



Question No.	Questions
6. /	<p>A small insect enters the eye of person riding a bike, the person then applies sudden brakes to his bike without rubbing his eye and he found that the small insect got out of his eye. By which law of physics the small insect got out of eye</p> <p>(1) Newton's third law of motion      (2) Newton's second law of motion (3) Newton's first law of motion      (4) Newton's law of Gravitation</p>
7.	<p>Two bodies with masses <math>m_1</math> and <math>m_2</math> (<math>m_1 &gt; m_2</math>) are joined by a massless string passing over fixed pulley. The centres of gravity of the two masses are initially at same height. Assume the pulley to be weightless. Then the downward acceleration of mass <math>m_1</math> is</p> <p>(1) <math>\frac{m_1}{m_1 + m_2} g</math>      (2) <math>\frac{m_2}{m_1 + m_2} g</math> (3) <math>\frac{m_1 - m_2}{m_1 + m_2} g</math>      (4) <math>\left[ \frac{m_1 - m_2}{m_1 + m_2} \right]^2 g</math></p>
8.	<p>A block of mass 1 kg lies on a horizontal surface in a truck. The coefficient of static friction between the block and the surface is 0.6. If the acceleration of truck is <math>5 \text{ ms}^{-2}</math>, the frictional force acting on the block is</p> <p>(1) 4 N      (2) 5 N (3) 6 N      (4) 10 N</p>
9.	<p>Two balls of different mass have same kinetic energy. The ball having greater momentum will be</p> <p>(1) Heavier one      (2) Lighter one (3) Both have same      (4) Can't say</p>
10.	<p>The moment of inertia of a ring of mass <math>M</math> and radius <math>R</math> about an axis through the diameter in its plane will be</p> <p>(1) <math>0.5 MR^2</math>      (2) <math>MR^2</math> (3) <math>1.5 MR^2</math>      (4) <math>2 MR^2</math></p>





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21.	<p>Two iron spheres, A (a solid sphere) and B (a hollow sphere), are charged to same potential. Which of the two hold more energy ?</p> <p>(1) A (2) B</p> <p>(3) Both have same (4) Can't be predicted</p>
22.	<p>Two bulbs A and B of 25 watt and 100 watt, respectively, rated at 220 V, are connected in series with a supply of 440 V. Which bulb will fuse ?</p> <p>(1) A (2) B</p> <p>(3) Both will fuse (4) None will fuse</p>
23.	<p>When a charge particle moves through a magnetic field, it may suffer a change in</p> <p>(1) Energy (2) Mass</p> <p>(3) Speed (4) Velocity</p>
24.	<p>Two electrons are moving parallel to each other in free space, then the force between them will be</p> <p>(1) Attractive (2) Repulsive</p> <p>(3) No force (4) Can't say anything</p>
25.	<p>Current used for electrolysis is</p> <p>(1) D.C. (2) A.C.</p> <p>(3) Both of these (4) None of these</p>

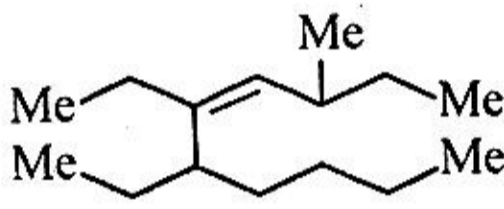
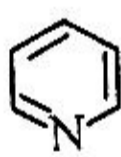

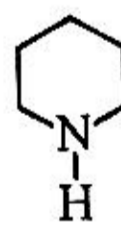
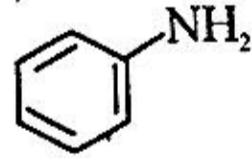


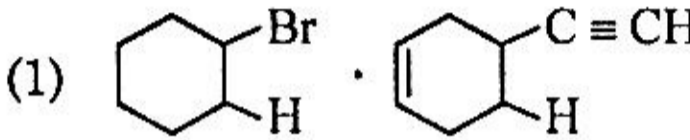
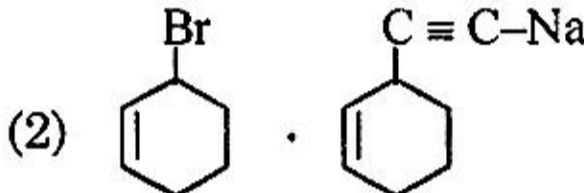
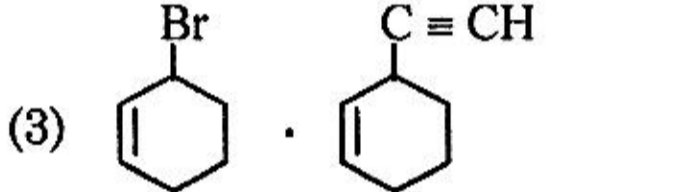
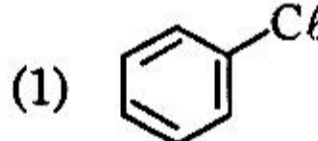
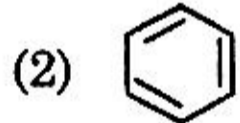
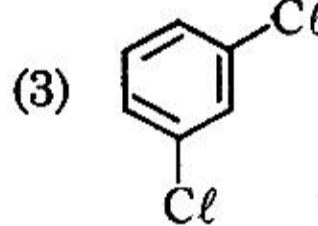
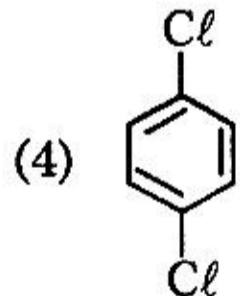
Question No.	Questions
31.	<p>The blue colour of sky is due to</p> <p>(1) Reflection of light                      (2) Refraction of light</p> <p>(3) Scattering of light                      (4) Diffraction of light</p>
32.	<p>If two coherent sources of intensity ratio 25:1 interfere, then the ratio of intensity of maxima and minima in the interference pattern will be</p> <p>(1) 3:2    (2) 9:4</p> <p>(3) 5:1    (4) 25:1</p>
33.	<p>Nuclear force between two nucleons depends on their</p> <p>(1) Mass    (2) Charge</p> <p>(3) Spin    (4) Both (2) and (3)</p>
34.	<p>Charge on a n-type semiconductor is</p> <p>(1) Zero    (2) Negative</p> <p>(3) Positive    (4) <math>10^{-6}</math> coulomb</p>
35.	<p>If a zener diode has 9.1 V break down voltage with a maximum power dissipation of 273 mW, then maximum current that can pass through zener diode is</p> <p>(1) 40 mA    (2) 30 mA</p> <p>(3) 20 mA    (4) 10 mA</p>

Question No.	Questions
	<b>Part-B (Chemistry)</b>
36.	25 mL of a solution of $\text{Ba(OH)}_2$ on titration with 0.1 M solution of $\text{HCl}$ gave a titre value of 35 mL. The molarity of barium hydroxide solution was  (1) 0.07 (2) 0.14 (3) 0.28 (4) 0.35
37.	Identify the least stable among the following :  (1) $\text{Li}^-$ (2) $\text{Be}^-$ (3) $\text{B}^-$ (4) $\text{C}^-$
38.	The correct order of size among $\text{Cl}$ , $\text{Cl}^+$ and $\text{Cl}^-$ is  (1) $\text{Cl}^+ < \text{Cl}^- < \text{Cl}$ (2) $\text{Cl}^+ > \text{Cl}^- > \text{Cl}$ (3) $\text{Cl}^+ < \text{Cl} < \text{Cl}^-$ (4) $\text{Cl}^- < \text{Cl} < \text{Cl}^+$
39.	The geometry of $\text{ClO}_4^-$ ion is :  (1) Pyramidal (2) Tetrahedral (3) Trigonal Planar (4) Trigonal bipyramidal
40.	The number of orbitals in a subshell is equal to  (1) $2l - 1$ (2) $2l$ (3) $l^2$ (4) $2l + 1$



Question No.	Questions
41.	<p>The term that accounts for intramolecular force in van der Waal's equation for non-ideal gas is</p> <p>(1) <math>RT</math> (2) <math>V - b</math></p> <p>(3) <math>P + \frac{a}{V^2}</math> (4) <math>(RT)^{-1}</math></p>
42.	<p>Which one of the following is not applicable to the phenomena of absorption</p> <p>(1) <math>\Delta H &gt; 0</math> (2) <math>\Delta G &lt; 0</math></p> <p>(3) <math>\Delta S &lt; 0</math> (4) <math>\Delta H &lt; 0</math></p>
43.	<p>Which one of the following is a positively charged sol</p> <p>(1) Gold sol (2) <math>As_2S_3</math> sol</p> <p>(3) Methylene blue sol (4) Gelatin</p>
44.	<p>What is the normality of 1 M <math>H_3PO_2</math> solution ?</p> <p>(1) 0.5 N (2) 1.0 N</p> <p>(3) 2.0 N (4) 3.0 N</p>
45.	<p>A cricket ball 0.5 Kg is moving with a velocity of <math>100 \text{ ms}^{-1}</math>. The wavelength associated with its motion is :</p> <p>(1) <math>1/100 \text{ cm}</math> (2) <math>6.6 \times 10^{-34} \text{ m}</math></p> <p>(3) <math>1.32 \times 10^{-35} \text{ m}</math> (4) <math>6.6 \times 10^{-28} \text{ m}</math></p>

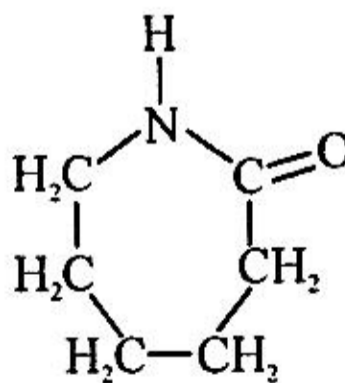
Question No.	Questions
46.	Ortho and para hydrogen differ in (1) atomic number (2) mass number (3) electron spin in two atoms (4) nuclear spin in two atoms
47.	Which of the following carbonates is least stable (1) $MgCO_3$ (2) $Na_2CO_3$ (3) $K_2CO_3$ (4) $Rb_2CO_3$
48.	The IUPAC name of the  Structure is : (1) 2,4,5-triethyl-3-nonene (2) 5,6-diethyl-3-methyl-4-decene (3) 2,4,6-triethyl-3-octene (4) 3-ethyl-5-methyl-3-heptene
49.	The strongest base among the following is : (1)  (2)  (3)  (4) 
50.	The number of $\sigma$ -and $\Pi$ -bonds present in pent-4-ene-1-yne is : (1) 10, 3 (2) 4, 9 (3) 3, 10 (4) 9, 4

Question No.	Questions
51.	Which alkene on ozonolysis gives $\text{CH}_3\text{CH}_2\text{CHO}$ and $\text{CH}_3\text{COCH}_3$ ? (1) $\text{CH}_3\text{CH}_2\text{CH}=\text{C}(\text{CH}_3)_2$ (2) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_2\text{CH}_3$ (3) $\text{CH}_3\text{CH}_2\text{CH}=\text{CHCH}_3$ (4) $\text{CH}_3\text{C}(\text{CH}_3)=\text{CHCH}_3$
52.	$\text{Cyclohexene} \xrightarrow{\text{NBS}} \text{A} \xrightarrow{\text{NaC}\equiv\text{CH}} \text{B}$ , what are A and B : (1)  (2)  (3)  (4) None of them
53.	Identify the compound Y in the following reaction : $\text{Aniline} \xrightarrow[273-278 \text{ K}]{\text{NaNO}_2 + \text{HCl}} \text{Benzenediazonium chloride} \xrightarrow{\text{Cu}_2\text{Cl}_2} \text{Y} + \text{N}_2$ (1)  (2)  (3)  (4) 
54.	Which reagent will you use for the following reaction ? $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl} + \text{CH}_3\text{CH}_2\text{CHClCH}_3$ (1) $\text{Cl}_2/\text{UV light}$ (2) $\text{NaCl} + \text{H}_2\text{SO}_4$ (3) $\text{Cl}_2$ gas in dark      (4) $\text{Cl}_2$ gas in the presence of iron in dark





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Question No.	Questions
61.	Electrolytic reduction of nitrobenzene in weakly acidic medium gives : (1) Aniline (2) Nitrosobenzene (3) N-phenylhydroxylamine (4) p-hydroxyaniline
62.	The efficiency of fuel cell is given by (1) $\frac{\Delta G}{\Delta S}$ (2) $\frac{\Delta G}{\Delta H}$ (3) $\frac{\Delta S}{\Delta G}$ (4) $\frac{\Delta H}{\Delta G}$
63.	Thymine is : (1) 5-methyluracil (2) 4-methyluracil (3) 3-methyluracil (4) 1-methyluracil
64.	If the rate of the reaction is equal to the rate constant, the order of the reaction is (1) 0 (2) 1 (3) 2 (4) 3
65.	Which of the following polymer can be formed by using the following monomer unit ? <div style="text-align: center;">  </div> (1) Nylon 6, 6 (2) Nylon 2-nylon 6 (3) Melamine polymer (4) Nylon-6

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Question No.	Questions
66. /	Which of the following is not a target molecule for drug function in body ?  (1) Carbohydrates                      (2) Lipids (3) Vitamins                                (4) Proteins
67.	The pollutants released by jet aeroplane in the atmosphere as fluorocarbons are called  (1) Photochemical oxidants (2) Photochemical reductants (3) Aerosols (4) Physical pollutants
68.	Which of the following pairs has the same size ?  (1) $Zn^{2+}$ , $Hf^{4+}$ (2) $Fe^{2+}$ , $Ni^{2+}$ (3) $Zr^{4+}$ , $Ti^{4+}$ (4) $Zr^{4+}$ , $Hf^{4+}$
69.	The coordination number and oxidation state number of Cr in $K_3Cr(C_2O_4)_3$ are respectively  (1) 3 and + 3                                      (2) 3 and 0 (3) 6 and + 3                                      (4) 4 and + 2
70.	Ionic solids, with Schottky defects, contain in their structure  (1) Cation vacancies only (2) Cation vacancies and interstitial cations (3) Equal number of cation and anion vacancies (4) Anion vacancies and interstitial anions





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Question No.	Questions
76. ✓	Area of the triangle formed by 3 complex numbers $1 + i$ , $i - 1$ , $2i$ in the Argand plane is  (1) $\frac{1}{2}$ (2) 1 (3) $\sqrt{2}$ (4) 2
77.	If the equations $2x^2 + kx - 5 = 0$ and $x^2 - 3x - 4 = 0$ have one root in common, then the value of $k$ is :  (1) 3 (2) -3 (3) 4 (4) None of these
78.	The solution of the equation $1 +  x - 1  \geq 0$ is :  (1) $(-\infty, 0)$ (2) $(-2, 0)$ (3) $(0, \infty)$ (4) $(0, 2)$
79.	12 persons are to be arranged to a round table. If two particular persons among them are not to be side by side, the total number of arrangements is :  (1) $9(10!)$ (2) $2(10!)$ (3) $2(11!)$ (4) $10!$
80.	The positive integer just greater than $(1 + 0.0001)^{10000}$ is  (1) 3 (2) 4 (3) 5 (4) None of these

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Question No.	Questions
86.	<p>The one which is the measure of central tendency is :</p> <p>(1) co-efficient of correlation      (2) standard deviation</p> <p>(3) mean deviation                      (4) mode</p>
87.	<p>If S be a finite set containing n elements. The the total number of binary operations on S is :</p> <p>(1) <math>n^n</math>                                      (2) <math>2^{n^2}</math></p> <p>(3) <math>n^2</math>                                        (4) <math>n^{n^2}</math></p>
88.	<p>The solution of the equation <math>\tan^{-1}(1+x) + \tan^{-1}(1-x) = \frac{\pi}{2}</math> is :</p> <p>(1) <math>x = 1</math>                                      (2) <math>x = -1</math></p> <p>(3) <math>x = 0</math>                                      (4) <math>x = \pi</math></p>
89.	<p>If <math>A = \begin{bmatrix} a &amp; b \end{bmatrix}</math>, <math>B = \begin{bmatrix} -b &amp; -a \end{bmatrix}</math> and <math>C = \begin{bmatrix} a \\ -a \end{bmatrix}</math>, then the correct statement is :</p> <p>(1) <math>A = -B</math>                                      (2) <math>A + B = A - B</math></p> <p>(3) <math>AC = BC</math>                                      (4) <math>CA = CB</math></p>
90.	<p>The value of <math>\lambda</math> and <math>\mu</math> for which the system of equations <math>x + y + z = 6</math>, <math>x + 2y + 3z = 10</math> and <math>x + 2y + \lambda z = \mu</math> have unique solution are :</p> <p>(1) <math>\lambda \neq 3, \mu \in \mathbb{R}</math>                                      (2) <math>\lambda = 3, \mu = 10</math></p> <p>(3) <math>\lambda \neq 3, \mu = 10</math>                                      (4) <math>\lambda \neq 3, \mu \neq 10</math></p>

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91.	<p>The largest value of a third order determinant whose elements are 0 or 1 is :</p> <p>(1) 3 (2) 2 (3) 1 (4) 0</p>
92.	<p>The set of all points, where the function <math>f(x) = \frac{x}{1+ x }</math> is differentiable is :</p> <p>(1) <math>(0, \infty)</math> (2) <math>(-\infty, \infty)</math> (3) <math>(-\infty, 0) \cup (0, \infty)</math> (4) None of these</p>
93.	<p>The function <math>f(x)</math> is defined by</p> $f(x) = \begin{cases} \frac{ x+2 }{\tan^{-1}(x+2)}, & x \neq -2 \\ 2, & x = -2 \end{cases}, \text{ then}$ <p><math>f(x)</math> is :</p> <p>(1) continuous at <math>x = -2</math> (2) differentiable at <math>x = -2</math> (3) not continuous at <math>x = -2</math> (4) continuous but not derivable at <math>x = -2</math></p>
94.	<p>If <math>\int \frac{\cos 4x + 1}{\cot x - \tan x} dx = A \cos 4x + B</math>, then</p> <p>(1) <math>A = -\frac{1}{8}</math> (2) <math>A = -\frac{1}{4}</math> (3) <math>A = -\frac{1}{2}</math> (4) <math>-1</math></p>
95.	<p>The area of the figure bounded by <math>y = \sin x</math>, <math>y = \cos x</math> in the first quadrant is :</p> <p>(1) <math>2(\sqrt{2} - 1)</math> (2) <math>\sqrt{3} + 1</math> (3) <math>2(\sqrt{3} - 1)</math> (4) None of these</p>



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Question No.	Questions
	<b>Part-C {Opt. (ii)} (Biology)</b>
101.	Genetic engineering is connected with (1) Eugenics (2) Euthenics (3) Euphenics (4) All of these
102.	Some people who have suffered from a disease may not be affected again during their life time ; such immunity is called (1) Natural immunity (2) Acquired immunity (3) Innate immunity (4) Passive immunity
103.	Raw cheese is known as (1) Blue cheese (2) Cottage cheese (3) Swiss cheese (4) None of these
104.	Cell division cannot be stopped in which phase of the cell cycle ? (1) G <sub>1</sub> -Phase (2) G <sub>2</sub> -Phase (3) S-Phase (4) Prophase
105.	What type of plant is formed when colchicine is used in the process of development of Raphanobrassica ? (1) Autotetraploid (2) Haploid (3) Triploid (4) Allotetraploid

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106. ✓	Synapsis occurs between (1) mRNA and ribosomes (2) male and female gametes (3) Two homologous chromosomes (4) Spindle fibers and centromere
107.	A nitrogen fixing microbe associated with <i>Azolla</i> in rice fields is (1) Frankia (2) Tolypothrix (3) Spirulina (4) Anabaena
108.	A patient brought to a hospital with myocardial infarction is normally immediately given (1) Cyclosporin-A (2) Statins (3) Penicillin (4) Streptokinase
109.	Rotenone is (1) A bioherbicide (2) A natural insecticide (3) An insect hormone (4) A natural herbicide
110.	Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as (1) Genetic flow (2) Genetic drift (3) Random mating (4) Genetic load

Question No.	Questions
111. ✓	<p>The tendency of population to remain in genetic equilibrium may be disturbed by</p> <p>(1) Random mating                      (2) Lack of migration (3) Lack of mutation                    (4) Lack of random mating</p>
112.	<p>If two pea plants having red (Dominant) colored flowers with unknown genotypes are crossed, 75% of the flowers are red and 25% are white. The genotypic constitution of the parents having red colored flowers will be</p> <p>(1) Both heterozygous (2) One homozygous and other heterozygous (3) Both homozygous (4) Both hemizygous</p>
113.	<p>The deposition of lipids on the wall lining the lumen of large and medium sized arteries is referred to as</p> <p>(1) Osteoarthritis                      (2) Osteoporosis (3) Stokes-Adams Syndrome        (4) Atherosclerosis</p>
114.	<p>Which of the following matches correctly ?</p> <p>(1) Pulmonary artery – Carries deoxygenated blood to the lungs (2) Superior vena cava – Receives deoxygenated blood from the lower body and organs (3) Inferior vena cava – Receives deoxygenated blood from the head and body (4) Hepatic artery – carries deoxygenated blood to the gut</p>



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115.	<p>The function of leghemoglobin in the root nodules of legumes is</p> <p>(1) Oxygen removal</p> <p>(2) Inhibition of nitrogenase activity</p> <p>(3) Expression of nif gene</p> <p>(4) Nodule differentiation</p>
116.	<p>GIFT (Gamete intrafallopian transfer) mixes egg and sperm in the _____</p> <p>(1) Fallopian tube                      (2) Uterus</p> <p>(3) Vagina                                (4) Culture medium</p>
117.	<p>An example of merocrine gland is _____</p> <p>(1) Sebaceous gland                      (2) Pineal gland</p> <p>(3) Salivary gland                        (4) Mammary gland</p>
118.	<p>ATPase enzyme needed for muscle contraction is located in _____</p> <p>(1) Actinin                                      (2) Troponin</p> <p>(3) Myosin                                      (4) Actin</p>
119.	<p>Casparian strips are present in the _____ of the root.</p> <p>(1) Pericycle                                      (2) Cortex</p> <p>(3) Epiblema                                      (4) Endodermis</p>

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120.	<p>The inner, darker and harder portion of secondary xylem that cannot conduct water, in an older dicot stem, is called</p> <p>(1) Bast (2) Alburnum (3) Duramen (4) Wood</p>
121.	<p>Seed coat is not thin, membranous in</p> <p>(1) Groundnut (2) Coconut (3) Maize (4) Gram</p>
122.	<p>Lenticels are involved in</p> <p>(1) Transportation (2) Gaseous exchange (3) Food transport (4) Photosynthesis</p>
123.	<p>Insect mouthparts are adapted for different functions in different species. Mouthparts of houseflies are used for</p> <p>(1) Siphoning (2) Piercing and sucking (3) Sponging and lapping (4) Biting and chewing</p>
124.	<p>The first enzyme to be purified and crystalized was</p> <p>(1) Urease (2) Diastase (3) Insulin (4) Zymase</p>

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Question No.	Questions
125.	<p>Many enzymes are secreted in inactive form to protect</p> <p>(1) Cell membrane                      (2) Mitochondria</p> <p>(3) Cell proteins                         (4) Cell DNA</p>
126.	<p>An action potential in the nerve fiber is produced when positive and negative charges on outside and the inside of the axon membrane are reversed because</p> <p>(1) All potassium ions leave the axon</p> <p>(2) More potassium ions enter the axon as compared to sodium ions leaving it</p> <p>(3) More sodium ions enter the axon as compared to potassium ions leaving it</p> <p>(4) All sodium ions enter the axon</p>
127.	<p>Sequence of taxonomic categories is</p> <p>(1) Division – Class – Order – Family – Tribe – Genus – Species</p> <p>(2) Class – Phylum – Tribe – Order – Family – Genus – Species</p> <p>(3) Phylum – Order – Class – Tribe – Family – Genus – Species</p> <p>(4) Division – Class – Family – Tribe – Order – Genus – Species</p>
128.	<p>In the five-kingdom system of classification, which single kingdom out of the following can include blue green algae, nitrogen-fixing bacteria and methanogenic archaeobacteria ?</p> <p>(1) Protista                                      (2) Fungi</p> <p>(3) Monera                                        (4) Plantae</p>

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Question No.	Questions
129.	Methanogens are (1) Obligate anaerobic bacteria (2) Aerobic fungi (3) Aerobic bacteria (4) Obligate anaerobic fungi
130.	Noise is measured using sound meter and the unit is (1) Hertz (2) Decibel (3) Joule (4) Sound

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