}{t}$ 4) $\frac{1}{4} \frac{1}{4} \frac{1}{t} x^{2}$ 1. If the second and fourth minima in the diffraction pattern at a distance 1 cm from the slit are at 3 cm and 6 cm respectively from the central maximum, what is the width of the central maximum) 1) 4.5 cm 2) 1.5 cm 3) 6.0 cm 4) 3.0 cm
31. A given quantity of an ideal gas is at the pressure P and the absolute temperature T. The isothermal bulk modulus of the gas is
1) $\frac{2}{3}F$ 2) P 3) $\frac{3}{2}F$ 4) 2P
32. The radiation emitted by a star A is 10.000 time that of the sun. If the surface temperature of the sun and the star A are 8000K and 2000K respectively. It ration of the radii of the star A and the sun is
1)

- 33. How many times larger is the spacing between the energy levels with n = 3 and n= 4 than the spacing between the energy levels with n = 8 and n = 9 for a hydrogen like atom or iron?
 1) 0.71 2) 0.41 3) 2.43 4) 14.82
- 34. In the following, which one of the diodes is reverse biased?



- 35. A vibration magnetometer placed in magnetic meridian has a small bar magnet. The magnet executes oscillations with a time period of 2 sec in earth's horizontal magnetic field of 24 microtesla. When horizontal field 18 microtesla is produced opposite to the earth's field by placing a current carrying wire, the new time period of the magnet will be

 1) 1 s
 2) 2 s
 3) 3 s
 4) 4 s
- 36. Three cells of emf 1 V and internal resistance 1Ω each are connected as shown. Effective emf of combination between the points P and Q is



37. An elevator is going upward and the variation in the velocity of the elevator is as given in the graph. What is the height of which the elevator takes the passengers?



38.	When the angle of incidence on a material is 60° , the reflected light is completely polarized. The velocity of the refracted ray inside the material is $(inms^{-1})$				
	1) 3×10 ⁸	$2) \left(\frac{3}{\sqrt{2}}\right) \times 10^8$	3) $\sqrt{3} \times 10^8$	4) 0.5×10 ⁸	
39.	When monochrom photoelectrons and radiation is 2I, the respectively 1) N and 2T	natic radiation of intensi d their maximum kinetion number of emitted elect 2) 2N and T	ty I falls on a metal surfac c energy are N and T resp trons and their maximum 3) 2N and 2T	e, the number of ectively. If the intensity of kinetic energy are 4) N and T	
40.	A transformer of e and current in the	fficiency 90% has turns primary is 0.5A, then th	ratio 10 : 1. If the voltage e current in secondary is	across the primary is 220V	
	1) 5.5 A	2) 5 A	3) 4 A	4) 4.5 A	
41.	Three particles sta	rt from the origin at the	same time, one with a ve	locity v_1 along the x-axis,	
	second along the r	negative y-axis with v_2 are	nd the third particle move	es along the line $x = y$. The	
	velocity of third pa	article, so that three may	r always lie on the same li	ne is:	
	1) $\frac{v_1 + v_2}{2}$	2) $\sqrt{v_1 + v_2}$	3) $\frac{v_1v_2}{v_1+v_2}$	4) $v = \frac{\sqrt{2v_1v_2}}{v_1 - v_2}$	
42.	A laser beam is ser an astronaut. If the to make the round	nt to the moon and refle e moon is at 3,84,000 km trip?	cted back to earth by a mi distance from earth, how	rror placed on the moon by long does it take the light	
40	I) 5 MIN	2) 2.5 MIN	3) 2.5 S	4) 500 S	
43.	down from 400 rps	s to 200 rps in 2 s. Then i	s on the rough surface. Its angular retardation in	rad s ⁻² is	
	 1) 200 π 	2) 100 π	3) 400 π	4) None of these	
44.	The resultant of tw	vo forces at right angle is	s 5N. When the angle bety	ween them is 120° , the	
	resultant is $\sqrt{13}N$.	Then the forces respecti	vely are,		
	1) $\sqrt{12}N, \sqrt{13}N$	2) $\sqrt{20}N, \sqrt{5}N$	3) 3N, 4N	4) $\sqrt{40}N, \sqrt{15}N$	
45.	An electron having magnetic field of it	g kinetic energy 10 eV is ntensity 10 ⁻⁴ T. The speed	circulating in a path of ra	adius 0.1 m in an external	
	1) $1.76 \times (10^6) m s^{-1}$	2) $4.8 \times (10^6) m s^{-1}$	3) $2.0 \times (10^{12}) m s^{-1}$	4) $4.8 \times (10^{12}) m s^{-1}$	
		CHE	MISTRY		
46.	Which of the follow	wing is not a chlorinated	d insecticide?		
	1) DTT	2)Methoxychlor	3) Parathion	4) BHC	
47.	A compound which preparation of azo	ch is a strong oxidizing a compounds. Identify the	agent and has orange colo ne compound:	ured crystal. It is the	
	1) Hydrogen perox	xide	2) Potassium perma	nganate	
	3) Sodium chroma	te	4) Potassium dichro	mate	

48.	Two moles of Helium gas expanded isothermally and irreversible at $27^{\circ}C$ from volume 1 dm^{3} to $1m^{3}$ at constant pressure of 100 k Pa. Calculate the work done			
49.	1) 99900 J Ti I_4 on heating give	2) -99900 J s	3) 34464.65 J	4) -34464.65 J
	1) $TiI_2 + I_2$	2) $Ti + 2I_2$	3) $TiI_3 + \frac{2}{2}I_2$	4) none of these
50.	How many tetrahe	dral holes are occupied in	diamond?	
	1) 25%	2) 50 %	3) 75%	4) 100%
51.	In the synthesis of a	ammonia by Haber's proc	ess, if 60 moles of ammonia	a is obtained in one
	1) 20 mo/min	of disappearance of nitro	Jen Is: 3) 0.5 mol/min	1) 60 mol/min
F.2				4) 00 moly min
52.	The solubility prod	UCT OF Ag_2CrO_4 IS 32×10^{-12} .	what is the concentration (of ^{cro₄} lons in that
	Solution? 1) $2 \times 10^{-4} M$	2) $16 \times 10^{-4} M$	3) $8 \times 10^{-4} M$	(1) $8 \times 10^{-8} M$
53.	What is the lowest	energy of the spectral line	e emitted by the hydrogen a	atom in the Lyman
	series?	55	, , , , , , , , , , , , , , , , , , ,	<i>y</i>
	(h = Planck's consta	ant, c = velocity of light, R	e = Rydberg's constant)	
	1) $\frac{5hcR}{2C}$	2) $\frac{4hcR}{2}$	3) $\frac{3hcR}{4}$	4) $\frac{7hcR}{144}$
54.	When Fthylchlorid	ہ e and alcoholic KOH are t	heated, the compound obta	ined is
011	1) C_2H_4	2) <i>C</i> ₂ <i>H</i> ₂	3) $C_6 H_6$	4) $C_2 H_6$
55.	In the following rea	action sequence in aqueou	is solution, the species X, Y	and Z respectively, are
	$S_2 O_3^{2-} \xrightarrow{Ag^+} X_{Solution}^{Clear} -$	$\xrightarrow{Ag^+} Y^{White}_{Percipatate} \xrightarrow{With time} Z^{Black}_{Precipatate}$	tate	
	1) $[Ag(S_2O_3)_2]^{3-}, Ag_2S_3$	S_2O_3, Ag_2S	2) $[Ag(S_2O_3)_3]^{5-}, Ag_2SO_3, A_3$	g_2S
	3) $[Ag(SO_3)_2]^{3-}, Ag_2S_2$	$_{2}O_{3},Ag$	4) $[Ag(SO_3)_3]^{3-}, Ag_2SO_4, Ag_3SO_4, Ag_3SO_5, Ag$	$_{2}S$
56.	Phenol is			
	1) A base weaker th	nan ammonia	2) An acid stronger than	n carbonic acid
F7	3) An acid weaker i	than carbonic acid	4) A neutral compound	
57.	The most unlikely i	resonating structures of p	-nitrophenoxide ion is:	
	N [†]	Q the second sec	0, , 0	-0, ₊ <u>0</u>
	1)	2)	3)	4)
	<u>Y</u>	Ϋ́	\sum	e V
58.	A mixture of metha	ane and ethene in a molar	ratio ofx : y has an average	e molecular mass of
	20u. The mean mol	ar mass when they are mi	xed in the molar ratio y : x	will be-
	1) 20 u	2) 25 u	3) 24 u	4) 15 u



66.	Which among the following is classified as a condensation polymer?				
67	The tenth elements	in the periodic table reserv	ble with the	4) Aci yiointi ne	
07.	1) First element	2) Second element	3) Fourth element	4) Ninth element	
68	Consider the follow	/ing statements regarding (compounds which cause a	lobal warming X is a	
00.	hydrocarbon. A and	d B are neutral oxides of ni	trogen. C is a blue coloure	d gas and D is released	
	when $H_{a}S$ is reacted	d with oxvaen. Identify the	correct statements about 2	X_i A, B, C and D.	
	I. X is mainly prese	nt in natural gas			
	II. In A and B one is	s diamagnetic and another	one is paramagnetic		
	III. C can be identif	ied by using liquid elemen	t in d-block		
	IV. D causes acid ra	ain			
	1) All are correct	2) , ,	3) II, III, IV	4) I, III, IV	
69.	An acid solution of	0.005 M has a pH of 5. The	e degree of ionization of ac	id is	
	1) 0.1×10^{-2}	2) 0.2×10 ⁻²	3) 0.5×10^{-4}	4) 0.6×10 ⁻⁶	
70.	CH_3COCH_3 and CH_3C	$H_2 CHO$ can be distinguishe	d by		
	1) Neutral <i>FeCl</i> ₃	2)Tollen's reagent	3) <i>NaHSO</i> ₃	4) 2, 4- DNP	
71.	Acetic anhydride is	prepared in the laboratory	y by heating sodium acetat	e with	
	1) Ethyl chloride	2) Acetyl chloride	3) Conc. H_2SO_4	4) Zinc dust	
72.	An unknown alcoh	ol is treated with the "Luca	as reagent" to determine w	hether the alcohol is	
	primary, secondary	or tertiary. Which alcohol	reacts fastest and by what	mechanism?	
	1) Secondary alcoh	ol by $S_N 2$	2) Tertiary alcohol by S_N	2	
	3) Secondary alcoh	ol by $S_N 1$	4) Tertiary alcohol by S_N	1	
73.	30 mL of 0.2N BaCl	v_2 is mixed with 40 mL of 0.	3 N $Al_2(SO_4)_3$. How many g	g of <i>BaSO</i> ₄ are formed?	
	1) 0.10 g	2) 0.60 g	3) 0.90 g	4) 0.70 g	
74.	1 mole each of A	gNO_3 , $CuSO_4$ and $AlCl_3$ is elements	ctrolysed. Then ratio of	number of Faraday's	
	required are:				
	1)1 : 1 : 1	2) 1 : 2 : 3	3) 3 : 2 : 1	4) 1 : 3 : 1	
75.	At a constant temp	erature, which of the follow	ving aqueous solutions wi	II have the maximum	
	vapour pressure?				
	(Mol.wt NaCl = 58.5, H)	$H_2 SO_4 = 98.0 g mol^{-1}$			
	1) 1 molalNaCl (aq)) 2) 1 molar NaCl (aq)	3) 1 molal $H_2SO_4(aq)$	4) 1 molar $H_2SO_4(aq)$	
76.	When two reactants	s A and B are mixed to give	e products C and D, the re	action quotient Q at	
	the initial stage of t	he reaction is best describe	d by-		
	1) Is independent of	time	2) Increase with time		
	3) Decrease with tir	ne	4) Is zero	0	
11.	vvnich one of the fo	bilowing reactions of Xenor	1 compounds is not feasibl	e?	
	$1) XeO_3 + 6HF \rightarrow XeF$	$_{6} + 5H_{2}O$	$2) \ 3XeF_4 + 6H_2O \rightarrow 2Xe + Xe$	$eO_3 + 12HF + 1.5O_2$	
	$3) \ 2XeF_2 + 2H_2O \rightarrow 2XF_2 + 2H_2O$	$Ae + 4HF + O_2$	4) $XeF_6 + RbF \rightarrow Rb[XeF_7]$		

78.	Consider the reaction $A \rightarrow 2B + C$, $\Delta H = -15 kcal$. The energy of activation of backward reaction is 20 kcal mol^{-1} . In presence of catalyst, the energy of activation of forward reaction is 3 $kcal mol^{-1}$. At 400 K the catalyst causes the rate of the forward reaction to increase by the number of times equal to				
	1) $a^{3.5}$ 2) $a^{2.5}$		3) a ^{-2.5}	(1) $e^{2.303}$	
79	The enthalow and entropy change	for the reacti	ion [.]	4) e	
17.	$Br_2(l) + Cl_2(g) \rightarrow 2BrCl(g)$				
	Are 30 $kJ mol^{-1}$ and 150 $JK^{-1} mol^{-1}$ requilibrium is	espectively. T	he temperature at which	the reaction will be in	
	1) 300 K 2) 285.7 K		3) 273 K	4) 450 K	
80.	For the reversible reaction, $N_{\rm c}(g)$ +	$3H_{2}(g) \rightleftharpoons 2N$	$\mathcal{H}_{a}(g)$ at 500°C. the value	e of <i>K</i> is 1.44×10^{-5} when	
	partial pressure is measured in atr	nosphere. Th	ne corresponding value o	f K_c , with	
	concentration in $^{mole\ litre^{-1}}$, is				
	1) $\frac{1.44 \times 10^{-7}}{(0.082 \times 773)^{-2}}$ 2) $\frac{1.44 \times 10^{-7}}{(0.082 \times 773)^{-7}}$	$()^{-2}$	3) $\frac{1.44 \times 10^{-5}}{(8.314 \times 500)^{-2}}$	4) $\frac{1.44 \times 10^{-5}}{(0.082 \times 500)^{-2}}$	
81.	Which method is used to separate	sugars?			
	1) Fractional crystallization	0	2) Sublimation		
	3) Chromatography		4) Benedict's reagent		
82.	The EMF of a cell corresponding t	o the reactior	ו:		
	$Zn(s) + 2H^{+}(aq) \rightarrow Zn^{2+}(0.1M) + H_{2}(g)$	(1 <i>atm</i>) is 0.28	volt at $25^{\circ}C$.		
	The pH of the solution at the hydr	ogen electro	de.		
	$E_{Zn^{2+}/Zn}^{0} = -0.76 volt; E_{H^{+}/H_{2}}^{0} = 0$				
	1) 2.30 2) 7.8		3) 9.2	4) 8.30	
83.	Arrange the following in correct o	rder of Lewis	s acidity BF ₃ .BCl ₃ ,BBr ₃ .		
	1) $BF_3 > BBr_3 > BCl_3$ 2) $BF_3 > BCl_3 > $	$-BBr_3$	3) $BF_3 > BCl_3 < BBr_3$	4) $BBr_{3} < BF_{3} < BCl_{3}$	
84.	Consider the following structures				
85.	Choose the correct statement rega 1)Dipole moment varies as II > III 3) I is the most reactive among the The number of geometric isomers	rding the abo > I ee that can exis	ove structures 2) II is more stable than 4) AII of the above t for square planar [<i>Pt</i> (<i>Cl</i>	 $(py)(NH_3)(NH_2OH)]^+$ is	
	(py = pyriaine): 1) 6 2) 2		3) 3	4) 4	

86. A solution of acetone in ethanol 1) Obeys Raoult's law 2) Shows a negative deviation from Raoult's law 3) Shows a positive deviation from Raoult's law 4) Behaves like a near ideal solution (i) H₂O/OH⁻(incomplete) 87. (ii) Br₂/KOH 2) H₃C ~~ NH₂ 3) H₂C NH₂ 88. Which of the following is an example of heterogeneous catalysis reaction? 1) $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$ 2) Hydrolysis of aqueous sucrose solution in the presence of aqueous mineral acid 3) $CH_2COOCH_3(l) + H_2O(l) \xrightarrow{HCl(l)} CH_2COOH(l) + CH_2OH(l)$ 4) $CO(g) + 2H_2(g) \xrightarrow{Cu,ZnO-Cr_2O_3(s)} CH_2OH(l)$ A mixture of dihydrogen and dioxygen at one bar pressure contains 20% by weight of 89. dihydrogen. Calcuate the partial pressure of dihydrogen 1) 0.8 bar 2) 0.4 bar 3) 1.6 bar 4) 3.2 bar $CH_2 = CH - CH_3 \xrightarrow{Cl_2, 500^0 C} A$. The product A is 90. $\begin{array}{c} CH_3 - CH - CH_2 \\ I \\ I \\ CI \\ CI \\ CI \\ 2 \\ H.C \end{array}$ $\begin{array}{ccc} H_2C = C - CH_2 & HC = CH - \\ 3) & C_1 & C_1 & 4 \end{pmatrix} & C_1 \\ \end{array}$ ċι BIOLOGY What is true about exotic breeds? 91. 1) Require specific environment for growth 2) Sturdy and low yielding 3) Are sturdy 4) Take less food Secretion of the androgen by Leydig cells of testes is under the regulatory influence of 92. 1) STH 2) FSH 3) ACTH 4)ICSH The total number of species, that are known and described range between 93. 1) 0.5-1.0 million 2) 1.1-1.2 million 3) 1.7-1.8 million 4) 2.5-3.0 million 94. Which of the following statement is correct about the circulatory system of Annelida? 1) Blood contains a respiratory pigment haemocyanin 2) Blood contains respiratory pigment haemoglobin in RBC 3) They have open type of circulatory system 4) The respiratory pigment is haemoglobin dissolved in plasma 95. Which of the following option is incorrect? 1) Lipoproteins = Proteins + Lipids 2) Chromoproteins = Proteins + Lipids 3) Nucleoproteins = Proteins + Nucleic acids 4) Glycoproteins = Proteins + Carbohydrates 96. Represented below is the inheritance pattern of a certain type of traits in humans.



Which one of the following conditions could be an example of this pattern? 3) Phenylketonuria 4) Sickle cell anaemia

2) Haemophilia 1) Thalassemia

- Which one of the following is a method for birth control? 97. 2) GIFT 4) IVF-ET 1) IUDs 3) ICSI
- 98. Lacunae are connected with each other by
 - 2) Sublacunae 1) Canaliculi
 - 3) Both canaliculae and sublacunae 4) None of the above
- 99. The two chromatids of a metaphase chromosome represent
 - 1) Replicated chromosomes to be separated at anaphase
 - 2) Homologous chromosomes of a diploid set
 - 3) Non-homologous chromosomes joined at the centromere
 - 4) Maternal and paternal chromosomes joined at the centromere
- 100. Mark the correct option with respect to tissue, location, and its function.

1	١	
I	,	

Tissue	Location	Function
Reticular tissue	Spleen	Secretion
2)		

=/		
Tissue	Location	Function
Brush bordered	PCT	Reabsorption
cuboidal		
epithelium		
2)		

3)

Tissue	Location	Function
Neurosensory	Taste buds and	Conversion of all
epithelium	cornea	types of electrical
		stimuli to
		chemical stimuli

4)

,		
Tissue	Location	Function
Glandular	Lining of blood	To handle blood
epithelium	vessels	presure

101. Oral contraceptives help in preventing pregnancy by inhibiting 1) Ova formation 2) Fertilization 3) Implantation

4) None of these

102. Phototropic and geotropic movements are linked to

1) Gibberellins 2) Enzymes 3) Auxin 4) Cytokinin

103.	Select the incorrect	statement.				
	1) VNTR belongs to a class of mini-satellite DNA					
	2) DNA sequencers work on the principal developed by Frederick Sanger					
	3) HGP was coordin	nated by US Department of	Energy and the Natio	nal Institute of Health		
104.	Restriction enzyme	work by cleaving				
	1) Glycosidic linkag	je	2) Phosphodiester lir	nkage		
	3) Both (A) and (B)		4) None of these	C C		
105.	ICBN stands for					
	1) International Cor	ngress of Biological Names				
	2) Indian Code of B	otanical Nonmenclatutre				
	3) Indian Congress	of Biological Names				
	4) International Cod	de of Botanical Nomenclatu	re			
106.	Which one of the fo	ollowing is not a part of a re	nal pyramid?			
	1) Peritubular capil	laries	2) Loops of Henle			
	3) Collecting ducts		4) Convoluted tubul	es		
107.	In bitegmic type of	ovule, nucellus is, and	d the number of integu	iments is		
	1) Poorly developed	d, two	2) Well developed, tv	WO		
	3) Poorly developed	d, one	4) Well developed , a	one		
108.	Carbohydrates are	commonly found as starch	in plant storage organs	s. Which of the following		
	five properties of st	arch (a-e) make it useful as	a storage material?			
	(a) Easily translocat	ted.				
	(b) Chemically non	-reactive.				
	(c) Easily digested I	by animals.				
	(d) Osmotically ina	ctive.				
	(e) Synthesized dur	ing photosynthesis.				
	The useful properti	es are				
	1) (B) and (C)	2) (B) and (D)	3) (A), (C) and (E)	4) (A) and (E)		
109.	Senescence in plant	s is inhibited by				
	1) Ethylene	2) Auxin	3) Cytokinin	4) Abscissic acid		
110.	A cell increases in v	volume, if the external medi	um is			
	1) Hypotonic	2) Hypertonic	3) Isotonic	4) None of these		
111.	If phytoplanktons a	ire destroyed in the sea, the	n			
	1) Algae will get more space to grow					
	2) Primary consume	2) Primary consumers will grow luxuriantly				
	3) It WIII effect the f	ood chain				
110	4) INO ETTECT WIII DE SEEN					
112.	1) Denothyroid and	Supraropal	2) Deperces and Dere	the yianus?		
	2) Thymus and Tax	supi ai eriai tos	4) Adronal and Over			
	57 THYTTUS and Tes	ເບັ		у		

113.	Which one of the following paris is correctly matched with regard to the codon and the amino			
	acid coded by it?			
	1) CAC-Lysine 2) AUG-Cysteine	3) UUA-Leucine	4) CCC-Valine	
114.	Which of the following is also called " amphibi	ans of the plant kingdo	om"?	
	1) Pteridophyta 2) Thallophyta	 Tracheophyta 	4) Bryophyta	
115.	During hybridization offsprings with hybrid vi	igour superior to both p	parents are self-pollinated	
	for a few successive generations to			
	1) Retain their parental	2) Remove their parer	ntal characters	
	3) Get homozygosity	4) Segregate character	ſS	
116.	During cell growth, DNA synthesis place in			
	1) S phase 2) G ₁ phase	3) G ₂ phase	4) M phase	
117.	Deficiency of the enzyme ADA causes			
	1) Hypogammaglobulinemia	2) Agammaglobuline	mia	
	3) Acquired immunodeficiency disease	4) Severe combined ir	mmunodeficiency disorder	
118.	Cellulose is a polymer of			
	1) α - glucose 2) α - fructose	3) β -glucose	4) β - fructose	
119.	Which of the following is an edible fungus?			
	1) Mucor 2) Penicillium	3) Agaricus	4) Rhizopus	
120.	Left shift of oxyhemoglobin curve is noticed ur	nder		
	1) Normal temperature and pH	2) Low temperature a	nd high pH	
	Low pH and high temperature	4) Low pH and low te	emperature	
121.	If a homozygous tall plant is crossed with hom	ozygous dwarf plant, t	he offspring will be	
	1) All tall plants 2) Half tall plants	3) Half dwarf plants	4) All dwarf plants	
122.	The pollination in Pinus is			
	1) Entomophilous 2) Anemophilous	 Hydrophilous 	4) Malscophilous	
123.	Select the correctly matched pair among the fol	lowing.		
	1) Solanaceae - Pukses	2) Fabaceae - Pea		
	3) Brassicaceae - Wheat	4) Leguminosae – Sur	nflower	
124.	The enzyme produced by Streptococcus is used	d to		
	1) Maintain blood cholesterol level	2) Strengthen tissues		
	Acts as immunosuppressive agent	4) Dissolve blood clot	S	
125.	Nucellar embryo is			
	1) Apomictic haploid	2) Apomictic diploid		
	3) Amphimictic haploid	4) Amphimictic diplo	id	
126.	Placenta produces which hormone?			
	1) ACTH 2) Progesterone	3) GH	4) Gastrin	
127.	Plasma membrane helps in			
	1) Transportation of only water in and out of ce	ell		
	2) Protein synthesis			
	3) Usmoregulation			
	4) INUCIEIC ACIO SYNTNESIS			

128.	Catching, processing or selling of f	ish, shellfish or other aquatic	animals is known as?						
	1) Pisciculture 2) Sericulture	e 3) Apiculture	4) Lac culture						
129.	The tangential, as well as radial wa impermeable, waxy material suber	alls of the endodermal cells, h in in the form of	ave a deposition of water-						
	1) Epiblema 2) Phellem	3) Phelloderm	4) Casparian strips						
130.	Companion cells are closely associ	ated with	·/ · · · · · · · · · · · · · · · · · ·						
	1) Sieve elements 2) Vessel eler	nents 3) Trichomes	4) Guard cells						
131.	Bali, Javan, Caspian are	,	,, , , , , , , , , , , , , , , , , , , ,						
	1) Species of Panthera tigris	2) Subspecies of	Panthera tioris						
	3) Genus of Panthera tigris	4) Subgenus of I	Panthera tigris						
132.	Fusion of male gamete with polar	nuclei of of embryo sac is kno	wn as						
	1) Double fertilization	2) Embryogeny							
	3) Pollination	4) Triple fusion							
133.	Select the wrong statement								
	1) Bacteria cell wall is made up of	oeptidoglycan							
	2) Pili and fimbriae are mainly inv	olved in motility of bacterial of	ells						
	3) Cyanobacteria lack flagellated c	ells 4) Mycoplasma	4) Mycoplasma is a wall – less microorganism						
134.	If plant material is dried and burnt in a crucible, the residue would contain								
	1) Oxides and carbonates of about	ten elements 2) Carbon and p	hosphorous						
	3) Nitrates and sulphates only	4) Oxides and ca	 Oxides and carbonates of Ca and Mg only 						
135.	In the TCA cycle, FADH ₂ is formed	d during							
	1) Conversion of succinyl Co-A to	succinate 2) Conversion o	f citrate to cis-aconitate						
	3) Conversion of succinate to fuma	rate 4) Conversion o	f fumarate to malate						
136.	Malarial parasite is								
	1) Polygenetic2) Digenetic	3) Monogenetic	4) Monomorphic						
137.	The pH of the digestive juices with	in the human small intestine	is between 7.5 and 8.5. This						
	environment is slightly								
	1) Basic 2) Acidic	3) Neutral	4) None of these						
138.	Flocs produced in the secondary tr	reatment plant of the sewage of	comprises of,						
100	1) Algae and Fungi 2) Only Alga	e 3) Viruses	4) Bacteria and fungi						
139.	During blood typing agglutination	i indicates that the	ine contain antinana						
	1) RBC carry certain antigens	2) Plasma conta	2) Plasma contains certain antigens						
140	3) RBC carry certain antibodies	4) Plasma conta	ins certain antibodies						
140.	1) Tiger has many enomine	2) Tigor bas may	2) Tigor has maximum biomass						
	2) Tiger is emplyorous	2) Tiger is dopo	adopt upon a large number of						
	borbiyoros	4) Tiger is deper	ident upon a large number of						
1/1	Correct sequence among the fellow	vina is							
141.	1) Palaeozoic Nesozoic Cor	$\frac{1}{2} \sum_{i=1}^{2} \frac{1}{2} \sum_{i=1}^{2} \frac{1}$	Archaeozoic Drotorozoic						
	3) Palaezoic \rightarrow Archaeozoic \rightarrow Cel	$\frac{1}{2} \frac{1}{1} \frac{1}$	$\rightarrow \text{Palaeozoic} \rightarrow \text{Proterzoic}$						
	=								

142.	The human kidney								
	1) Is responsible for the storage of nutrients suc	ch as glycogen							
	2) Concentrates the urine by actively transporti	ng water out of the filt	rate						
	3) Produces more dilute urine when the collect	ing ducts become less j	permeable to water						
	4) Responds to antidiuretic hormone by increas	sing urine output							
143.	Failure of testes to descend in scrotal sac is known	own as.							
	1) Impotency 2) Castration	3) Synorchidism	4) Cryptorchidism						
144.	The acellular forms of life could have originate	d around							
	1) 1000 mya 2) 1500 mya	3) 2000 mya	4) 3000 mya						
145.	Metagenesis is seen in								
	1) Sycon 2) Obelia	3) Ascaris lumbricoid	les 4) Periplaneta						
	Americana								
146.	The largest known human gene is								
	1) Gene for dystrophin	2) Gene for ADA							
	3) Gene for cystic fibrosis	4) Gene for phenylala	inine hydroxylase						
147.	What is true about Rheumatoid arthritis?								
147. What is true about kneumatold arthritis?1) It is neurological disorder.2) It causes inflammation of joints.									
	3) It is a type of auto-immune disease.	ease. 4) Both (B) and (C)							
148.	Stirred tank bioreactors have been designed for	-							
	1) Addition of preservatives to the product 2) Purification of the product								
	3) Ensuring anaerobic conditions in the culture	vessel							
	4) Availability of oxygen throughout the process	SS							
149.	 4) Availability of oxygen throughout the process 9. When selection acts to eliminate both extremes from an array of phenotypes, the frequency of intermediate times which is closed by many sets in an array of phenotypes. 								
	intermediate type, which is already present in r	more, gets increased. T	his type of selection is						
	called								
	1) Discruptive selection	2) Directional selection	n						
	3) Stabilising selection	4) Non-directional se	lection						
150.	Thalamus is								
	1) Base of flower	2) Base of ovary							
	3) Modification of pollen	4) Modification of per	tal						
151.	Contraction of the ventricle in the heart begins	by the command from							
	1) Chordae tendinae 2) S.A. node	3) Purkinje fibres	4) A.V node						
152.	In increasing order of organizational complexit	y, which one of the fol	lowing is the correct						
	sequence?								
	1) Species, population, community, ecosystem	2) Population, community, species, ecosystem							
	3) Population, ecosystem, species, community	4) Species, populatior	n, ecosystem, community						
153.	What is true about Bt toxin?								
	1) Bt protein exists as active toxin in the Bacillu	S							
	2) The activated toxin enters the ovaries of the	pest to sterilize it and t	hus prevent its						
	multiplication.								
	3) The concerned Bacillus has antitoxins.								
	The inactive protoxin gets converted into an active form in the insect gut.								

1) The density of bacteria in medium 2) A particular pollutant 3) The dominant Bacillus in a culture 4) A certain pesticide 155. Nicotiana sylvestris flowers only during long days and N. tabacum flowers only during short days. If raised in the laboratory under different photoperiods, they can be induced to flower at the same time and can be cross-fertilized to produce self-fertile offspring. What is the best reason for considering N. sylvestris and N. tabacum to be separate species? 1) They cannot interbreed in nature 2) They are reproductively distinct 3) They are physiological distinct 4) They are morphologically distinct 156. Swiss cheese is ripened by 2) Penicillium roqueforti 1) Propionibacterium shermanii 3) Penicillium camemberti 4) Streptococcus lactis 157. Which of the following statement is/are correct / incorrect? I. A-bands of the muscle are dark and contain myosin. II. I-bands are the light bands and contain actin. III. During muscle contraction, the A-band contracts. IV. The part between the two Z-lines is called a sarcomere. V. The central gap of the thick filament, not overlapped by myosin filament is called H-zone. 1) I, II and III are correct, while IV and V are incorrect 2) LIILV are correct while ILIV are incorrect 3) I, II and IV are correct, while III and V are incorrect 4) I,II,III and V are correct, while IV is incorrect 158. The second maturation division of the mammalian ovum occurs 1) Shortly after ovaulation before the ovum makes entry into the fallopian tube 2) Until the nucleus of the sperms has fused with that of the ovum 3) In the Graffian follicle following the first maturation division. 4) After the ovum has been penetrated by a sperm 159. The most significant value of vegetative propagation is that: 1) It enables rapid production of genetic variation. 2) It is a means of producing a large population of individuals genetically identical to the parent. 3) It ensures that the progeny are safe from the attack of diseases and practice. 4) It is ancient practice. 160. In photosynthesis, for fixation of one molecule of glucose, the number of ATP and NADPH₂ required is 1) 12 and 18 2) 18 and 12 3) 6 and 12 4) 18 and 18 161. The force of tension cohesion exceeds root pressure on a 1) Rainy day 2) Foggy morning 3) Sunny day 4) Full moon night 162. What is true about the limbic system? 1) It is a part of forebrain 2) The amygdale and hippocampus are part of it 3) It regulates sexual behavior and emotional reaction 4) All of these

154. 'bB' is a standard abbreviation used for the quantitative expression of

163.	Which one of the taxonomic aids can give a comprehensive account of complete complied information of any one genus or family at a particular time?							
	1) Taxonomic key 2) Flora	3) Herbarium	4) Monograph					
164.	Opening of hepatopancreatic duct into the d	uodenum is guarded by	.,					
	1) Pyloric sphincter 2) Sphincter of Boyden	3) Sphincter of Oddi	4) Cardiac sphincter					
165.	Each lung is covered by a double-layered ple	eura. The outer pleural m	embrane is in contact with					
	1) Surface of lungs	2) Thoracic lining						
	3) Both surface of the lungs and thoracic cav	ity 4) Alceoli						
166.	In sponges, asexual reproductive structure is	\$						
	1) Endogenous budding	2) Exogenous buddir	ng					
	3) Conidia	4) Zoospores						
167.	The precursor of tissue macrophages are							
	1) Lymphocytes 2) Eosinophils	3) Monocytes	4) None of these					
168.	The secretions ofgland help in lubric	cation of the penis.						
	1) Prostate gland2) Bulbourethral gland	3) Seminal vesicle	4) None of these					
169.	Which of the following is not a function of the	ne skeletal system?						
	1) Storage of minerals	2) Production of body	y heat					
	3) Locomotion	4) Production of eryt	hrocytes					
170.	Which elements is required for the germinat	ion of pollen grains?						
	1)Boron 2) Calcium	3) Chlorine	4) Potassium					
1/1.	Halophiles differ from eubacteria in							
1) Having different cell wall and cell membrane structure								
	2) They survive in extreme conditions		1					
170	3) Require 0_2 for survival.	4) More than one opt	Ion is correct					
172.	1) Emigration increases when	aacac 2) Martality inaraac	ac 1) Natality increases					
170	1) Emigration increases 2) initing attorney	eases 3) IVIOI latity fill eas	es 4) indiality increases					
173.	1) Warm and maist any ironmont favours day	composition						
	2) Decomposition rate is slower if detritus is	rich in chitin and lignin						
	3) Farthworm is a detritivore	non in chitin and hymn.						
	4) Precipitation of soluble inorganic nutrient	s into the soil horizon as	unavailable salts is called					
	mineralization							
174.	Select the wrongly matched pair regard to the	ne C₄ cvcle						
.,	1) Primary CO ₂ fixation – PGA product	2) Site of initial carbo	xvlation – Mesophyll cells					
	3) Primary CO ₂ acceptor - PEP	4) C ₄ plant – Maize						
175.	Oxidative phosphorylation in eukaryotes oc	curs during						
	1) Light reaction in chloroplast	2) Dark reaction in ch	nloroplast					
	3) Anaerobic respiration in mitochondria	4) Aerobic respiration in mitochondria						
176.	The most important role of k^+ ions is that							
	1) It provides a red colour.	2) It promotes photos	sysnthesis.					
	3) It influences many enzymic activities which	ch regulate many plant p	rovesses.					
	4) It helps in the formation of cambium.							

- 177. Which of the following is a copper-containing protein acting as a mobile electron carrier in thylakoid membrane?
 - 1) Plastocyanin 2) Plastoquinone
- 3) Pheophytin

4) Cytochrome b₆

4) Hydra

- 178. Diploblastic animal with radial symmetry is1) Roundworm2) Earthworm3) Liver fluke
- 179. Which organisms is used as biocontrol agents of several plant pathogens?1) Baculoviruses 2) Bacillus thuringiensis 3) Dragon flies 4) Trichoderma
- 180. In the given diagram of antibody, 'X' indicates _____



- 1) Constant region of heavy chain
- 3) Disuphide bond

2) Antigen-binding site4) Light chain

NEET MOCK TEST – 5 PHYSICS KEY

1-10	3	3	3	2	2	1	1	2	1	1
11-20	4	2	2	3	2	4	1	1	1	1
21-30	4	1	4	2	1	2	1	3	2	4
31-40	2	1	2	1	4	1	3	3	2	4
41-45	4	3	1	3	1					

CHEMISTRY KEY

46-55	3	4	2	2	2	3	1	3	1	1
56-65	3	3	3	2	1	3	1	4	1	4
66-75	1	2	4	2	2	2	4	4	2	1
76-85	2	1	2	2	2	3	4	3	4	3
86-90	3	1	4	1	2					

BIOLOGY KEY

91-100	1	4	3	4	2	2	1	1	1	2
101-110	3	3	4	2	4	4	2	2	3	1
111-120	3	1	3	4	3	1	4	3	3	2
121-130	1	2	2	4	2	2	3	1	4	1
131-140	2	4	2	1	3	2	1	4	1	4
141-150	1	3	4	4	2	1	4	4	3	1
151-160	2	1	4	2	1	1	3	4	2	2
161-170	3	4	4	3	1	1	3	2	2	1
171-180	4	4	4	1	4	3	1	4	4	2

PHYSICS SOLUTIONS

1. As we know, gravitational potential $V = \frac{-GM}{R}$

Gravitational potential at mid point,

$$= -\frac{G \times 10}{1} - \frac{G \times 100}{1} = -100G$$
$$= -110 \times 6.67 \times 10^{-11} Jkg^{-1}$$
$$= -7.3 \times 10^{-9} Jkg^{-1}$$

2. Given,
$$a\mu_g = a\mu$$

The focal length of convex lens in liquid f is given by

$$\frac{1}{f} = \left(\frac{a\mu_g}{a\mu_l} - 1\right) \left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$
$$\frac{1}{f} = (1-1) \left(\frac{1}{R_1} - \frac{1}{R_2}\right)$$
$$\frac{1}{f} = 0$$
or $f = \infty$

Its focal length will become infinite.

3. In perfectly inelastic collision between two particles, linear momentum is conserved. Let θ be the angle between the velocities of the two particles before collision. Then

$$p^{2} = p_{1}^{2} + p_{2}^{2} + 2p_{1}p_{2}\cos\theta$$
$$or\left(2m\frac{v}{2}\right)^{2} = (mv)^{2} + (mv)^{2}$$
$$or 1 = 1 + 1 + 2\cos\theta$$
$$or \cos\theta = -\frac{1}{2} \text{ or } \theta = 120^{0}$$

4. Wien's displacement law is given by $\lambda_m T = cons \tan t (say b)$ Given, b=Wien's constant = $2.93 \times 10^{-10} m$

Substituting the values, we obtain $T = \frac{b}{\lambda_m} = \frac{2.93 \times 10^{-3}}{2.93 \times 10^{-10}} = 10^7 K$

5. Tension may increase or decrease depending on the nature of charge given to sphere.



6.



Block 'A' cannot be in equilibrium. Due to F sin θ component (upwards) on block 'B'. Block 'A' moves downwards relative to block 'B'. So, friction on block 'B' downwards.

Mass of the system (m) = 50000 kg
 Speed of the system (v) = 36 km/h

$$=36 \times \frac{5}{15}m/s$$
 (:: $1km/h = \frac{5}{18}m/s$) = 10m/s

Compression of the spring (x) = 1.0m

K.E of the system =
$$\frac{1}{2}mv^2 = \frac{1}{2} \times 50000 \times (10)^2 = 25000 \times 100J = 2.5 \times 10^6 J$$

Since, 90% KE of the system is lost due to friction, therefore kinetic energy transferred to shock absorber ,

=10%,
$$KE_{total} = \frac{10}{100} \times 2.5 \times 10^6 J = 2.5 \times 10^5 J$$

This K.E. is converted in to spring energy

$$2.5 \times 10^5 = \frac{1}{2}kx^2$$
$$2.5 \times 10^5 = \frac{1}{2} \times k \times 1^2$$
$$k = 5.0 \times 10^5 N / m$$

8. Power of bulb,
$$P = \frac{V^2}{R}$$

$$\therefore \frac{P_2}{P_1} = \frac{R_1}{R_2} \text{ or } \frac{R_1}{R_2} = \frac{100}{200} = 0.5$$

- 9.
- N_0 is the initial amount of substance and N is the amount left after decay.

Thus,
$$N = N_0 \left(\frac{1}{2}\right)^n$$

n = no. of half lives = $\frac{t}{t_{1/2}} = \frac{15}{5} = 3$
Therefore, $N = N_0 \left(\frac{1}{2}\right)^3 = \frac{N_0}{8}$

10.

The spring block system will perform SHM about the mean position with an amplitude 5 cm.

Given, spring constant k = 50 N/mm = mass attached = 2kg

$$\therefore$$
 Angular frequency $\omega = \sqrt{\frac{k}{m}}$

$$=\sqrt{\frac{50}{2}}=\sqrt{25}=5rad/s$$

Assuming the displacement function

$$y(t) = A\sin(\omega t + \phi)$$

Where, ϕ = initial phase

But given at t = 0, y(t) = +A \therefore y(0) = +A = A sin($\omega \times 0 + \phi$)

Or $\sin \phi = 1 \Longrightarrow \phi = \frac{\pi}{2}$

And the desired equation is

$$y(t) = A\sin\left(\omega t + \frac{\pi}{2}\right) = A\cos\omega t$$

Putting A = 5 cm, ω =5rad/s We get, $y(t) = 5\sin(5t + \pi/2)$

Where, t is in second and y is in centimeter.

11. From work energy theorems,

$$\frac{p^2}{2m} = \mu mgs \Longrightarrow S = \frac{p^2}{2\mu m^2 g}$$

- 12. Path difference on circles around 'P' is same. So, the fringes obtained on the screen in the given condition will be concentric circles.
- 13. Work done is area under the curve

 $W = P_0 V_0$ $= -8 \times (10^5 \times 1.01) \times 7 \times 10^{-3}$ $W = -56 \times 1.01 \times 10^2 J$ W = -5656JIdeal gas equation is given by PV = nRT...(i) 14. For oxygen, P = 1 atm, V = 1 L, n = n_{o_2} Therefore, Eq. (i) becomes $\therefore 1 \times 1 = n_{O_2} RT$ $n_{O_2} = \frac{1}{RT}$ For nitrogen P=0.5 atm, V = 2L, n = n_{N_2} $\therefore 0.5 \times 2 = n_{N_2} RT$ $\Rightarrow n_{N_2} = \frac{1}{RT}$ For mixture of gas $P_{mix}V_{mix} = n_{mix}RT$ Here, $n_{mix} = n_{O_2} + n_{N_2}$ $\therefore \frac{P_{mix}V_{mix}}{RT} = \frac{1}{RT} + \frac{1}{RT}$ $P_{mix}V_{mix} = 2(V_{mix} = 1)$ $\phi = n \times A \times B$ 15. Where n = no. of turns $A \equiv Area of loop$ $B \equiv Magnetic field$ $\therefore \varepsilon = \frac{\Delta \phi}{\Delta t} = nA \frac{\Delta B}{\Delta t}$ $= 200 \times 0.15 \times \frac{0.6 - 0.2}{0.4} = 30V$ 16. $p_i \cos \theta$ p, cos 0 o, sin θ Linear momentum of water striking per second to the wall $p_i = mv = Av\rho v = Av^2\rho$ Linear momentum of reflected water per second $p_r = Av^2 \rho$: change in momentum of water per second $= p_i \cos \theta + p_r \cos \theta$ $=2Av^2\rho\cos\theta$

By the definition of force, force exerted on the wall.

 $=2Av^2\rho\cos\theta$

17. In first case observer (surface) is moving away, perceiver frequency

$$f' = f\left(\frac{c-v}{c}\right)$$

In second case source (surface) is moving away. Perceived frequency

$$f'' = f'\left(\frac{c}{c+v}\right) = f\left(\frac{c-v}{c+v}\right)$$

18. Weight of the rod = w

Reaction of boy $R_B = \frac{W}{4}$

Reaction of man
$$R_M = \frac{3w}{4}$$

$$R_B$$
 R_M

As the rod is in rotational equilibrium

$$\therefore \Sigma \tau = 0$$

$$R_{B} \times \frac{L}{2} - R_{M} \times x = 0$$

$$\Rightarrow \frac{w}{4} \times \frac{L}{2} - \frac{2w}{4} \times x = 0$$

$$\Rightarrow x = \frac{L}{6}. \qquad \therefore \text{ distance from other end, } y = \frac{L}{2} - x$$

$$\Rightarrow y = \frac{L}{2} - \frac{L}{6} = \frac{2L}{6} = \frac{L}{3}$$
NA
Force

20. Magnetic field =
$$\frac{Force}{Ch \arg e \times velocity}$$

[*MLT*⁻²] [*MLT*⁻²]

19.

$$\frac{[MLT^{-2}]}{[AT][LT^{-1}]} = [MA^{-1}T^{-2}]$$

21. Let \vec{u}_1 and \vec{u}_2 be the initial velocities of the two particles and θ_1 and θ_2 be their angles of projection with the horizontal.

The velocities of the two particles after time t are,

 $\vec{v}_1 = (u_1 \cos\theta_1)\hat{i} + (u_1 \sin\theta_1 - gt)\hat{j} and \vec{v}_1 = (u_1 \cos\theta_1)\hat{i} + (u_2 \sin\theta_2 - gt)\hat{j}$

Their relative velocity is

 $\vec{v}_{12} = \vec{v}_1 - \vec{v}_2$

 $= (u_1 \cos\theta_1 - u_2 \cos\theta_1)\hat{i} + (u_1 \sin\theta_1 - u_2 \sin\theta_2)\hat{j}$

Which is a constant. So the path followed by one, as seen by the other is a straight line, making a constant angle with the horizontal.

22. Output of upper OR gate = P + ROutput of lower OR gate = P + Q \therefore Net output A=(P+R).(P+Q)

$$= P.P + P.Q + R \cdot P + R \cdot Q$$
$$= P.(1+Q) + R.P + R.Q$$
$$\therefore 1 + Q = 1 and P.P = P$$
$$\therefore A = P + R.P + R.Q$$
$$= P(1+R) + R.Q = P + R.Q$$

$$23. E = \left(\frac{1}{2}\right) CV^2 \dots (i)$$

The energy stored in capacitor is lost in form of heat energy $H = ms \Delta T \dots (ii)$

From eqs (i) and (ii), we have

$$ms \Delta T = \left(\frac{1}{2}\right) CV^2$$
$$V = \sqrt{\frac{2ms \Delta T}{C}}$$

24. We have given,

 $I = 10 \sin 314 t A and V = 100 \sin 314 t V$

Comparing with $I = I_0 \sin \omega t$ and $V = V_0 \sin \omega t$, we get

 $\therefore I_0 = 10A \, and \, V_0 = 100V$

$$\Rightarrow I_{rms} = \frac{10}{\sqrt{2}} A, V_{rms} = \frac{100}{\sqrt{2}} V,$$

Phase difference $\phi = 0^{\circ}$

 \therefore Power dissipated $P_{av} = V_{rms} \times I_{rms} \times \cos \phi$

$$= \left(\frac{10}{\sqrt{2}}\right) \left(\frac{100}{\sqrt{2}}\right) \cos 0^{\circ} = 500W$$

25. Differentiating the lens formula $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ with respect to time, we get

$$-\frac{1}{v^2} \cdot \frac{dv}{dt} + \frac{1}{u^2} \cdot \frac{du}{dt} = 0 \quad (as \ f = cons \tan t)$$
$$\therefore \left(\frac{dv}{dt}\right) = \left(\frac{v^2}{u^2}\right) \cdot \frac{du}{dt}$$

Further, substituting proper value in lens formula, we

$$\frac{1}{v} + \frac{1}{0.4} = \frac{1}{0.3} (u = -0.4m, f = 0.3m) \text{ or } v = 1.2m$$

Putting the values in eq.(i) magnitude of rate of change of position of image = 0.09 m/s

Lateral magnification, $m = \frac{v}{u}$

$$\therefore \frac{dm}{dt} = \frac{u \cdot \frac{dv}{dt}}{u^2} = \frac{(-0.4)(0.09) - (1.2)(0.01)}{(0.4)^2} = -0.3 / s$$

 \therefore Magnitude of rate of change of lateral magnitude = 0.3/s

26. As $\alpha_{B} > \alpha_{A}$, therefore, strip B will appear on outer side.

27. Energy stored in the wire

$$U = \frac{1}{2}Y \times (strain)^{2} \times volume$$

$$orU = \frac{1}{2}Y \times \left(\frac{x}{l}\right)^{2} \times Al$$

$$orU = \frac{1}{2}\frac{Yx^{2}}{l} \times A$$

$$orU = \frac{1}{2}\frac{YA}{l}x^{2}$$

28.
$$\varepsilon = \frac{B\omega R^{2}}{2}$$

$$= \frac{0.1 \times (2\pi \times 20)(0.1)^{2}}{2} = 20\pi \times 10^{-3} volt$$

- 29. Since acceleration is constant, therefore there is uniform increase in velocity. So, the v-t graph is a straight line slopping upward to the right. When acceleration becomes zero, velocity is constant. So v-t graph is a straight line parallel to the time axis.
- 30. For a secondary minima $d\sin\theta = n\lambda$

$$\sin\theta = \frac{n\lambda}{d}$$

For second minima n = 2

$$\sin \theta = \frac{2\lambda}{d} = \tan \theta_1 = \frac{x_1}{D}$$

For fourth minima n = 4
$$\sin \theta_2 = \frac{4\lambda}{d} = \frac{x_2}{D}$$
$$x_2 - x_1 = \frac{4\lambda}{d} - \frac{2\lambda}{d} = \frac{2\lambda}{d} = 6 - 3 = 3cm$$

Width of central max =
$$\frac{2\lambda}{d} = 3cm$$

31.
$$\therefore \beta = \frac{\Delta P}{\frac{\Delta V}{V}}$$

32.

 $\therefore \text{ In isothermal process}$ $(P + \Delta P)(V - \Delta V) = PV \quad \text{or } P - P\Delta P + V\Delta P - \Delta P\Delta V = PV$ But $\Delta P \ \Delta V$ may be neglected $\therefore V\Delta P = P \ \Delta V$ or $\frac{\Delta P}{\Delta V} = P$ Hence, (P) is correct
As $E = Q = AT^4 \Rightarrow Q = \pi r^2 T^4$ $\therefore \frac{Q_{star}}{Q_{star}} = \frac{r_{star}^2 T_{star}^4}{r_{star}^2} = \frac{10000}{1} = \left(\frac{r_{star}}{r_{sun}}\right)^2 \left(\frac{2000}{8000}\right)^4$

$$10000 \times 256 = \left(\frac{r_{star}}{r_{sun}}\right)^2$$
$$\frac{r_{star}^2}{r_{star}^2} = \frac{1600}{r_{sun}}$$

$$\frac{r_{sun}^2}{r_{sun}^2} = \frac{1}{1}$$

33. Use the relationship between energy of an orbit and quantum number n of that orbit.

$$\frac{r_4 - r_3}{r_9 - r_s} = \frac{r_1 \times 4^2 - r_1 \times 3^2}{r_1 \times 9^2 - r_1 \times 8^2} = \frac{16 - 9}{81 - 64} = 0.41$$

- 34. In a diode when potential of n is at high potential and potential at p is of low potential then it is called reversed biased.
- 35. Time period of a vibration magnetometer,

$$T \alpha \frac{1}{\sqrt{B}}$$
$$\Rightarrow \frac{T_1}{T_2} = \sqrt{\frac{B_2}{B_1}} \Rightarrow T_2 = T_1 \sqrt{\frac{B_1}{B_2}} = 2\sqrt{\frac{24 \times 10^{-6}}{6 \times 10^{-6}}} = 4s$$

36. Two batteries of emf 1V are combined, and two resistance also combine in series



- 37. Area under graph will give displacement height = $\frac{1}{2} \times 4 \times 3.6 + 3.6 \times 8 = 36m$
- 38. Refractive index $\mu = \tan i_p = \tan 60^\circ = \sqrt{3}$

So, the velocity of refracted ray inside the material

$$v = \frac{c}{\mu} = \frac{3 \times 10^8}{\sqrt{3}} = \sqrt{3} \times 10^8 \, m \, s^{-1}$$

39. The number of photoelectrons ejected is directly proportional to the intensity of incident light. Maximum kinetic energy is independent of intensity of incident light but depends upon the frequency of light. Hence, option 2N and T is correct.

40. Given,
$$\frac{N_p}{N_s} = \frac{10}{1}$$

 $V_p = 220V, I_p = 0.5A$
We know that, $\frac{V_p}{V_s} = \frac{N_p}{N_s}$
Efficiency, $\eta = \frac{Output \ power}{Input \ power} = \frac{I_s V_s}{I_p V_p}$
 $\frac{90}{100} = \frac{I_s}{0.5} \times \frac{1}{10} \Rightarrow I_s = 4.5A$
41. Slope of AC line = Slope of BA line

$$\frac{\left(\frac{vt}{\sqrt{2}} - 0\right)}{\left(\frac{vt}{\sqrt{2}} - v_{1}t\right)} = \frac{0 - (-v_{2}t)}{(v_{1}t - 0)}$$
$$v = \frac{\sqrt{2}v_{1}v_{2}}{v_{2} - v_{1}}$$

42. Given: the distance of the moon (s) = $38000 \text{ km} = 384000 \times 10^3 m$ We known speed of light (c) = $3 \times 10^8 m / s$ Total time taken by the laser beam to make the round trip is

$$t = \frac{2s}{c} = \frac{2 \times 384000 \times 1000}{3 \times 10^8} = 2.5s$$

43. Given, $\omega_1 = 2\pi \times (400) rad s^{-1}$

$$\omega_2 = 2\pi \times (200) rad s^{-1}$$

$$\alpha = 2\pi \frac{(400 - 200)}{2} = 200\pi \text{ radions } \alpha \text{ is the retardation.}$$

44. Let A and B be the two forces, As per question

$$\sqrt{A^2 + B^2} = 5$$

Or $A^2 + B^2 = 25.....(i)$
And $A^2 + B^2 + 2AB \cos 120^0 = 13$
Or AB = 25 - 13 = 12
Or 2AB = 24(ii)
Solving (i) and (ii), we get A = 3N and B = 4N

45. When charge enters into a perpendicular magnetic field, it starts to move in a circular path. Radius of a circular path followed by a charge particle:

$$r = \frac{mV}{qB}$$

 $V = 1.76 \times (10^6) m s^{-1}$

CHEMISTRY SOLUTONS

46. Parathion is

$$(C_2H_2)_2 - P - O - O - NO$$

47. Potassium dichromate $K_2Cr_2O_7$ is an orange – red crystalline soluble solid substance. It is a good oxidizing agent and is used in making chrome pigments, azo dyes and as a bleaching agent.

48.
$$W = -P\Delta V$$

Given, $P = 100 \ kPa = 10^5 \ Pa$ $V_1 = 1 dm^3 = 10^{-3} \ m^3, V_2 = 1 m^3$ $W = -10^5 \times (1 - 10^{-3}) J$ $\therefore W = -99900 J$

49. TiI_4 on heating gives titanium and iodine. It is the van Arkel method for the production of pure Ti. $TiI_4 \xrightarrow{Heat} Ti + 2I_2$

50. Diamond has face centered cubic structure and FCC has 8 tetrahedral holes but in diamond only 4 tetrahedral holes are filled to maintain its covalency.
Percentage of tetrahedral holes diamond =
$$\frac{4}{8} \times 100 = 50\%$$

51. In Haber's process, ammonia is synthesized as
 $N_2 + 3H_2 \frac{\text{Fe}.Mo.300\text{C}}{\text{High Pressure}} \rightarrow 2\text{NH}_3$
Rate of synthesis of ammonia = $\frac{60}{60} = 1\text{mol/min}$
 \therefore Ratio of disappearance of nitrogen, i.e.,
 $\frac{-d[N_3]}{dt} = \frac{1}{2} \frac{d[N_4]_3}{dt} = 0.5 \text{ mol/min}$
52. $A_{8,c}CP_0 \rightarrow 2Ag^* + CrQ^2^*$
 $K_{qr} = (2s)^2 s = 4s^2$
 $s = \left(\frac{K_{qr}}{4}\right)^{\frac{1}{2}} = \left(\frac{32 \times 10^{-12}}{4}\right)^{\frac{1}{2}} = 2 \times 10^{-4}M$
53. We know that,
 $\Delta E = hc.R \left[\frac{1}{n_1^2} - \frac{1}{n_2^2}\right]$
For lowest energy, of the spectral line in Lyman series, $n_1 = 1, n_2 = 2$
Hence,
 $\Delta E = hc.R \left[\frac{1}{1^2} - \frac{1}{2^2}\right]$
 $\Delta E = \frac{3hcR}{4}$
54. We know that,
 $CH_1CH_1CH + KOH \rightarrow CH_2 = CH_2 + KCI + H_2O$
Thus, in this reaction Ethener C_2H_4 is produced.
55. $s_i O_i^* - \frac{Ag^*}{4} [ag(S_i O_i)]^* - \frac{Ag^*}{4} - \frac{Ag_i S_i O_i^4}{\sqrt{hittrop} proteiptate}$

So, X, Y and Z are

$$[Ag(S_2O_3)_2]^{3-}, Ag_2S_2O_3$$
 and Ag_2S respectively

56. P^{Ka} of phenol = 10

 P^{Ka} of carbonic acid less than 10

$$HO \subset O > O$$

The acidic strength α conjugate base stability. In carboxylic acid conjugate base stabilized because if forms two resonating structures.

'N' being a 2nd period atom can't expand its octet and hence can't have five bonds on it, thus the structure above is invalid.

58. Mol. Wt. of $CH_4 = 16$

Mo.wt. of $C_2H_2 = 28$ $\therefore 20 = \frac{16x + 28y}{x + y}$ or 16x + 28y = 20x + 20y

or 4x = 8y

or x = 2y

In the gaseous mixture when the mole ratio of CH_4 and C_2H_4 is y : x

Then avg mol. Wt. =
$$\frac{16x + 28x}{x + y} = \frac{16y + 56y}{3y} = \frac{72y}{3y} = 24u$$

61.

 $E_{red/oxi} = \frac{1}{Number of electrons gained or lost by one molecule reductant or oxidant or valence factor}$

Mol.weight of reductant or oxidant

$$E_{As_2O_3} = \frac{M_{As_2O_3}}{4} (As_2^{6+} \to 2As^{5+} + 4e^{-})$$

Per mole $4e^{-}$ lose son 'n' factor = 4

Equivalent weight of $As_2O_3 = \frac{M.wt.of As_2O_3}{4}$

60. Freundlich's adsorption isotherm is given as:

$$x = Kp^{\frac{1}{n}}$$

When x = 1, $\frac{x}{m}$ =kp (at low pressure)

When $n > 1, \frac{x}{m} = k$ (At high pressure)

CsCI packed in simple cubic unit cell:

Cs present at corner No. of Cs^+ in a unit cell = 1;

CI present at body center void no. of Cl^- in a unit cell = 1

62. Electrostatic forces of attraction is inversely proportional to dielectric constant of medium (H_2O) i.e.,

 $F \alpha \frac{1}{\varepsilon}$ therefore, electrostatic forces of attraction are reduced to $\frac{1}{80th}$ in water.



57.

is highly acidic. 64. Structure of L glucose is Pressure of dry air = $P_{moist air} - P_{water vapours}$ 65. Partial pressure = mole fraction $\times P_{a}$: Partial pressure of N_2 and O_2 are also in the ratio of 3 : 1. Partial pressure of $N_2 = \frac{600 \times 3}{3+1} = 450 torr$ Dacron is made by the removal of CH_3OH from the constituents (phthalic acid) and ethylene diol. 66. O + CH₃OH 67. Tenth element (Ne) belongs to the noble gas family. Hence it resembles with second element (He) which is also a noble gas. $X: CH_4, AB: NO, N_2O, C: O_3, D: SO_2$ 68. Acid, $[H^+] = 10^{-pH} = 10^{-5}$ 69. $\alpha = \frac{[H^+]}{Concentration} = \frac{10^{-5}}{0.005} = 0.2 \times 10^{-2}$ 70. Acetone does not give positive Tollen's test but Propanal gives positive Tollen's test $CH_3COC1 + CH_3COONa \rightarrow (CH_3CO)_2O + NaCl$ 71. Acetyl chloride Sodium acetate Acetic anhydride 72. 3° alcohol reacts fastest giving white turbidity immediately on adding lucas reagent. Reaction takes place through carbocation formation involving S_{N}^{1} mechanism, Rate of reaction in this reaction is directly proportional to the stability of the carbocation formed. 3° -R-OH (tertiary alcohol) forms 3° carbocation and therefore, the reaction is fastest. $BaCl_2 + Al_2(SO_4)_3 \longrightarrow BaSO_4 + AlCl_3$ 30*X*0.2 40 X 0.3 0 0 Meq Meq after rx^n 0 6 6 6 73. Meq of $BaCl_2 = 6 = \frac{wt}{eq}X1000$ Meq of $BaCl_2 = \frac{6X233}{2X1000} = 0.7g$ 74. $Ag^+ + e^- \rightarrow Ag$

 $Cu^{2+} + 2e^- \rightarrow Cu$

 $Al^{^{3+}} + 3e^{-} \rightarrow Al$

Thus, number of faradays required by 1 mol each = 1 : 2 : 3

- 75. One molar (1M) aqueous solution is more concentrated than one molal aqueous solution of the same solute. In solution, H_2SO_4 provides three ions. While NaCl provides two ions. Hence, vapour pressure of solution of NaCl is higher (as it gives less ions). Therefore, 1 molalNaCl will have the maximum vapour pressure.
- 76. Q = Reaction quotient

 $[Q \neq K_c]$

 $Q = \frac{[Concentration of product]^{x}}{[Concentration of reaction]^{y}}$

Initially concentration of products is low $Q < K_c$ and Q then increase with time till it becomes equal to K_c .

77. The reaction $XeO_3 + 6HF \rightarrow XeF_6 + 3H_2O$ is not feasible because XeF_6 formed will further produce XeO_3 by getting hydrolysed.

 $\begin{aligned} XeF_6 + H_2O &\rightarrow XeOF_4 + 2HF \\ XeOF_4 + H_2O &\rightarrow XeO_2F_2 + 2HF \\ XeO_2F_2 + H_2O &\rightarrow XeO_3 + 2HF \end{aligned}$

78.
$$E_{a(f)} - E_{a(b)} = \Delta H = -15kcal$$

$$\Rightarrow E_{a(f)} = -15 + 20 = 5kcal$$

$$\frac{k_{(catalyst)}}{k_a} = e^{E_a - E_{a(catalyst)}/RT}$$

$$=e^{(5-3)\times 10^3/2\times 400}=e^{2.5}$$

79.
$$Br_2(l) + Cl_2(g) \rightarrow 2BrCl(g)$$

$$\Delta H = 30kJ mol^{-1}, \Delta S = 105JK^{-1}mol^{-1}$$

$$\Delta S = \frac{\Delta H}{T} i.e., 105 = \frac{30}{T} \times 1000$$
$$\therefore T = \frac{30 \times 1000}{105} = 285.7 K$$

80.
$$\Delta n_g = n_p - n_r \{ \substack{n_p \\ =number of moles of \\ =number of moles of products (gaseous) \\ =number of moles of products (gaseous) \}$$

$$\Delta n_g = 2 - 4 = -2$$

$$K_C = \frac{K_P}{(RT)^{\Delta ng}}$$

$$K_C = \frac{1.44 \times 10^{-5}}{(0.082 \times 773)^{-2}} (T \text{ in } K \text{ and } R \text{ in } L \text{ atm mole}^{-1} K^{-1})$$

81. Chromatoagraphy method is used to separate sugars. They are separated by the chromatographic adsorption of their coloured esters.

For Zn electrode

$$E_{Zn/Zn^{+2}} = E_{Zn/Zn^{+2}}^{0} - \frac{0.059}{2} \log \frac{Zn^{+2}}{Zn}$$
$$= 0.76 - \frac{0.059}{2} \log \frac{0.1}{1} = 0.79 V$$

For Hydrogen electrode

$$E_{\rm H^+/H_2} = E_{\rm H^+/H_2}^0 - \frac{0.059}{2} \log \frac{1}{[{\rm H^+}]^2}$$
$$= 0 - \frac{0.059}{2} \, X \, 2(\log[{\rm H^+}])$$
$$E_{cell} = E_{Zn/Zn^{+2}} - E_{{\rm H^+/H_2}}$$
$$0.28 = 0,79 - 0.059 \, pH$$
$$p^H = 8.63$$

83. This problem contains conceptual mixing of Lewis acidity and back bond. Transfer of electron from filled orbital of one atom to vacant orbital of another atom is termed as π back bonding.

In BF_3 , BCl_3 and BBr_3 each will shown $p_{\pi} - p_{\pi}$ back bonding as follows



Extant of overlapping as the 2p - 2p > 2p - 3p > 2p - 4p difference between the size of p orbital increases the extent of overlapping decreases the availability of vacant orbital increases and the acidic character increases. Hence correct order of Lewis acidity represented by option ($BF_3 < BCl_3 < BBr_3$)

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84.



Hence, Dipole moment decrease as II > III > I stability = II > III > I The reverse is correct for reactivity

85. Complex with general formula [*Mabcd*]⁺ square planar complex can have three isomers.



86. Pure ethanol has H-bond .when acetone mixed the forces of attraction decreases. Both the components escape easily showing higher vapour pressure than the expected value.



88.
$$CO(g) + 2H_2(g) \xrightarrow{Cu,ZnO-Cr_2O_3(s)} CH_3OH(l)$$

In this reaction, reactants and catalysts are in different physical states, hence, it is an example of heterogeneous catalysis.

89. Let the weight of mixture = 100g

$$P_{H_2} = P_{Total} \cdot X_{H_2}$$

$$=P_{T_{otal}} \times \frac{n_{H_2}}{n_{H_2} + n_{O_2}} = 1 \times \frac{\frac{20}{2}}{\frac{20}{20} + \frac{80}{32}} bar = 0.8bar$$

90. It is free radical substitution at allyic position.

BIOLOGY SOLUTIONS

- 91. Exotic breeds are the ones that have come from other countries or originally belong to other countries.
- 92. Leydig cells are stimulated by LH or interstitial cell stimulating hormone to produce androgens.
- 93. 1.7 to 1.8 million species are known and described so for.
- 94. In Annelids, Respiratory pigment exist in dissolved state in blood plasma.
- 95. A chromoprotein is a conjugated prosthetic group (or cofactor). A common example is a haemoglobin, which contains a heme cofactor, which is the iron-containing molecule that makes oxygenated blood appear red.
- 96. Haemophilia is carried by genes x chromosome of father to daughters and the mother carry x linked genes to both sons and daughters.
- 97. IUD is one of the method for birth control.
- 98. Lacunae in bone are connected to one another by Canalaculii.
- 99. The two chromatids of a metaphase chromosome represent replicated chromosomes, arranged at the equatorial plane of the cell, to be separated at anaphase.
- 100. PCT is lined by simple cuboidal epithelium with microvilli forming brush order to fecilitate reabsorption.
- 101. Oral contraception can prevent implantation.
- 102. Phototrophic movements are the plant responses towards the light. Generally, plant shoot and flower show positive phototropism while geotropism is the plant response to the gravity of earth.
- 103. DNA finger printing is unique to an individual .
- 104. The restriction enzymes and exonuclease both break down nucleic acid chains by cleaving the phosphodiester bond.
- 105. The International code of Botanical Nomenclature (ICBN) is a set of rules and recommendations dealing with the formal botanical names given to the plant.
- 106. PCT and DCT are located in cortex , but not medulla (Renal pyramid)
- 107. It bitegmic type, nucellus is well developed. Ovules with two integuments e.g., members of polypetalae and monocots.
- 108. Starch is a plant storage polysaccharide. It is chemically nonreactive and osmotically inactive polysachharides of much greater molecular weight.

- 109. Cytokinin delays the senescence (Ageing) of leaves and other organs by controlling protein synthesis and mobilization of resources (Disappearance of chlorophyll).
- 110. If the plasmolysed cell (flaccid cell) is placed in a hypotonic solution then endosmosis occurs, which makes the cell again turgid (volume increases).
- 111. In an aquatic ecosystem, phytoplankton is the main producer.
- 112. Parathyroid and Adrenal are the endocrine glands. Adrenal glands are the pairs of endocrine glands situated immediately above the kidneys.
- 113. Leucine is coded by 6 codons which are UUA, UUG, CUU, CUC, CUA, and CUG. Valine is one of 20 protogenic amino acids. Its codons are GUU, GUC, GUA, and GUG.
- 114. Bryophytes are called amphibians because they need water to complete their life cycle.
- 115. The advantage of self pollination lies in the genetic structure maintained within the crop. Self pollination results in splitting the crop's gene pool into independent homozygous lines.
- 116. DNA replication occurs in the S phase of the cell cycle. S phase, or synthesis, is the phase of the cell cycle when DNA packaged into chromosomes is replicated.
- 117. Adenosine deaminase (ADA) is very crucial for immune systems to function. The patent lacks functional T- lymphocytes and fails to fight infectious pathogens.
- 118. ADA deficiency causes severe combined Immuno deficiency disease (SCID).
- 119. The fructifications of certain fungi are used as nutritious and delicious food e.g., Agaricus bisporus and A. campestris (mushrooms)
- 120. Due to a rise in temperature, the decrease in pH, and increase in carbon dioxide concentration, the rate of oxyhaemoglobin dissociation is also increased.
- 121. Oxy-haemoglobin curve is shifted to left side due to the formation of oxy haemoglobin induced by low temperature and high pH.
- 122. In Pinus, the pollination is anemophilous, (wind) i.e., pollen grains are carried to the ovule through the wind.
- 123. Pulses belong to Fabaceae, wheat belongs to Poaceae, sunflower belongs to Asteraceae.
- 124. Streptokinase produced by the bacterium Streptococcus and modified by genetic engineering is used as a 'clot buster' for removing clots from the blood vessels of patients who have undergone myocardial infarction leading to the heart attack.
- 125. Substitution of a usual sexual reproduction by a form of reproduction which does not include meiosis and syngamy is called apomixis.
- 126. Progesterone is an endogenous steroid sex hormone involved in the menstrual cycle, pregnancy and embryogenesis in human females.
- 127. Placenta produces estrogen, progesterone, relaxins, hcGH.
- 128. Pisciculture is the rearing and induced breeding of fish by man in pond tanks and artificial reservoirs.
- 129. Pisciculture is catching, processing, selling of fish, shell fish or other aquatic organisms.
- 130. Sieve tubes are found associated with companion cells of angiosperms. Both sieve tube member and companion cell are derived from the same meristematic cell. Companion cell is nucleated. These cells provide energy of food conduction. Xylem vessels, present on monocot root, Stomatal cells.
- 131. Three subspecies of Panthera tigris (tiger) are Bali, Javan, and Caspian.
- 132. During double fertilization triple fusion occurs. i.e., the fusion of two polar bodies with secondary male nucleus takes place. This results in the formation of triploid primary endosperm nucleus. This is the characteristic feature of angiosperm.

- 133. Pili and fimbriae are surface structures of the bacteria that do not play a role in motility. Pili and fimbriae are elongated, hollow appendages seen in Gram-negative bacteria made of a unique protein, pilin. They serve in the attachment of bacteria with substratum and not in movement.
- 134. In dried plant parts are heated in silica crucible at 600° C all organic substances vaporize and the remaining plant ash contains only inorganic substances or essential mineral elements.

135.
$$\begin{array}{c} \begin{array}{c} coo^{-} \\ H-C-H \\ H-C-H \\ coo^{-} \end{array} \xrightarrow{succinate} \\ FAD \\ FAD \\ coo^{-} \end{array} \xrightarrow{foo^{-} \\ FADH_{2}} \begin{array}{c} coo^{-} \\ H-C \\ Coo^{-} \\ coo^{-} \end{array}$$

- 136. Malarial parasite is digenetic in nature because its life cycle gets completed in two different hosts. Primary or principal host in man and secondary or intermediate or vector host is female Anopheles mosquito.
- 137. Malarial parasite plasmodium is Digenetic parasite as it completes its life cycle in human and female Anophelous mosquito.
- 138. pH of digestive juice of intestine is alkaline.
- 139. Agglutination is the process where the antibodies bind to specific antigens and produce large insoluble complexes, which render them harmless and facilitate their destruction by other immune system cells.
- 140. Agglutination during blood typing indicate RBC carry antigen on its surface.
- 141. Tiger is a climax carnivore as it feed on different herbivores.
- 142. Palaeozoic \rightarrow Mesozoic \rightarrow Coenozoic era is the correct sequence.
- 143. Human kidney concentrates the urea by selective reabsroption and tubular secretion.
- 144. Failure of testes to descend to scrotum is called cryptorchidism.
- 145. The question is wrong, it is cellular life.
- 146. Metagnesis or Alternation of generation is seen in obelia.
- 147. Human gene for the formation of Distrophin is the largest gene.
- 148. Rheumatoid Arthritis is Auto-immune disorder and also cause inflammation of joints.
- 149. The broadened base of flower which lies at the tip of pedicel is called torus or thalamus or receptacle.
- 150. When phenotypes are eliminated from the extreme ends of phenotypic distribution. It result stabilizing selection.
- 151. SA is the site of generation of the rhythmic cardiac impulse. AV node is a compact mass of myogenic fibres which receives an impulse from the SA node and transmits it to ventricles.
- 152. Contraction of ventricle in the heart is due to a signal received from Purkinje fibres which inturn receive signal from SA node.
- 153. Species population community Ecosystem is the relative correct answer. But population species community ecosystem is the correct one.
- 154. dB is a standard abbreviation for the quantitative expression of noise. Unwanted sound is called noise. Generally, sound 80 dB is considered as noise.
- 155. The term species evolves from word specific means only those groups of plants or animals come under one species which can interbreed and produce fertile offsprings naturally.
- 156. Swiss cheese is characterized by large holes formed due to the amount of *CO*₂ released by Propionibacterium shermanii, penicillium roqueforti is involbed in ripening of the Roquefort cheese. Camembert cheese is ripened by Penicillium camemberi.
- 157. During muscle contraction, A band remains same. The central gap of thick filament not overlapped by thin filament is called H zone.

- 158. Oogenesis starts with the divison of oogonia (gamete mother cells) giving rise to primary oocyte which enters into prophase I of the meiotic division and gets temporarily arrested at this stage.
- 159. The second maturation division of ovum occur only after sperm penetration in to it.
- 160. During photosynthesis one Clavin cycle takes in only one carbon (as *CO*₂) at a time so, it takes six turns of the cycle to produce six-carbon compound.
- 161. It is so because the transpiration rate is very high on a sunny day.
- 162. Lymbic system is a part of Forebrain and contain amygdale and Hippocampal lobe which controls emotions and sexual behavior.
- 163. Taxonomuc keys are aids for the rapid identification of unknown plants. Flora is an inventory of the plants of a defined geographical region.
- 164. Opening of Hepatopancreatic duct in to duodenum is guarded by sphincter of oddi.
- 165. The outer pleural membrane of lung is in contact with thoracic lining.
- 166. In sponges, asexual reproduction occur by Gemmule formation (or) Endoenous budding.
- 167. Tissue macrophases are formed from Monocytes.
- 168. Bulbo-Urethral gland secretion lubricates penis.
- 169. Production of Body heat is not the function of skeletal system.
- 170. Boron is the micronutrient for plants, present in the soil in very small amounts. It is absorbed from the soil in the form of boric acid (H_3BO_3) and tetraborate anions. Boron is required for pollen germination, seed germination and cell differentiation.
- 171. Halophiles are organisms that thrive in high salt concentrations. They are type of extremophile organisms. The name comes from the Greek word for "Salt-loving", as they survive in extremely saline conditions.
- 172. Population Density increases when natality increases.
- 173. Precipitation of insoluble inorganic nutrients occur in soil horizon.
- 174. The primary CO_2 fixation product in the C_4 cycle is oxaloacetic acid (OAA) in the mesophyll cells. It then forms the other 4-carbon compound malic acid in the mesophyll cells itself, which is then transported to the bundle sheath cells.
- 175. The process of ATP synthesis during oxidation of reduced coenzymes in ETC is called oxidative phosphorylation or terminal oxidation. It takes place in mitochondria.
- 176. Potassium acts as an activator or several enzymes including DNA polymerase. It is an activator of more than 40 enzymes which regulates many plant processes.
- 177. Plastocyanin is a copper containing protein which transfers electrons to PS-I.
- 178. Hydra is diploblastic, Radially symmetrical animal.
- 179. A biological control being developed for use in the treatment of plant disease is the fungus. Trichoderma. Trichoderma species are free-living fungi that are very common in the root ecosystems. They are effective biocontrol agents of several plant pathogens.
- 180. In the diagram, X indicate variable or Antigen binding site of Antibody.