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SHRADDHA
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ONLINE TEST SERIES
SAMPLE QUESTION PAPER

SHRADDHA SAMARTHYA : NEET - UG (MEDICAL)

IMPORTANT INSTRUCTIONS

1. On the Answer Sheet, fill in the particulars on Side-1 and Side-2 carefully with blue/black ball point pen only.
2. The test is of 3 hours duration and this Test Booklet contains 180 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
3. In this Test Paper, each subject will consist of 45 questions (all questions are mandatory). Each correct answer will get + 4 marks, while for incorrect answer, negative marking (-1) is applicable.
4. In case of more than one option correct in any question, the best correct option will be considered as answer.
5. Use Blue/Black Ball Point Pen only for writing particulars on this page/marking responses.
6. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
8. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Form No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
9. Use of white fluid for correction is not permissible on the Answer Sheet.

SUBJECT : PHYSICS

1) If h is the Planck's constant, m = mass of the electron, e = charge of the electron and $\in_0$ = permittivity of vacuum, then $\frac{h^2 \in_0}{me^2}$ has the unit

1) newton 2) joule
3) watt 4) metre

2) For a certain organ pipe, three successive resonance frequencies are observed at 425, 595 and 765 Hz. The speed of sound in air is 340 m/s. The pipe is

1) closed pipe of length 1m
2) closed pipe of length 2m
3) open pipe of length 1m
4) open pipe of length 2m

3) The potential energy of the liquid of surface tension "T" and density p that rises into the capillary tube is

1) $\pi^2 T^2 \rho^2 g$ 2) $4\pi T^2 \rho^2 g$
3) $\frac{2\pi T^2}{\rho g}$ 4) $\frac{\pi T^2}{\rho g}$

4) A stone with weight w is, thrown vertically upward into air from ground level with initial speed v_0. If a constant force f due to air drag acts on the stone throughout its flight, the speed of stone just before impact with the ground is

1) $v_0\left(\frac{w-f}{w+f}\right)^{1/2}$ 2) $v_0\left(\frac{w+f}{w-f}\right)^{1/2}$
3) $v_0\left(\frac{w-f}{w}\right)^{1/2}$ 4) $v_0\left(\frac{w+f}{f}\right)^{1/2}$

5) Let V, T, L, K and r denote the speed, time period angular momentum, kinetic energy and radius of satellite in circular orbit, then

a) V α r^{-1} b) L α $r^{1/2}$
c) T α $r^{3/2}$ d) K α r^{-2}

1) Only a & b are true
2) Only b & c are true
3) Only a, b & d are correct
4) Only a, b & c are correct.

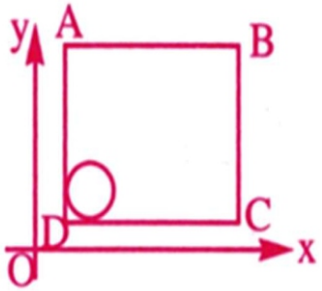
6) A block of mass m is supported by a cord C from the ceiling and another cord D is attached to the bottom of the block (see figure). If D is pulled on steadily

1) C breaks earlier than D
2) D breaks earlier than C
3) Both break simultaneously
4) not possible to say which one will break earlier

7) A charged capacitor of capacitance C is discharged through a resistance R. A radio active sample decays with an average life t. The R in terms of C and tin order that the ratio of the electrostatic energy stored in the capacitor to the activity of the radio active sample remains constant with time, is

1) $\frac{2t}{C}$ 2) $\frac{C}{2t}$
3) 2t C 4) t C

8) A solid sphere of mass 2kg is resting inside a cube as shown in the figure. The cube is moving with a velocity $\vec{v} = \left(5t\hat{i} + 2t\hat{j}\right) ms^{-1}$. Here t is time in seconds. All surfaces are smooth. The sphere is at rest with respect to the cube. What is the total force exerted by the sphere on the cube?



1) 26N 2) 16N
3) 20N 4) 18N

9) A hollow metal sphere is filled with water and is hung by a long thread is made to oscillate. If there is a small hole in the bottom through which water slowly flows out, then its period of oscillation

1) goes on increasing until the sphere is empty
2) goes on decreasing till the sphere is empty
3) remains unchanged throughout
4) first increases and then attains original value as sphere becomes empty

10) A box of mass m is placed on a rough inclined plane of inclination θ. Its downward motion can be prevented by applying an upward pull F parallel to the inclined plane. The block can be made to just slide upwards by applying force 2F parallel to the inclined plane. The coefficient of friction between the block and inclined plane is

1) $\frac{\tan\theta}{3}$ 2) 3 tan θ
3) $\frac{\tan\theta}{2}$ 4) 2tan θ

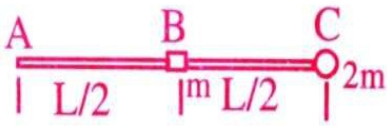
11) A SHO has amplitude A and time period T. The maximum velocity will be

1) $4AT$ 2) $\frac{2A}{T}$
3) $2\pi\sqrt{A/T}$ 4) $2\pi A/T$

12) A particle moves in one dimensional field with total mechanical energy 'E'. If potential energy of a particle is U(x), then the

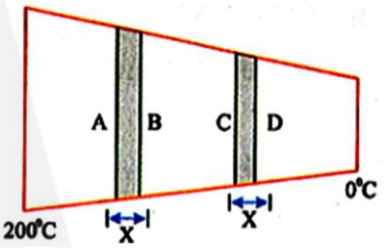
1) Particle has non zero speed where U(x) = E
2) Particle has zero acceleration where U(x) = E
3) Particle has zero velocity where $d\frac{U(x)}{dx}=0$
4) Particle has zero acceleration where $d\frac{U(x)}{dx}=0$

13) A long rod ABC of mass "m" and length "L" has two particles of masses "m" and "2m" attached to it as shown in the figure. The system is initially in the horizontal position. The work to be done to keep it vertical with A at the bottom is (g = acceleration due to gravity)



1) 2mgl 2) 3mgl
3) $\frac{5mgl}{2}$ 4) $\frac{3mgl}{2}$

14) Two ends of a conducting rod of varying cross section are maintained at 200°C and 0°C respectively. In steady state

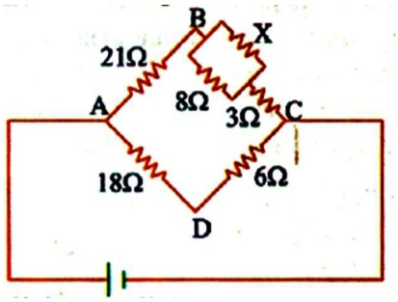


1) Temperature difference across AB and CD are equal
2) temperature difference across AB is greater than that of across CD
3) temperature difference across AB is less than that of across CD
4) temperature difference may be equal or different depending on the thermal conductivity of the rod

15) A body 'x' with a momentum 'p collides with another identical stationary body 'y' one dimensionally. During the collision 'y' gives an impulse J' to the body 'x'. Then the coefficient of restitution is

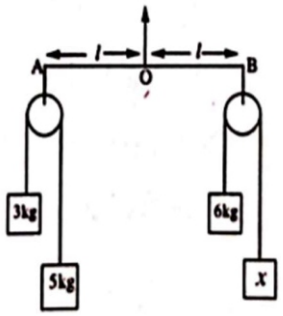
1) $\frac{2J}{p}-1$ 2) $\frac{J}{p}+1$
3) $\frac{J}{p}-1$ 4) $\frac{J}{2p}-1$

16) In the circuit shown in the figure, the value of Resistance X, when potential difference between the points B and D is zero will be



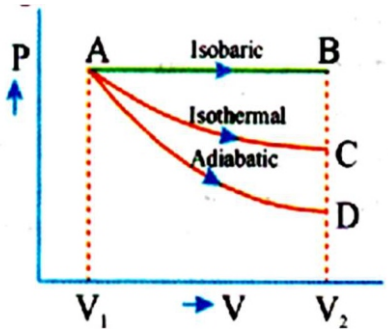
1) 9Ω 2) 8Ω
3) 6Ω 4) 4Ω

17) A rigid uniform rod AB is pivoted at its midpoint 'O'. For the rod AB is to be horizontal the mass 'x' should be



1) 4 kg 2) 2 kg
3) $\frac{60}{11}$ kg 4) $\frac{30}{11}$ kg

18) A gas is expanded from volume V_1 to volume V_2 in three processes shown in the figure. If U_A, U_B, U_C and U_D represent the internal energies of the gas in state A, B, C and D respectively, the which of the following is not correct

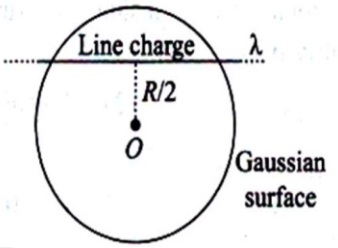


1) $U_B - U_A > 0$ 2) $U_C - U_A = 0$
3) $U_D - U_A < 0$ 4) $U_B = U_C = U_D$

19) Three identical solid spheres moves down three incline A, B and C - all of the same dimensions. A is without friction, the friction between B and sphere is sufficient to cause rolling without slipping, the friction between C and sphere causes rolling with slipping. The kinetic energies A, B, C at the bottom of the inclines are E_A, E_B, E_C

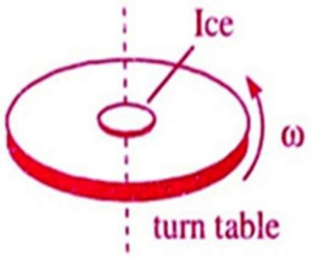
1) $E_A = E_B = E_C$ 2) $E_A = E_B > E_C$
3) $E_A > E_B > E_C$ 4) $E_A > E_B = E_C$

20) Find the flux through the gaussian surface given that the radius of circle is R.



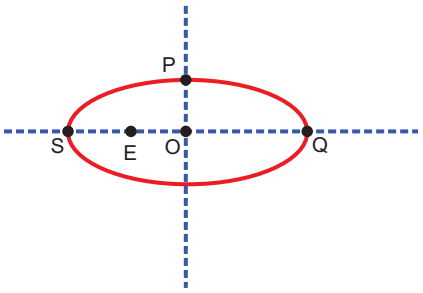
1) $\frac{\sqrt{3}\lambda R}{2\varepsilon_0}$ 2) $\frac{\sqrt{3}\lambda R}{\varepsilon_0}$
3) $\frac{\lambda R}{\varepsilon_0}$ 4) $\frac{2\lambda R}{\varepsilon_0}$

21) A circular turn table rotates about its normal axis with uniform angular speed ω. A circular thick of layer of ice and of radius much smaller than the table - top rotates along with the table. The new angular speed ω of the table when ice starts melting is



1) ω' >ω 2) ω' < ω
3) ω' = ω 4) any of (1), (2) or (3)

22) A satellite moving in an elliptical orbit around the earth as shown. The minimum and maximum distance of the satellite from earth are 3 unit and 5 unit respectively. The distance of satellite from earth when it is at 'P' is



1) 4 unit 2) 3 unit

3) 3.75 unit 4) 6 unit

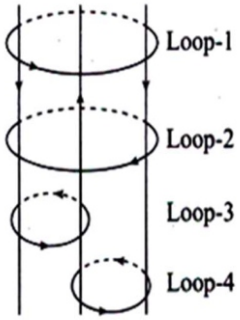
23) The magnitude of electric field intensity at point (2, 0, 0) due to a dipole moment $\vec{p} = \hat{i} + \sqrt{3}\hat{j}$ kept at origin is

$\left(where\, k = \frac{1}{4\pi\varepsilon_0} \right)$

1) $\frac{\sqrt{13}k}{8}$ 2) $\frac{\sqrt{13}k}{4}$

3) $\frac{\sqrt{7}k}{8}$ 4) $\frac{\sqrt{7}k}{4}$

24) Three wires are carrying same constant current i in different directions. Four loops enclosing the wires in different manners are shown in figure. The direction of $d\vec{\ell}$ is shown in the figure.



	Column-I		Column-II
a)	Along close Loop-1	p)	$\oint \vec{B} d\vec{\ell} = \mu_0 i$
b)	Along close Loop-2	q)	$\oint \vec{B}.d\vec{\ell} = -\mu_0 i$
c)	Along close Loop-3	r)	$\oint \vec{B}.d\vec{\ell} = 0$
d)	Along close Loop-4	s)	$\oint \vec{B}.d\vec{\ell} = 2\mu_0 i$

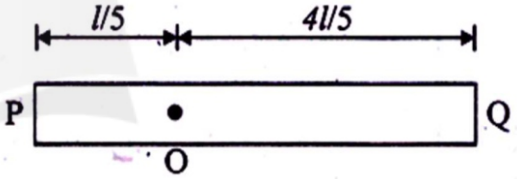
	a	b	c	d
1)	q	p	r	r
2)	p	r	s	s
3)	r	p	s	p
4)	r	q	q	q

25) A uniform rod of length L, has a mass per unit length λ and area of cross-section A. The elongation in the rod is l due to its own weight, if it is suspended from the ceiling of a room. The Young's modulus of the rod is

1) $\frac{3\lambda g L^2}{Al}$ 2) $\frac{\lambda g L^2}{2Al}$

3) $\frac{2\lambda g L}{Al}$ 4) $\frac{\lambda g L^2}{Al}$

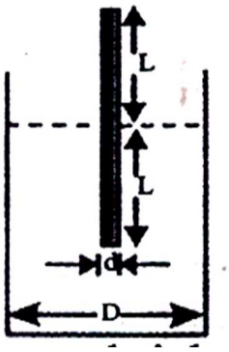
26) A straight rod of length l is rotating about axis passing through 0 is shown. A uniform magnetic field B exists parallel to the axis of rotation. E.m.f induced between P and Q is:



1) $\frac{8}{25}B\omega l^2$ 2) $\frac{3}{10}B\omega l^2$

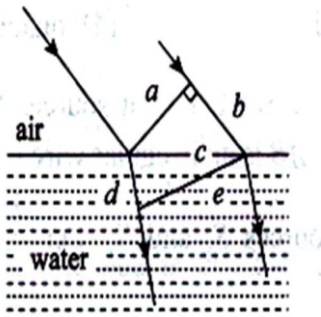
3) $\frac{7}{25}B\omega l^2$ 4) zero

27) A candle of diameter d is floating on a liquied in a cylinderical container of diameter D (D >>d) as shown in figure. It is burning at the rate of 2cm/hour. then the top of the candle will:



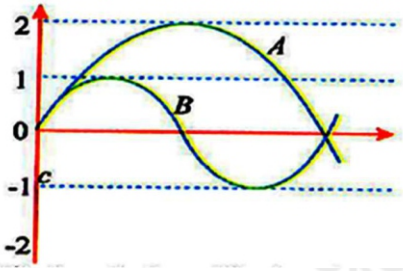
1) Remain at the same height
2) Fall at the rate of 1cm/hour
3) Fall at the rate of 2cm/hour
4) Go up at the rate of 1cm/hour

28) Figure shows plane waves refracted from air to water using Huygen's principle a, b, c, d, e are lengths on the diagram. The refractive index of water w.r.t air is in the ratio



1) $\frac{a}{e}$ 2) $\frac{b}{e}$ 3) $\frac{b}{d}$ 4) $\frac{d}{b}$

29) The displacement – time graphs for two sound waves A and B are shown in the figure, then the ratio of their intensities $\frac{I_A}{I_B}$ is equal to



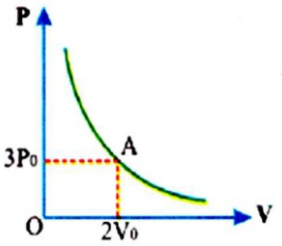
1) 1 : 4 2) 1 : 16
3) 1 : 2 4) 1 : 1

30) A bird is flying at the height of 12 cm from the surface of a lake and a fish is swimming at a depth of 24 cm from the surface.
(Take is μ = 4/3)

	Column-I		Column-II
A)	Distance of fish from the surface as seen by bird	P)	16 cm
B)	Distance of fish from the surface as seen by fish	Q)	40 cm
C)	Distance between fish and bird as seen by bird	R)	18 cm
D)	Distance between fish and bird as seen by fish	S)	30 cm

	A	B	C	D
1)	P	R	S	Q
2)	R	P	Q	S
3)	R	P	S	Q
4)	P	R	Q	S

31) The variation of pressure P with volume V for an ideal monoatomic gas during an adiabatic process is shown in figure. At point A the magnitude of rate of change of pressure with volume is



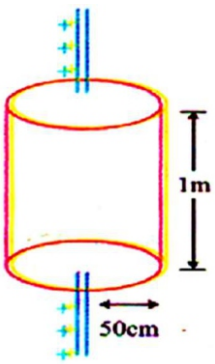
1) $\frac{3}{5}\frac{P_0}{V_0}$ 2) $\frac{5}{3}\frac{P_0}{V_0}$
3) $\frac{3}{2}\frac{P_0}{V_0}$ 4) $\frac{5}{2}\frac{P_0}{V_0}$

32) The magnetic field of a plane polarized electromagnetic wave, moving along z-direction, is given by

$$B = 1.2\times10^{-6}\sin\left[2\pi\left(\frac{z}{240}-\frac{t\times10^{7}}{8}\right)\right]\text{T}$$

The maximum electric field is
1) 1000 V m^{-1} 2) 180 V m^{-1}
3) 360 V m^{-1} 4) 0.40 V m^{-1}

33) Electric charge is uniformly distributed along a long straight wire of radius 1 mm. The charge per cm length of the wire is Q coulomb. Another cylindrical surface of radius 50 cm and length 1m symmetrical encloses the wire as shown in the figure. The total electric flux passing through the cylindrical surface is



1) $\frac{Q}{\varepsilon_0}$ 2) $\frac{100Q}{\varepsilon_0}$

3) $\frac{100Q}{(\varepsilon_0)^2}$ 4) $\frac{100Q}{(\pi\varepsilon_0)}$

34) Given below are two statements:

Statement-I : The reactance of an ac circuit is zero. It is possible that the circuit contains a capacitor and an inductor.

Statement-II : In ac circuit, the average power delivered by the source never becomes zero.

In the light of the above statements, choose the correct answer from the options given below

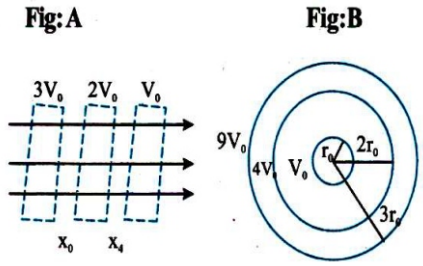
1) Both Statement I and Statement II are true.

2) Both Statement I and Statement II are false.

3) Statement I is true but Statement II is false.

4) Statement I is false but Statement II is true.

35) Equipotential surfaces are shown in figure a and b. The field in figure



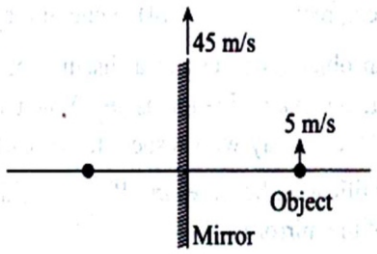
1) A is uniform only

2) B is uniform only

3) A and B is uniform

4) both are non uniform

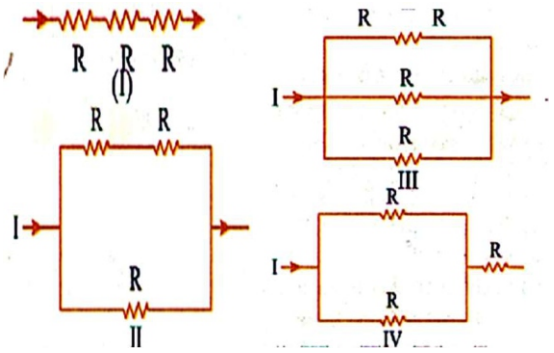
36) In the shown figure, velocity of image with respect to mirror is



1) 50 m/s 2) 40 m/s

3) 0 m/s 4) none of these

37) Three resistances of equal values are arranged in four different configurations as shown below. Power dissipation in the increasing order is



1) (III)<(II)<(IV)<(I) 2) (II)<(III)<(IV)<(I)

3) (I)<(IV)<(III)<(II) 4) (I)<(III)<(II)<(IV)

38) When a metallic surface is illuminated with monochromatic light of wavelength λ, the stopping potential is 5 V_0. When the same surface is illuminated with light of wavelength 3λ the stopping potential is V_0. Then the work function of the metallic surface is (Here h = Planck's constant and c = Speed of light)

1) $\frac{hc}{6\lambda}$ 2) $\frac{hc}{5\lambda}$

3) $\frac{hc}{4\lambda}$ 4) $\frac{2hc}{4\lambda}$

39)

Column I	**Column II**
A) Junction rule	1) Another statement of Ohm's law.
B) Loop rule	2) Magnitude of drift velocity per unit electric field.
C) $\vec{j} = \sigma \vec{E}$	3) Based on law of conservation of charge
D) Mobility	4) Based on law of conservation of energy.

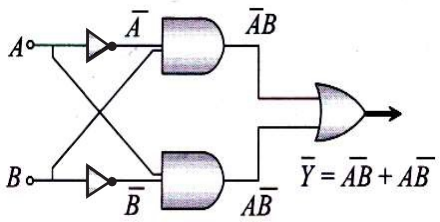
	A	B	C	D
1)	1	2	3	4
2)	1	3	2	4
3)	4	2	1	3
4)	3	4	1	2

40) If E_n and J_n are the magnitude of total energy and angular momentum of electron in the nth Bohr orbit respectively, then

1) $E_n \propto J_n^2$ 2) $E_n \propto \frac{1}{J_n^2}$

3) $E_n \propto J_n$ 4) $E_n \propto \frac{1}{J_n}$

41) Which of the following represent correctly the truth table in of the configuration



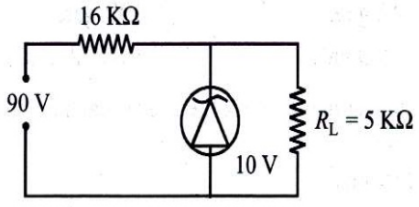
1)
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

2)
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

3)
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

4)
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

42) In the circuit below, the current through zener diode is



1) 2mA 2) 3mA

3) 4mA 4) 5mA

43) A particle starts moving, from the rest state, along a straight line under a constant force and travels a distance of x in the first 5 seconds. The distance traveled by it in the next five seconds will be

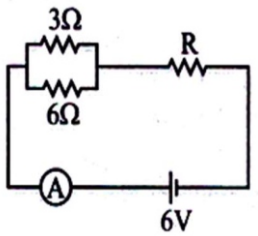
1) x 2) 2 x 3) 3 x 4) 4 x

44) A bullet is fired from a cannon with velocity 500 the angle of projection is 15° and g = 10 ms^{-2}, range is

1) 25×10^3m 2) 12.5×10^3m

3) 50×10^2m 4) 25×10^2m

45) If the ammeter in the given circuit reads 2 A, the resistance R is



1) 1 Ω 2) 2 Ω

3) 3 Ω 4) 4 Ω

SUBJECT : CHEMISTRY

46) 1 kg impure sample of $BaCO_3$ on strong heating gives 765 g of BaO, then find percentage impurities in sample. (Atomic mass of Ba = 137)

1) 1.5 % 2) 5%

3) 15% 4) 23.5%

47) Which of the following conditions is incorrect for

1) Ψ must be single valued at any particular point

2) Ψ must be positive

3) Ψ must be a continuous function of its coordinates

4) None of the above

48) The correct values of ionization enthalpies (in kJ mol^{-1}) of Si, P, Cl and S respectively are:

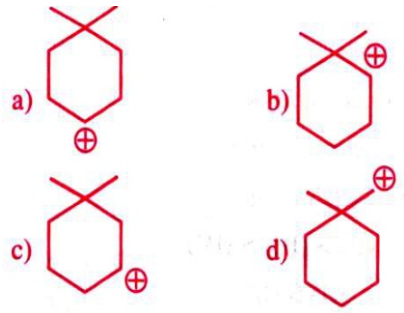
1) 786, 1012, 999, 1256

2) 1012, 786, 999, 1256

3) 786, 1012, 1256, 999

4) 786, 999, 1012, 1256

49) Which of the following carbocation is likely to rearrange?



1) a, b only 2) b, d only
3) a, d only 4) b, c only

50) Among the following species, identify the isostructural pairs : NF_3, NO_3^- , BF_3, H_3O^+, HN_3

1) [NF_3, NO_3^-] and [BF_3, H_3O^+]

2) [NF_3, HN_3^+] and [NO_3^-, BF_3]

3) [NF_3, H_3O^+] and [NO_3^-, BF_3]

4) [NF_3, H_3O^+] and [NH_3, BF_3]

51) Identify the correct match for the reagents used to detect the presence of various groups of glucose

	Group -I		**Group - II**
I	Conc. HNO_3	A	Aldehyde group
II	Br_2/H_2O	B	Terminal alcohol group
III	$(CH_3CO)_2O$	C	Carbonyl group
IV	HCN	D	Hydroxy groups

	I	**II**	**III**	**IV**
1)	B	C	D	A
2)	C	A	D	B
3)	A	B	C	D
4)	B	A	D	C

52) In which of the following preparation of ethane a new C – C bond is formed

1) Sabatier-Senderson's reaction

2) Reduction of ethyl iodide

3) Decarboxylation

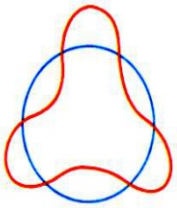
4) Kolbe's electrolysis

53) How many of the following species have sp^3d hybridisation on central atom?

$[ICl_2]^-$, BrF_5, SOF_4, SF_6, $XeOF_4$, ClF_3, $[I(CN)_2]^-$, PCl_5

1) 2 2) 5 3) 6 4) 8

54) The wave motion of an electron in an Bohr's orbit of hydrogen atom is as shown in following figure.



Its potential energy is:

1) - 3.4eV 2) +3.4eV
3) - 3.02ev 4) - 1.51eV

55) Which of the following set of oxides are amphoteric

1) CO_2, SiO_2, P_4O_{10}, N_2O_5

2) K_2O, BaO, CrO, FeO

3) N_2O_3, CO, NO, N_2O

4) Al_2O_3, ZnO, SnO_2, Sb_4O_6

56) The number of moles of $KMnO_4$ that will be needed to react with one mole of sulphite ions in acidic solution is

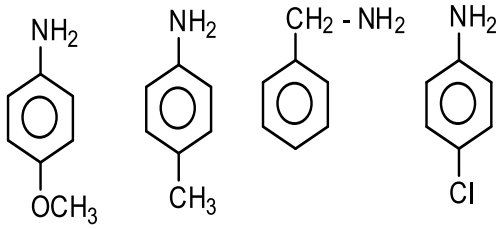
$$MnO_4^- + SO_3^{2-} + H^+ \rightarrow Mn^{2+} + SO_4^{2-} + H_2O$$

1) 2/5 2) 3/5
3) 4/5 4) 1

57) Identify the correct match from the following lists

	List - A		List – B
I)	Dehydrohalo-genation	a)	Alc. KOH
II)	Dehydration	b)	Conc. $H_2SO_4/170°C$
III)	Unsaturation testing	c)	Zn dust
IV)	Dehalogenation	d)	Br_2 water

	I	**II**	**III**	**IV**
1)	b	d	c	a
2)	a	b	d	c
3)	d	a	c	b
4)	a	c	d	b

58) 

I II III IV

The correct decreasing order of K_b is:-

1) I > II > III > IV 2) III > IV > II > I

3) II > III > IV > I 4) IV > II > I > III

59) The actual product of 4.327 and 2.8 is 12.11156. The correctly reported answer will be

1) 12 2) 12.1

3) 12.12 4) 12.116

60) The reaction $CH_3COOH+C_2H_5OH \rightleftharpoons CH_3COOC_2H_5+H_2O$ can be made to proceed in the forward direction by

1) Increasing the temperature

2) Sudden cooling of the reaction mixture

3) Conducting the reaction in presence of a small quantity of NaOH

4) Taking excess of C_2H_5OH and CH_3COOH

61) **Assertion(A)**: Heat of neutralisation of HF is more than that of HCl with NaOH.

Reason (R): More amount of energy is released in the hydration of F- ions (stronger ion – dipole attractions (or) hydrogen bonds.)

1) Both (A) and (R) are true and (R) is the correct explanation of (A)
2) Both (A) and (R) are true and (R) is not the correct explanation of (A)
3) (A) is true but (R) is false
4) Both (A) and (R) are false

62) Identify the correct match for the reagents used to detect the presence of various groups of glucose

	Column -I		**Column - II**
a	Nucleoside	i	Sugar + base + phosphoric acid group
b	Nucleotide	ii	Cytosine + Uracil
c	DNA	iii	Sugar + base
d	RNA	iv	Cytosine + thymine

	a	**b**	**c**	**d**
1)	iii	i	iv	ii
2)	i	iv	iii	ii
3)	ii	iii	i	iv
4)	iv	ii	i	iii

63) Which of the following orbital combination can not form π bond?

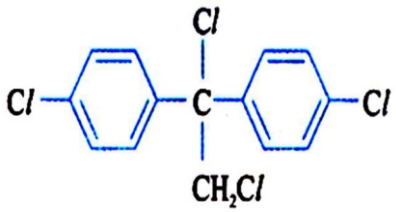
1) $p_x + p_x$ sideways overlapping

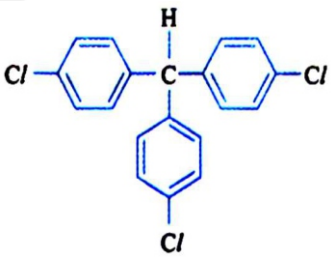
2) $d_{x^2-y^2} + p_y$ sideways overlapping

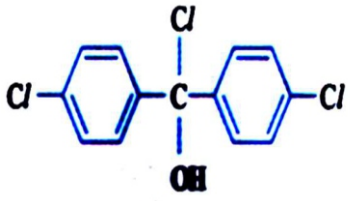
3) $d_{xy} + d_{xy}$ sideways overlapping

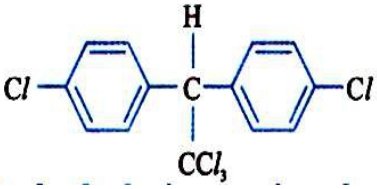
4) $d_{yz} + p_y$ sideways overlapping

64) Trichloroacetaldehyde, CCl_3CHO reacts with chlorobenzene in presence of sulphuric acid and produces

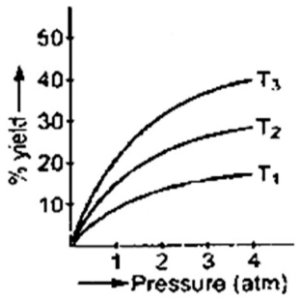
1) 

2) 

3) 

4) 

65) The preparation of $SO_{3(g)}$ by reaction $SO_{2(g)} + \frac{1}{2}O_{2(g)} \rightleftharpoons SO_{3(g)}$ is an exothermic reaction. If the preparation follows the following temperature-pressure relationship for its % yield, then for temperatures T_1, T_2 and T_3. The correct option is:



1) $T_3 > T_2 > T_1$ 2) $T_1 > T_2 > T_3$

3) $T_1 = T_2 = T_3$

4) Nothing could be predicted about temperature through given information

66) Following is incorrect about free radicals

1) they are planar in shape

2) They are paramagnetic

3) They have incomplete octet

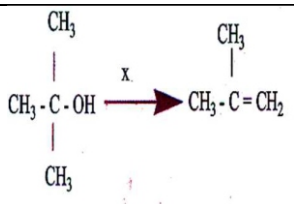
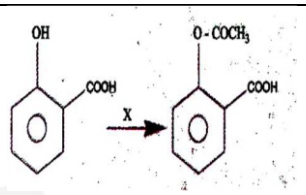
4) They are very less reactive as compared to other cations / anions

67) Match List-I with List-II and Select the correct answer using the codes given below:

	List – I		**List – II**
I	$[FeF_6]^{3-}$	A	1.73 BM
II	$[Ti(H_2O)_6]^{3+}$	B	5.93 BM
III	$[Cr(NH_3)_6]^{3+}$	C	0.00 BM
IV	$[Ni(H_2O)_6]^{2+}$	D	2.83 BM
V	$[Fe(CN)_6]^{4-}$	E	3.88 BM

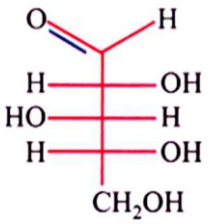
	I	**II**	**III**	**IV**	**V**
1)	B	A	C	D	E
2)	B	A	E	D	C
3)	B	C	D	E	A
4)	D	E	A	B	C

68) Match the following

	Column-I		**Column-II**
1)	$CH_3 - CH = CH-CH_2 - OH \xrightarrow{X} CH_3-CH = CH- CHO$	A)	Cu/ 300C
2)	$CH_3 - CH_2 - OH \xrightarrow{X} CH_3COOH$	B)	Acetic anhydride
3)		C)	$KMnO_4$/ H^+, Δ
4)		D)	CrO_3, under anhydrous medium

	1	**2**	**3**	**4**
1)	D	C	A	B
2)	C	D	A	B
3)	D	C	B	A
4)	D	A	B	C

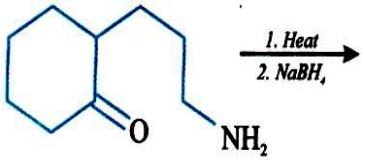
69) The R and S configuration for each stereogenic centre in this from top to bottom?

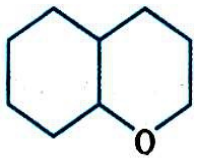


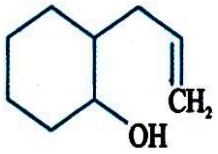
1) R.R.R 2) R.S.S

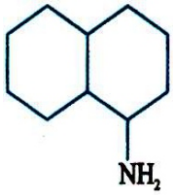
3) R.S.R 4) S.S.R

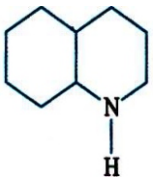
70) Identify the final product



1) 

2) 

3) 

4) 

71) At 25°C, K_{sp} of $PbBr_2$ is equal to 8×10^{-5}. If the salt is 80% dissociated, when is the solubility of $PbBr_2$ in mol/litre?

1) $\left[\frac{10^{-4}}{1.6\times1.6}\right]^{1/3}$ 2) $\left[\frac{10^{-5}}{1.6\times1.6}\right]^{1/3}$

3) $\left[\frac{10^{-4}}{0.8\times0.8}\right]^{1/3}$ 4) $\left[\frac{10^{-5}}{1.6\times1.6}\right]^{1/2}$

72) Match the following

	REACTION AND REAGENT		PRODUCT
I	$CH_3COOH \xrightarrow{LiAlH_4}$	A	CH_3CH_2OH
II	$CH_3COONa \xrightarrow[\Delta]{NaOH/CaO}$	B	CH_4
III	$CH_3COOH \xrightarrow[\Delta]{P_2O_5}$	C	$(CH_3CO)_2O$
IV	$CH_3COOH \xrightarrow[\Delta]{NH_3}$	D	CH_3CONH_2

	I	II	III	IV
1)	A	C	D	B
2)	A	C	B	D
3)	A	B	C	D
4)	D	C	B	A

73) PbI_4 does not exist because:

1) iodine is not a reactive
2) Pb(IV) is oxidizing and I^- is strong reducing agent
3) Pb(IV) is more stable than Pb(II)
4) Pb^{4+} is not easily formed

74) The entropy value at temperature T is

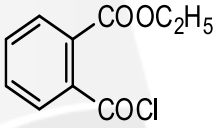
1) $S = \int_o^T C_p.dT$ 2) $S = \int_o^T C_p.TdT$

3) $S = \int_o^T \frac{C_p}{T}.dT$ 4) $S = \int_o^T C_p.T^3dT$

75) One of the following is most soluble?

1) Bi_2S_3 ($K_{sp}=1\times10^{-77}$)
2) MnS($K_{sp}=7\times10^{-16}$)
3) CuS($K_{sp}=8\times10^{-37}$)
4) Ag_2S ($K_{sp}=6\times10^{-51}$)

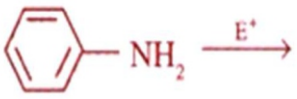
76) The IUPAC name of

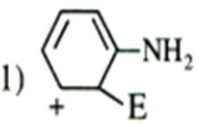


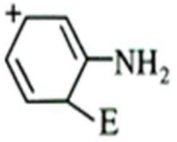
is

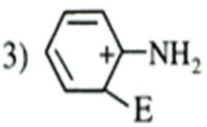
1) 2-Chlrorcarbonyl ethylbenzoate
2) 2-Carboxyethy; benzoyl chloride
3) Ethyl-2-(chlorocarbobyl) benzoate
4) Ethyl-1-(chlorocarbonyl) benzoate

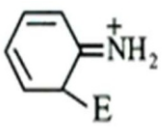
77) The most stable resonating structure of the intermediate arenium Ion is



1) 

2) 

3) 

4) 

78) Match the column-I with column-II

	column-I (Process)		**column-II (Entropy change)**
A)	Reversible isothermal compression of an ideal gas	p)	$\Delta S_{system} > 0$
B)	Isothermal free expansion (P_{ext} = 0) of an ideal gas	q)	$\Delta S_{system} < 0$
C)	Reversible adiabatic expansion of an ideal gas	r)	$\Delta S_{system} = 0$
D)	Reversible ideal gas expansion	s)	Information insufficient

	A	**B**	**C**	**D**
1)	p	q	r,s	r
2)	q	p	r	s
3)	p,q,r	q,s	r,s	r
4)	p,q,r,s	q,r,s	s	r

79) The correct statement about iron includes

I) the highest oxidation state of iron is + 6 in K_2FeO_4

II) the iron shown+2 oxidation state with six electrons in the 3d orbitals

III) the common oxidation state of iron is + 3 with five unpaired electrons in the 3d orbital

1) I, II, III 2) I, II

3) II, III 4) I only

80) $FeCl_3$ on reaction with $K_4[Fe(CN)_6]$ in aq solution gives blue colour and these are separated by a semi permeable membrane Due to osmosis there is

1) blue colour formation in the solution of $FeCl_3$

2) blue colour formation in the solution of $K_4[Fe(CN)_6]$

3) blue colour formation in both the solutions

4) no blue colour formation

81) In the isoelectronic series of metal carbonyl, the CO bond strength is expected to increase in the order.

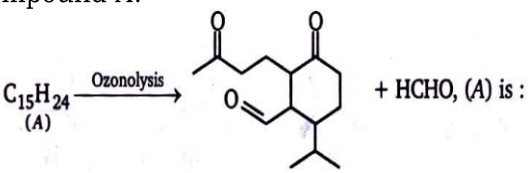
1) $[Mn(CO)_6]^+ < [Cr(CO)_6] < [V(CO)_6]^-$

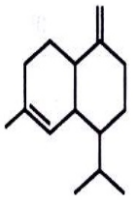
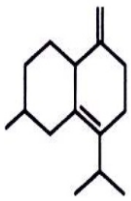
2) $[V(CO)_6]^- < [Cr(CO)_6] < Mn(CO)_6]^+$

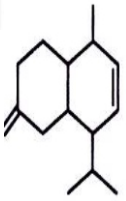
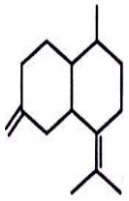
3) $[V(CO)_6]^- < [Mn(CO)_6]^+ < [Cr(CO)_6]$

4) $[Cr(CO)_6] < [Mn(CO)_6] < [V(CO)_6]^-$

82) The molecular formula of compound A is $C_{15}H_{24}$. Ozonolysis gives the following compound and formaldehyde. Which could be compound A?



1)  2) 

3)  4) 

83) In a fuel cell, methanol is used as fuel and oxygen gas is used as an oxidizer. The reaction is

$$CH_3OH_{(l)} + \frac{3}{2}O_2 \rightarrow CO_{2(g)} + 2H2O_{(l)}$$

At 298K, standard Gibbs energies of formation for $CH_3OH_{(l)}$. $H_2O_{(l)}$ and $CO_{2(g)}$ are -166.2, -237.2 and -394.4 KJ respectively. If standard enthalpy of combustion of methanol is -726 KJ, efficiency of the fuel cell will be

1) 80% 2) 87%

3) 90% 4) 97%

84) Which of the following order of stability of complex ion is incorrect?

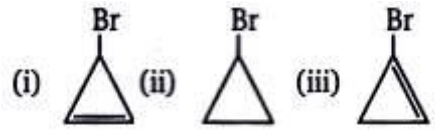
1) $[Fe(C_2O_4)_3]^{-3} > [Fe(H_2O)]^{3}$

2) $[Fe(EDTA)]^{-} > [Fe(en)_3]^{+3}$

3) $[Ni(en)_2]^{+2} > [Ni(DMG)_2]$

4) $[Fe(CN)_6]^{-3} > [Fe(CN)_6]^{-4}$

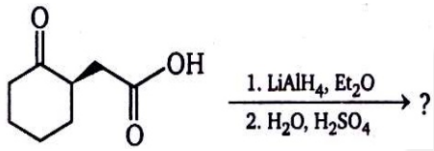
85) Compare rate of reaction with $Ag^{\oplus}\ NO_3^{\ominus}$ or rate of S_N1 reaction

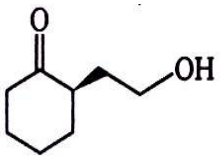


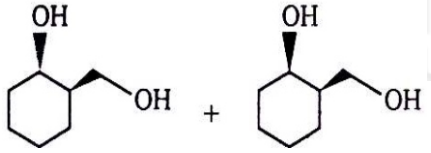
1) i > iii > ii 2) ii > iii > i

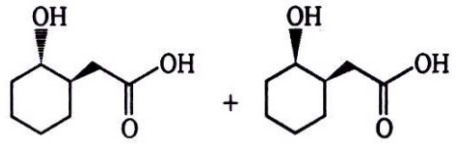
3) i > ii > iii 4) iii > i > ii

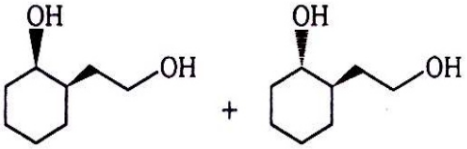
86) What are the major products of the following reaction?



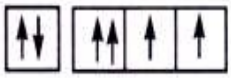
1)  + enantiomer

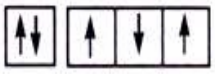
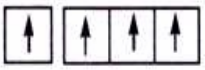
2) 

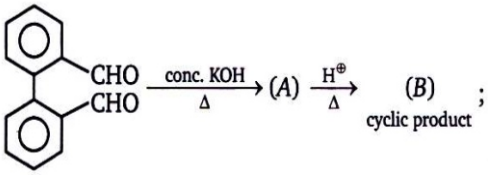
3) 

4) 

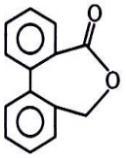
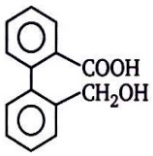
87) Which of the following is violation of Pauli's exclusion principle ?

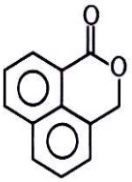
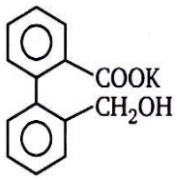
1)  2) 

3)  4) 

88) 

Structure of (B) is:

1)  2) 

3)  4) 

89) The equation representing Kohlrausch law from the following is

1) $\lambda_m = \frac{100K}{C_m}$ 2) $\lambda_m^0 = \lambda_c^0 + .\lambda_a^0$

3) $\lambda_{eq} = \frac{1000K}{C_{eq}}$ 4) $\lambda_m^0 = \lambda_c + \lambda_a$

90) For the reaction $N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)}$. The equilibrium constant is K_1. The equilibrium constant is K_2 for the reaction

$2NO_{(g)} + O_{2(g)} \rightleftharpoons 2NO_{2(g)}$.

The equilibrium constant "K" for the following reaction would be

$NO_{2(g)} \rightleftharpoons \frac{1}{2} N_{2(g)} + O_{2(g)}$?

1) $\frac{1}{(K_1K_2)}$ 2) $\frac{1}{(2K_1K_2)}$

3) $\frac{1}{(4K_1K_2)}$ 4) $\left[\frac{1}{(K_1K_2)}\right]^{\frac{1}{2}}$

SUBJECT : BOTANY

91) Which of the following is **true**

1) C_4 plants lack RuBisCo
2) Mesophyll cells of C_4 plants lack RuBisCO
3) Bundle sheath cells of C_4 plants lack RuBisCo
4) C_3 plants lack RuBisCo

92) **S- I:** ATP is energy currency of living cells.

S-II: ATP is easily hydrolysed to ADP and Pi and easily formed from ADP and Pi.

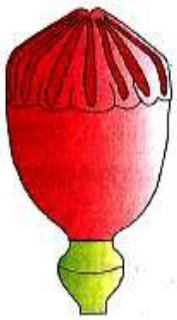
1) Both S-I and S-II are correct
2) S-I is incorrect and S-II is correct
3) S-I is correct and S-II is incorrect
4) Both S-I and S-II are incorrect

93) **Statement I:** H^+ gradient across the thylakoid membrane is essential for the formation of ATP

Statement II: Break down of H^+ gradient due to the movement of protons through F_0 of ATPase releases enough energy to activate ATPase enzyme that catalyses the formation of ATP

1) Statement I and II are correct
2) Statement I and II are incorrect
3) Statement I is correct, II is incorrect
4) Statement I is incorrect II is correct

94) The following figure shows the



1) Multicarpellary Syncarpous pistil of Papaver
2) Multicarpellary apocarpous gynoecium of Michelia
3) Pentacarpellary syncarpous gynoecium of the Michelia
4) Multicarpellary apocarpous gynoecium of the Papaver

95) **Statement I:** C_4 pathway is more efficient in terms of biomass production than C_3 pathway.

Statement II: C_4 pathway involves two carboxylations and one decarboxylation reactions while C_3 pathway includes one carboxylation and one oxygenation reactions

1) Statement I and II are correct
2) Statement I and II are incorrect
3) Statement I is correct, II is incorrect
4) Statement I is incorrect II is correct

96) I. Antipodal cell II. Fertilized Egg cell
III. Synergid cell IV. Polar nucleus
V. Male gamete VI. Nucellar cell
VII. Integument cell

Out of the seven names given above, find out haploid cells

1) I, III, IV, V
2) II, IV, VI, VII
3) I, II, III, V
4) II, III, V, VII

97) Glycolysis is operated in cytoplasm because

1) Other parts of cell are busy in their own functions
2) Cytoplasm is present in all living cells
3) All enzymes of the process are seated in cytoplasm
4) None of these

98) **Statements I:** Hydrophily is present in Vallisneria.

Statement II: All hydrophytes show hydrophily

1) Both S -I and S - II are correct
2) Both S - I and S -II are incorrect
3) S - I is correct and S -II is incorrect
4) S-I is incorrect and S -II is correct

99) Total ATP formed from oxidative phosphorylation

1) 34 2) 36 3) 38 4) 40

100) Identify the **correct** match between the codons and coding functions.

	Column I		Column I
A	AUG	I	Phenylalanine
B	UAA	II	Methionine
C	UUU	III	Tryptophan
D	UGG	IV	Termination

	A	B	C	D
1)	I	IV	II	III
2)	II	IV	I	III
3)	IV	III	II	I
4)	IV	I	III	II

101) Match List-I with List-II and select the **correct** option.

	List-I		List-II
I)	Friedrich Meischer	A)	Double helical model of DNA
II)	Wilkins and Franklin	B)	X-ray d9ifraction data of DNA
III)	Watson and Crick	C)	A + T ≠ C + G
IV)	Meselson and Stahl	D)	Nuclein
V)	Chargaff	E)	Proved semiconservative replication of DNA

	I	II	III	VI	V
1)	D	A	B	E	C
2)	D	B	A	C	E
3)	C	B	A	E	D
4)	D	B	A	E	C

102) Differentiation of shoot is controlled by

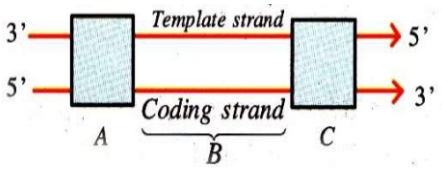
1) high auxin low cytokinin ratio

2) high cytokinin : low auxin ratio

3) high gibberellin low auxin ratio

4) high gibberellin low cytokinin ratio

103)



'A' in the above transcription unit is

1) Promoter 2) Terminator

3) Structural gene 4) Regulator

104) Identify the **correct** option for A and B.

Compound	Function
2, 4-D	A
B	Fruit ripening

	A	B
1)	Insecticide	Auxin
2)	Insecticide	Cytokinin
3)	Insecticide	GA
4)	Weedicide	Ethylene

105) Match following columns and identify the **correct** match.

	Column –I		Column –II
A)	Monohybrid cross	p)	T and t
B)	Test cross	q)	TT
C)	Alleles	r)	TT X tt
D)	Homozygous tall	s)	tt
		t)	Tt X tt

1) A = r; B = p; C = t; D = q

2) A = r; B = t; C = p; D = q

3) A = r; B = t; C = s; D = q

4) A = t; B = r; C = q; D = s

106) Select a phytdhormone synthesized from a compound known as connecting link of aerobic respiration.

1) A hormone promoting seed germination
2) A hormone promoting root initiation
3) A hormone promoting triple response growth
4) A hormone promoting opening of stomata

107) A couple has only A and O blood group children in 3:1 ratio if father's blood group is A, mother's blood group is

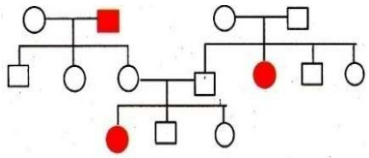
1) O 2) A 3) A or O 4) B

108) Which are involved in in-situ conservation?

i) Biosphere reserve ii) Cryopreservation
iii) Tissue culture iv) Seed bank
v) National park vi) Zoological park
vii) Sacred grove viii) Safari parks

1) iii, vii, v 2) ii, ii, i
3) i, v, vii 4) iv, vi, i

109)



The trait traced in this pedigree is
1) Autosomnal dominant
2) Autosomal recessive
3) X-linked recessive
4) X-linked dominant

110) Cryopreservation means
1) Preservation of genome at 196°C
2) Preservation of genome at -196°C
3) Preservation of genome at higher temperature
4)Preservation of genome at medium temperature

111) Match the following items:

	List –I		List-II
a)	Catabolism	i)	Breakdown of detritus into smaller particles
b)	Humification	ii)	Water soluble Inorganic nutrients, get precipitated as unavailable salts
c)	Fragmentation	iii)	Degradation of detritus into simple inorganic substances
d)	Leaching	iv)	Process of formation of dark coloured amorphous substance

	A	B	C	D
1)	(iii)	(iv)	(ii)	(i)
2)	(iv)	(iii)	(i)	(ii)
3)	(iv)	(iii)	(ii)	(i)
4)	(iii)	(iv)	(i)	(ii)

112) **(A):** According to "Robert May" global species diversity is about 7 millions.

(R): The total number of plants and animals described so far is slightly more than 1.5 million.

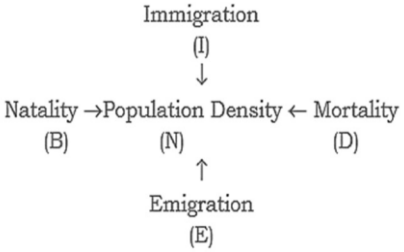
1) If both (A) and (R) are true and (R) is the correct explanation of (A)
2) If both (A) and (R) are true and (R) is not the correct explanation of (A)
3) (A) is true but (R) is false
4) (A) is false but (R) is true

113) Match the following:

	List-I		List-II
a)	Primary consumers	i)	Bacteria, fungi
b)	Tertiary consumers	ii)	Insects, cattle
c)	Secondary consumers	iii)	Tiger, lion
d)	Decomposers	iv)	Birds, wolf

	(a)	(b)	(c)	(d)
1)	(ii)	(iii)	(i)	(iv)
2)	(iii)	(ii)	(iv)	(i)
3)	(iii)	(ii)	(i)	(iv)
4)	(ii)	(iii)	(iv)	(i)

114) Study the following flow chart and choose the **correct** option.

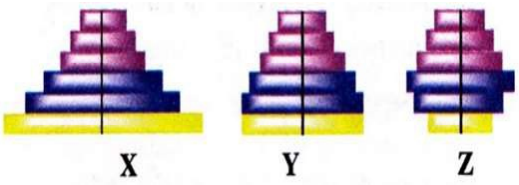


1) 'B' and 'D' cause a positive change while 'I' and 'E' cause a negative change in 'N'
2) If a new habitat is just being colonised, 'B' may contribute more significantly to 'N' than 'I'

3) 'N' will increase only when (B+I) is greater than (D+E)

4)'B' and 'I' are most influential factors under normal conditions while 'D' and assume importance only under special conditions

115) Identify the status of the populations X, Y and Z whose age pyramids are given below?



	X	Y	Z
1)	stable	growing	declining
2)	growing	stable	declining
3)	growing	declining	stable
4)	declining	stable	growing

116) Match the type of tissue in column I with their features in column II

	Column I		Column II
A	Meristem	p)	Photosynthesis, storage
B	Parenchyma	q)	Mechanical support
C	Collenchyma	r)	Actively diving cells
D	Sclerenchyma	s)	Sclecreids

	A	B	C	D
1)	p	r	q	s
2)	r	p	q	s
3)	q	s	p	r
4)	s	r	p	q

117) Cellular organelles with membranes are

1) Lysosomes, golgi apparatus and mitochondria

2) Nuclei, ribosomes and mitochondria

3) Chromosomes, ribosomes and endoplasmic reticulum

4) Endoplasmic reticulum, ribosomes and nuclei

118) Identify **correct** order of components with reference to their arrangement from outside to inner side in a woody dicot stem

1) Secondary cortex 2) Autumn wood

3) Secondary phloem 4) Phellem

1) 2,3,1,4 2) 4,1,3,2

3) 1,2,4,3 4) 3,4,2,1

119) Match the items in column I with appropriate items (one or more) of column II

	Column I		Column II
A	Amitosis	P	Equational division
B	Mitosis	Q	Haplontic cycle
C	Free nuclear division	R	Direct-division
D	Gametic meiosis	S	Opalina
E	Zygotic meiosis	T	Diplontic cycle
		U	Indirect division

	A	B	C	D	E
1)	R	P,U	S	T	Q
2)	S	Q	R	T	P
3)	P	R	T,U	S	Q
4)	P,U	Q	R	S	T

120) **Assertion**: In dicot stem, vascular bundles are of open type

Reason: Dicot stem bears cambium in the vascular bundles.

1) Assertion and reason are true and the reason is the correct explanation of the assertion

2) Assertion and reason are true but the reason is not a correct explanation of the assertion

3) Assertion is true but the reason is false

4) Assertion and reason both are false

121) Which of the following events takes place during diplotene stage of prophase I of meiosis?

1) Compaction of chromosome
2) Formation of synaptonemal complex
3) Formation of recombinational nodules
4) Dissolution of synaptonemal complexes

122) Polysome is formed by
1) Ribosomes, attached to each other in a linear arrangement
2) Several ribosomes attached to a single mRNA
3) Many ribosomes attached to a strand of endoplasmic reticulum
4) A ribosomes with several subunits

123) **Assertion**: Meiotic division results in the production of four dissimilar cells

Reason: Synapsis occurs during zygotic meiosis

1) Assertion and reason are true and the reason is the correct explanation of the assertion
2) Assertion and reason are true but the reason is not a correct explanation of the assertion
3) Assertion is true but the reason is false
4) Assertion and reason both are false

124) Match the following and select the **correct** answer.

A	Centriole	p	Infoldings in mitochondria
B	Chlorophyll	q	Thylakoids
C	Cristae	r	Nucleic acids
D	Ribozymes	s	Basal body cilia or flagella

	A	B	C	D
1)	s	q	p	r
2)	p	q	s	r
3)	p	r	q	s
4)	s	r	p	q

125) Choose the **correct** sequence of taxonomic categories in Linnaean Hierarchy
1) Phylum- Class- Family- Tribe- Order- Genus- Species
2) Division- Class- Order- Family- Tribe- Genus- Species
3) Order- class-tribe- division- Family-genus- Species
4) Phylum -class- Tribe- Order- Family - Genus -Species

126) Vascular cryptogams and botanical snakes of plant kingdom are
1) Pteridophytes 2) Tracheophytes
3) Angiosperms 4) Spermatopytes

127) Binomial epithet in binomial nomenclature is
1) Genus + Species
2) Genus
3) Genus + Species + Author name
3) Genus + Species + Family

128) In which of the following the angiosperms resemble the Gymnosperms
1) Nature of endosperm
2) Presence of vessels
3) Siphonogamy
4) Double fertilization

129) Bacterial that have organic molecules for energy and as a source of carbon are known as
1) Chemoheterotrophs
2) Photoautotrophs
3) Photoheterotrophs
4) Chemoautotrophs

130) What type of venation is found in Banana (Musa)?
1) Unicostate reticulate
2) Unicostate parallel
3) Divergent reticulate
4) Divergent parallel

131) Match the following and select the **correct** combination from the options given below

	Column I Kingdom		**Column II Class**
A	Plantae	I	Archaebacteria
B	Fungi	II	Euglenoids
C	Protista	III	Phycomycetes
D	Monera	IV	Algae

	A	**B**	**C**	**D**
1)	IV	III	II	I
2)	I	II	III	IV
3)	II	IV	II	I
4)	II	III	IV	I

132) The family comprising the largest number of genera and species in monocots is

1) Orchidaceae 2) Liliaceae

3) Poaceae 4) Musaceae

133) Match column I with column II and select the **correct** option

	Column I (Kingdom)		**Column II (Class)**
A	Morels	I	Deuteromycetes
B	Smut	II	Ascomycetes
C	Bread mould	III	Basidiomycetes
D	Imperfect fungi	IV	Zygomycetes

	A	**B**	**C**	**D**
1)	III	IV	I	II
2)	II	III	IV	I
3)	III	IV	II	I
4)	II	I	IV	III

134) The floral formula of the given floral diagram is most likely

1) Br ☿, K_{pappus}, $C_{(5)}$ $A_{(5)}$ $G_{(\bar{2})}$

2) Br K_{Pappus}, C_2 A_0 $G_{(\bar{2})}$

3) Br ☿, K_{pappus} C_5 A_5 $G_{(\bar{1})}$

4) Br ☿, K_{Pappus} $C_{(5)}$ $A_{(5)}$ $G_{\bar{0}}$

135) Asexual spores with flagella in algae are called

1) Zoospores 2) Zygospores

3) Aplanospores 4) Hypnospores

SUBJECT : ZOOLOGY

36) Which one of the following statements is totally **wrong** about the occurrence of notochord, while the other three are **correct**?

1

1) It is present only in larval tail in Ascidians

2) It is replaced by a vertebral column in adult frog

3) It is absent throughout life in humans from the very beginning

4) It is present throughout life in Amphioxus

37) Match the types of animal tissues listed under column-I with the location given under column II; choose the answer which gives the **correct** combination of the alphabets of the two columns

1

Column – I (Tissues)		**Column – II (Location)**
A.	Simple columnar epithelium	p. Wall of heart
B.	Cardiac muscle	q. Bone joints
C.	Adipose tissue	r. Inner lining of stomach and intestine
D.	Hyaline cartilage	s. Below the skin in the abdomen, buttocks, thighs and breasts
		t. Diaphragm

	A	B	C	D
1)	r	t	q	s
2)	r	p	s	q
3)	r	p	t	s
4)	p	r	s	t

138) Bidder's canal is found in
1) kidney of male frog
2) testis of frog
3) liver of frog
4) ovaries of frog

139) The fusion of ovum and sperm is done outside the body of woman to form zygote. The zygote is allowed to divide forming 8 blastomeres. The early embryo with not more than 8 blastomeres is transferred into the
1) Uterus 2) Fallopian tube
3) Cervix 4) Vagina

140) Match the following

1.	Abrin	p.	Anti-cancer drug
2.	Vinblastin	q.	Alkaloid
3.	Gums	r.	Toxin
4.	Morphine	s.	Protein
5.	GLUT-4	t.	Polymeric Secondary metabolite

	1	2	3	4	5
1)	r	p	t	q	s
2)	p	r	t	q	s
3)	r	p	q	t	s
4)	q	t	p	r	s

141) Foetal ejection reflex in human female is induced by
1) fully developed foetus and placenta
2) differentiation of mammary glands
3) pressure exerted by amniotic fluid
4) release of oxytocin from pituitary

142) Relationship between amino acid and protein is similar to one found between
1) glucose and fructose
2) nucleotides and nucleic acid
3) nucleosides and nucleic acid
4) purines and pyrimidines

143) Tasmanian wolf is a marsupial while wolf is a placental mammal. This shows
1) convergent evolution
2) divergent evolution
3) parallelism
4) inheritance of acquired characters

144) In contrast to Annelids the Platyhelminthes show
1) Radial symmetry
2) Presence of pseudocoel
3) Bilateral symmetry
4) Absence of body cavity

145) Match list I (drug) with list II (source) and select the correct answer using the codes given below the lists

List – I		List – II	
A.	LSD	1.	Papaver
B.	Opium	2.	Claviceps
C.	Cocaine	3.	Cannabis
D.	Hashish	4.	Erythroxylum

	A	B	C	D
1)	2	4	1	3
2)	3	2	1	4
3)	2	1	4	3
4)	4	3	2	1

146) If the first three nucleotides in 6bp palindromic sequence of one strand of a DNA molecule are CGT, what would be the next three nucleotides in the same strand most likely?
1) TTC 2) ACG 3) CGT 4) TGC

147) **I:** Each seminiferous tubule is lined on its inside by male germ cells and Sertoli cells.

II: Male germ cells undergo mitotic division only to form sperms.

1) S- I and S-II are correct.

2) S-I is correct and S-II is incorrect.

3) S-I is incorrect and S-II is correct.

4) S-I and S-II are incorrect.

148) You suspect your patient to be suffering from a bacterial disease, however the number of bacteria in the patient's body is very less. Which method can help you detect these pathogens in the laboratory?

1) Hybridoma technology

2) PCR

3) Somatic hybridization

4) DNA fingerprinting

149) Given below are four methods (A - D) and their modes of action (a - d) in achieving contraception. Select their **correct** matching from the four options that follow:

Method	**Mode of Action**
A) The pill	a) Prevents sperms reaching cervix
B) Condom	b) Prevents implantation
C) Vasectomy	c) Prevents ovulation
D) Copper -T	d) Semen contains no sperm

	A	**B**	**C**	**D**
1)	b	c	a	d
2)	c	a	d	b
3)	d	a	b	c
4)	c	d	a	b

150) Elution step is involved in

1) DNA cutting

2) DNA insertion

3) Separation of DNA from gel

4) Ligation of DNA with vector

151) **(A):** Down's syndrome is trisomic.

(R): In a person with Down's syndrome XXY chromosomes are present

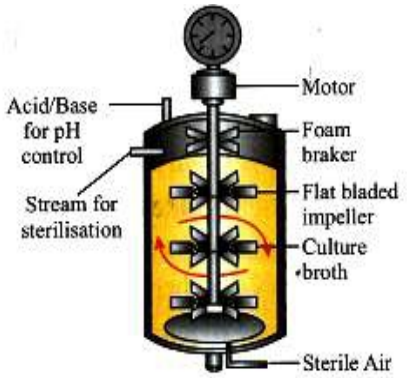
1) Both A and R are true and R is the correct explanation of A

2) Both A and R are true and R is not the correct explanation of A

3) A is true but R is false

4) Both A and R are false

152) Given below is the figure of one of the most commonly used bioreactor:



In this flat bladed impeller helps in:

1) Maintaining the pH of medium

2) Stirring the liquid medium

3) Regulating temperature of medium

4) Both 1 & 3

153) Match column – I with column – II and select the **correct** option.

	Column – I		**Column – II**
A.	Origin of invertebrates	I.	350 mya
B.	Origin of jawless fishes	II.	500 mya
C.	Origin of sea weeds	III.	200 mya
D.	Origin of fish like reptiles	IV.	320 mya

	A	**B**	**C**	**D**
1)	II	I	IV	III
2)	II	IV	I	III
3)	IV	I	III	II
4)	IV	III	I	II

154) Cry IAc and Cry IAb produce toxins that control respectively

1) Cotton bollworms and corn borer

2) Corn borer and cotton bollworms

3) Tobacco bud worms and Nematodes

4) Nematodes and tobacco bud worms

155) Read the following statements and find out **correct** statements:

A) More individuals acquire peripheral character value at both ends of distribution curve - Directional selection

B) Change in gene frequency occurs by chance - Genetic drift

C) More individuals acquire mean character value - Stabilizing selection

D) Sudden disappearance of dinosaurs from the earth - 200 mya.

1) A and C 2) B and D

3) B and C 4) A and D

156) Many transgenic animals are designed to increase our understanding of how genes contribute to the development of disease. Today transgenic models exist for many human diseases such as

1) cancer, cystic fibrosis, schizophrenia and alzheimer's

2) cancer, cystic fibrosis, rheumatoid arthritis and Alzheimer's disease

3) haemophilia, colour blindness, cancer, cystic fibrosis

4) cancer, cystic fibrosis, haemophilia, colourblindness

157) Read the following four statements (A-D)

a) Colostrum is recommended for the new born because it is rich in antigens

b) Chickungunya is caused by a Gram negative bacterium.

c) AIDS is characterized by decrease in T-helper cell

d) Metastasis is a property of benign tumors. How many of the above statements are **wrong**?

1) Four 2) One

3) Two 4) Three

158) Which of the following techniques, can serve the purpose of early diagnosis

I. rDNA II. PCR

III. ELISA IV) Electrophoresis

1) II, III, IV 2) I, II, III

3) I, II, IV 4) I, III, IV

159) Diaphragm contracts to help in ___ while the contraction of abdominal muscles helps in _____

1) Inspiration, expiration

2) Expiration, inspiration

3) Forced inspiration, expiration

4) Inspiration, forced expiration

160) Match the glands/cells in column I with appropriate function in column II

	Column I		**Column II**
A	Posterior pituitary	P	Produce thyroid hormone
B	Follicular cells	Q	Store oxytocin
C	Neurosecretory cells	R	Produce calcitonin
D	Parafollicular cells	S	Release hormones into capillaries of the posterior pituitary

	A	**B**	**C**	**D**
1)	P	S	Q	R
2)	Q	P	R	S
3)	Q	P	S	R
4)	P	Q	R	S

161) **Assertion:** Trachea and bronchi have incomplete cartilaginous rings on their surface

Reason: These C-shaped hyaline cartilaginous rings prevents them from collapsing under low air pressure

1) Assertion and reason are true and the reason is the correct explanation of the assertion
2) Assertion and reason are true but the reason is not a correct explanation of the assertion
3) Assertion is true but the reason is false
4) Assertion and reason both are false

162) Motile zygote of Plasmodium occurs in

1) Human RBCs
2) Human liver
3) Gut of female Anopheles
4) Salivary glands of Anopheles

163) Match the vessels in column I with appropriate organs it serves in column II

	Column I		**Column II**
A	Hepatic portal vein	P	Heart's blood system
B	Pulmonary trunk	Q	Returns blood to heart from lower limbs
C	Coronary circulation	R	Carries blood to liver
D	Inferior vena cava	S	Leads to lungs

	A	**B**	**C**	**D**
1)	R	S	P	Q
2)	R	Q	S	P
3)	S	P	R	Q
4)	S	Q	P	R

164) Which of the following sets includes the bacterial disease?

1) Cholera, Typhoid, Mumps
2) Tetanus, Tuberculosis, Measles
3) Malaria, Mumps, Poliomyelitis
4) Diphtheria, Leprosy, Plague

165) Match the organism in column I with its excretory structure in column II

	Column I		**Column II**
A	Cockroach	P	Nephridia
B	Earthworm	Q	Proboscis gland
C	Balanoglossus	R	Kidneys
D	Clarias	S	Malpighian tubules

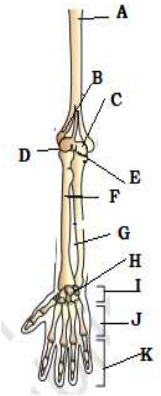
	A	**B**	**C**	**D**
1)	S	P	Q	R
2)	S	P	R	Q
3)	Q	P	R	S
4)	S	Q	R	P

166) **Assertion:** Genetic engineering overcomes the drawbacks of traditional hybridization

Reason: Genetic engineering involves creation of a recombinant DNA and introduce the desirable genes into target organisms.

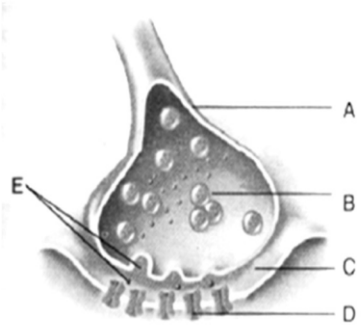
1) Assertion and reason are true and the reason is the correct explanation of the assertion
2) Assertion and reason are true but the reason is not a correct explanation of the assertion
3) Assertion is true but the reason is false
4) Assertion and reason both are false

167) Which of the labeled bones is a metacarpal?



1) A 2) G 3) I 4) J

168) In the following diagram showing axon terminal and synapse A, B, C, D and E respectively represents



1) A- axon terminal, B-synaptic cleft, C-synaptic vesicles, D-neurotransmitters, E-receptors

2) A- axon terminal, B-synaptic vesicles, C-synaptic cleft, D-receptors, E-neurotransmitters

3) A-Synaptic cleft, B-synaptic vesicles, C-axon terminal D- neurotransmitters, E-receptors

4) A-Synaptic cleft, B-axon terminal, C-Synaptic vesicles, D- neurotransmitters, E-receptors

169) Match the column A with column B and choose the **correct** option.

	Column – A		**Column – B**
(a)	Porifera	(i)	Canal system
(b)	Aschelminthes	(ii)	Water - vascular system
(c)	Annelida	(iii)	Muscular pharynx
(d)	Arthropoda	(iv)	Jointed appendages
(e)	Echinodermata	(v)	Metameres

	(a)	**(b)**	**(c)**	**(d)**	**(e)**
1)	(ii)	(iii)	(v)	(iv)	(i)
2)	(ii)	(v)	(iii)	(iv)	(i)
3)	(i)	(iii)	(v)	(iv)	(ii)
4)	(i)	(v)	(iii)	(iv)	(ii)

170) Choose the **incorrect** statement.

1) Receptors associated with aortic arch can recognize changes in H^+ concentration.

2) A chemosensitive area is located adjacent to respiratory rhythm centre.

3) Chemosensitive area is highly sensitive to CO_2

4) The role of oxygen in the regulation of respiratory rhythm is quite significant.

171) **Statement A**: The haemolymph of cockroach is colourless.

Statement B: Haemocytes are absent in the blood of cockroach

1) Both A and B are correct

2) Both A and B are incorrect

3) Statement A is correct but statement B is incorrect

4) Statement A is incorrect but statement B is correct

172) Choose the **correct** statements

A) Atrial contraction starts shortly after Q wave and marks the beginning of the systole

B) T-Wave represents the return of ventricles from excited to normal state

C) End of T-wave marks the end of systole

1) A, B 2) B, C

3) A, C 4) A, B, C

173) Read the following statements about exaggerated response of immune system. (allergy)

I) It occurs due to failure of immune system to differentiate between self and foreign cells

II) Watery eyes, running nose and difficulty in breathing are some of the symptoms.

III) Ig D antibodies are responsible

IV) It is due to release of histamine and serotonin from mast cells

Incorrect statements are

1) I and II 2) II and III

3) II and IV 4) I and III

174) **Statement A:** Atrial natriuretic peptide (ANP) acts as a counter check on the RAAS (Renin-Angiotensin-Aldoserone system)

Statement B: ANP causes contraction of vascular smooth muscles

1) Both A and B are correct

2) Both A and B are false

3) A is true, but B is false

4) A is false, But B is true

175) Read the following five statements. How many are **correct**?

A) A phosphodiester bond links the 5'- carbon of one nucleotide to the 3'- carbon of next nucleotide in a nucleic acid strand

B) Proteins can function as enzymes, structural components, transporters, and hormones within living organisms

C) All enzymes increase the activation energy required for biochemical reactions to proceed

D) Glycosidic bonds are formed between fatty acids and glycerol to create lipids

E) Secondary metabolites such as alkaloids and flavaonoids are essential for the primary metabolic processes in plants

1) One 2) Two

3) Three 4) Four

176) During muscular contraction, which of the following events occur?

i) H-zone disappears

ii) A band widens

iii) I band reduces in width

iv) Width of A band is unaffected

v) M line and Z line come closer

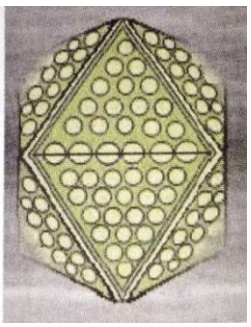
1) (i), (iii), (iv) and (v)

2) (i), (ii) and (v)

3) (ii), (iv) and (v)

4) (i), (ii) and (iii)

177) Study the following and identify the **correct** related to the diagram.



1) Adenovirus

2) Causes respiratory infections

3) Nucleo protein

4) All the above

178) Study the following about the brain

I) The midbrain, pons, cerebellum and medulla oblongata together form brain stem

II) The Inner parts of cerebral hemispheres, amygdala and hippocampus form the limbic system

III) Each cerebral hemisphere is divided into frontal, parietal, temporal and occipital lobes

Correct ones of the above are

1) Only I and III 2) Only I and II

3) Only II and III 4) I, II, III

179) Match the following bioactive substances and their roles. p

Bioactive Substance	Role
i) Statin	a) Removal of oil stains
ii) Cyclosporin A	b) Removal of clots from blood vessels
iii) Streptokinase	c) Lowering of blood cholesterol
iv) Lipase	d) Immunosuppressive agent

	i	ii	iii	iv
1)	b	c	a	d
2)	d	b	a	c
3)	d	a	b	c
4)	c	d	b	a

180) Match the following and select the **correct** option.

List – I	**List – II**
I) Melatonin	A) Fight – or – Flight response
II) Adrenalin	B) Milk ejection
III) Cortisol	C) Sets Biological clock
IV) Oxytocin	D) Anti inflammatory effect

	I	**II**	**III**	**IV**
1)	C	A	B	D
2)	C	A	D	B
3)	B	A	D	C
4)	C	D	A	B