

MT

2014 ___ ___ 1100

Seat No.

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MT - SCIENCE & TECHNOLOGY (72) - PRELIM II - PAPER - 5

Time : 3 Hours

(Pages 6)

Max. Marks : 80

Note :

- (i) All questions are compulsory.
- (ii) All questions carry equal marks.
- (iii) Draw neat and labelled diagrams wherever necessary.

SECTION - A

Q.1. (A) Answer the following sub-questions :

5

(1) **Find the odd man out :**

- (i) Ammeter, Ampere, Volt, Coulomb.
- (ii) Hydrogen, Helium, Neon, Argon.

(2) **State whether the following statements are true or false :**

- (i) Pollens, bacteria, fungal spores are also pollutants.
- (ii) When the pH value is between 0 to 7, the solution is acidic.

(3) **Fill in the blank :**

Eutrophication causes excessive growth of and
..... .

Q.1. (B) Rewrite the following statements by selecting the correct options :

5

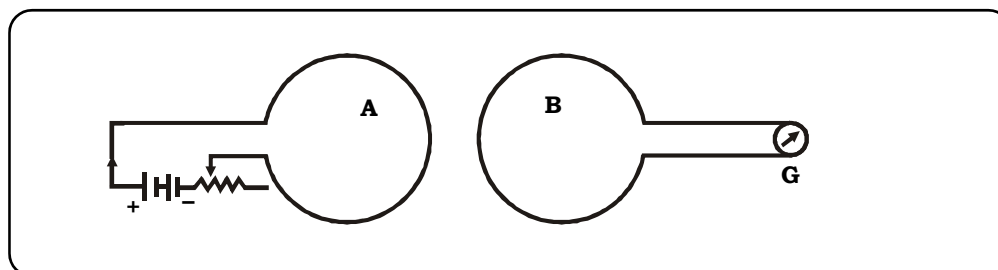
- (1) The direction of the magnetic field around a straight conductor carrying current is given by
(a) right hand rule (b) Fleming's left hand rule
(c) Fleming's right hand rule (d) none of these
- (2) A ray of light incident from a denser medium passes through a rarer medium in a straight line. What should be angle of incidence?
(a) 0° (b) 30°
(c) 60° (d) 90°
- (3) Which of the following represents the mirror formula ?
(a) $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ (b) $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$
(c) $\frac{1}{v} + \frac{1}{u} = \frac{1}{R}$ (d) $\frac{1}{u} - \frac{1}{v} = \frac{1}{f}$
- (4) The electronic configuration of Aluminium is
(a) (2, 8, 1) (b) (2, 8, 8)
(c) (2, 8, 2) (d) (2, 8, 3)
- (5) If the pH of a solution is 13, the solution is
(a) a strong acid (b) a strong base
(c) a very weak acid (d) a very weak base

Q.2. Attempt any FIVE of the following :

10

- (1) What are the rules for drawing ray diagrams for the formation of image by spherical mirror ?
- (2) Distinguish between : Electric motor and generator.

- (3) Observe the figure. If the current in the coil A is changed, will some current be induced in the coil B ? Explain.



- (4) What is the speed of light in diamond if absolute refractive index of diamond is 2.4 and velocity of light in vacuum is 3×10^8 m/s ?
- (5) Distinguish between : Periods and Groups.
- (6) Explain the following chemical reaction with the help of balanced equation : Sodium carbonate reacts with dilute hydrochloric acid.

Q.3. Attempt any FIVE of the subquestions :

15

- (1) Give the impact of noise pollution on human body.
- (2) Write a note on dispersion of light.
- (3) Define refraction and state the laws of refraction.
- (4) Find the expression for resistivity of a material.
- (5) State the neutralization reaction with an example.
- (6) Explain the merits of Mendeleev's periodic table.

Q.4. Attempt any ONE of the following :

5

- (1) Explain hypermetropia with its correction.
- (2) Write the physical properties and uses of washing soda and bleaching powder.

SECTION - B

Q.5. (A) Answer the following sub-questions : **5**

(1) **Fill in the blanks :**

The digested food is absorbed by the in the small intestine.

(2) **State whether the following statement is true or false :**

Silver and gold react with dilute acids.

(3) **Define :** Roasting.

(4) Name an alloy of copper and zinc

(5) **Write the correlated terms :**

Na : Na₂O :: Al :

Q.5. (B) Rewrite the following statements by selecting the correct options : **5**

(1) Rekha was shown slides of leaves. She could distinguish monocot and dicot leaf on the basis of

- (a) shape of stomata (b) size of cells
(c) thickness of epidermis (d) position of stomata

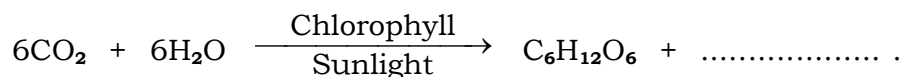
(2) The process of respiration is slower in plants than in that of the animals because

- (a) plants perform photosynthesis
(b) plants have chlorophyll
(c) plant's energy requirement is less
(d) plants have stomata

(3) In the experiment on photosynthesis, the leaf is boiled in alcohol kept in a water bath because

- (a) alcohol is bad for leaf
(b) alcohol is volatile
(c) alcohol catches fire on heating directly
(d) alcohol leaves fumes

- (4) Complete the following reaction for the photosynthesis :



- (a) O_2 (b) 3O_2
(c) 6O_2 (d) 12O_2

- (5) Acetic acid

- (a) turns red litmus blue (b) has pungent odour
(c) is red in colour (d) is odourless

Q.6. Attempt any FIVE of the following :

10

- (1) Write balanced chemical reaction : Aluminium metal is exposed to air.
- (2) What are the advantages of sexual reproduction over asexual reproduction ?
- (3) Name the pairs of visible contrasting characters in garden peas (*Pisum sativum*).
- (4) Give the need to use eco-friendly technology.
- (5) Distinguish between : Anode and Cathode.
- (6) Tarnished copper utensils are cleaned with lime juice or tamarind. Why?

Q.7. Attempt any FIVE of the following :

15

- (1) What are the objectives of the UNEP?
- (2) Distinguish between : Voluntary movements and Involuntary movements.

(3) Complete the table :

Type of compound	Functional group	Compounds containing functional group	
		Name	Formula
1. Alcohols	- OH	Ethyl alcohol
2. Aldehydes	Acetaldehyde	$\begin{array}{c} \text{H} \\ \\ \text{CH}_3 - \text{C} = \text{O} \end{array}$
3. Carboxylic acid	- COOH	Acetic acid

- (4) Describe the mechanism of breathing in human beings.
- (5) Sudha dipped a copper coin in a solution of silver nitrate. After some time she saw the silver shine on the coin. Why? Give the balanced chemical equation for the same.
- (6) Describe spore formation in mucor with a diagram.

Q.8. Attempt any ONE of the following :

5

- (1) Describe the process of cellular or internal respiration.
- (2) Describe Darwin's theory of evolution.

Best Of Luck 🍀

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Time : 3 Hours

Prelim II Model Answer Paper

Max. Marks : 80

SECTION - A		
Q.1. (A) Answer the following sub-questions :		
(1) (i) Ammeter. It is a device used to measure electric current and the remaining are units.		1
(i) Hydrogen. The rest are noble gases.		1
(2) (i) True.		1
(ii) True.		1
(3) (i) Eutrophication causes excessive growth of phytoplankton and algae.		1
Q.1. (B) Rewrite the following statements by selecting the correct options :		
(1) The direction of the magnetic field around a straight conductor carrying current is given by right hand rule.		1
(2) A ray of light incident from a denser medium passes through a rarer medium in a straight line. What should be angle of incidence? 0°		1
(3) Which of the following represents the mirror formula ? $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$		1
(4) The electronic configuration of Aluminium is (2, 8, 3).		1
(5) If the pH of a solution is one, the solution is a strong base.		1
Q.2. Attempt any FIVE of the following :		
(1) The rules are as follows :		2
1. If the incident ray is parallel to the principal axis, then the reflected ray passes through focus.		
2. If the incident ray is passing through the focus then the reflected ray is parallel to the principal axis.		
3. If the incident ray passes through the centre of curvature, the reflected ray traces the same path.		

(2)	<p style="text-align: center;">Electric motor</p> <ol style="list-style-type: none"> 1. A device which converts electrical energy into mechanical energy is called an electric motor. 2. Electric motor is based on a principle, when current carrying conductor is placed in a magnetic field a force acts on it. 3. It uses electricity. 	<p style="text-align: center;">Electric generator</p> <ol style="list-style-type: none"> 1. An electric device which converts mechanical energy into electrical energy is called an electric generator. 2. It works on the principle of electromagnetic induction. 3. It generates electricity. 	2
(3)	<ol style="list-style-type: none"> 1. If the current in coil A is changed, then some current will be induced in coil B. 2. As the current in coil A changes, the magnetic field related to it also change. 3. Due to the changing magnetic field, current is induced in coil B. 		2
(4)	<p>Given : Velocity of light in vacuum (V_{vac}) = 3×10^8 m/s Refractive index of diamond (${}_{\text{vac}}\eta_{\text{dia}}$) = 2.4</p> <p>To find : Speed of light in diamond (V_{dia})</p> <p>Formula : ${}_{\text{vac}}\eta_{\text{dia}} = \frac{V_{\text{vac}}}{V_{\text{dia}}}$</p> <p>Solution : ${}_{\text{vac}}\eta_{\text{dia}} = \frac{V_{\text{vac}}}{V_{\text{dia}}}$</p> $\therefore V_{\text{dia}} = \frac{V_{\text{vac}}}{{}_{\text{vac}}\eta_{\text{dia}}}$ $\therefore V_{\text{dia}} = \frac{3 \times 10^8}{2.4}$ $\therefore V_{\text{dia}} = 1.25 \times 10^8 \text{ m/s}$ <p style="text-align: center;">The speed of light in diamond is 1.25×10^8 m/s.</p>		2
(5)	<p style="text-align: center;">Periods</p> <ol style="list-style-type: none"> 1. Modern periodic table has 7 horizontal rows called as periods. 2. The number of shells present in the atom of an element determines the period number. 3. Elements show gradual variation in chemical properties along a period. 	<p style="text-align: center;">Groups</p> <ol style="list-style-type: none"> 1. Modern periodic table has 18 vertical columns of elements called groups. 2. The number of electrons present in the outermost shell of an atom of the element determines the group number. 3. Elements belonging to a particular group show strong resemblance in their chemical properties like valency, formulae of compounds and chemical reactions. 	2

(6)	<p>When sodium carbonate reacts with dilute hydrochloric acid to give sodium chloride, water and carbon dioxide gas is liberated.</p> $\text{Na}_2\text{CO}_{3(s)} + 2\text{HCl}_{(aq)} \rightarrow 2\text{NaCl}_{(aq)} + \text{H}_2\text{O}_{(l)} + \text{CO}_{2(g)}$ <p>Sodium carbonate Hydrochloric acid Sodium chloride Water Carbon dioxide</p>	2
Q.3.	Attempt any FIVE of the subquestions :	
(1)	<p>Effects on noise pollution on human beings depend on noise intensity, frequency and exposure duration. There are three types of effects on human body:</p> <p>(i) Auditory effects: Auditory fatigue, deafness.</p> <p>(ii) Non-auditory effects: Communication interference, sleep interference, concentration interference, ill temper, annoyance, violent behaviour, mental disorientation, bickering and loss of working efficiency.</p> <p>(iii) Physiological effects: Nausea, fatigue, anxiety, visual disturbances, insomnia, hypertension, cardio vascular disease.</p>	3
(2)	<div data-bbox="316 1012 1316 1384" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>The diagram illustrates the dispersion of white light. A white light beam enters a triangular glass prism from the left. Upon exiting the prism, the beam is dispersed into a spectrum of colors, with red (R) at the top and violet (V) at the bottom. The entire spectrum is labeled 'White light spectrum'.</p> </div> <ol style="list-style-type: none"> The phenomenon of splitting of light into its component colours is dispersion. Sir Issac Newton was the first to use a glass prism to obtain the spectrum of sunlight. A prism is a transparent medium bounded by two plane surfaces inclined at an angle. When white light is dispersed into seven colours by a prism, different colours of light bend through different angles with respect to incident ray. Out of these seven colours, red light bends the least while violet light bends the most, as each colour bends in different angle all colours become separate and we get a spectrum of seven different colours. 	3

(3)	<p>Refraction : The phenomenon of change in the direction of light when it passes from one transparent medium to another is called refraction.</p> <p>Laws of refraction :</p> <ol style="list-style-type: none"> The incident ray and the refracted ray are on the opposite sides of the normal at the point of incidence and all three lie in the same plane. For a given pair of media, the ratio of the sine of the angle of incidence to the sine of the angle of refraction is constant. If 'i' is the angle of incidence and 'r' is angle of refraction then, $\frac{\sin i}{\sin r} = \text{Constant.}$ 	3
(4)	<ol style="list-style-type: none"> Resistance of a conductor depends on the length 'ℓ' and area of cross section 'A' of the conductor $R \propto \ell$ and $R \propto \frac{1}{A}$ $\therefore R \propto \frac{\ell}{A}$ $\therefore R = \rho \frac{\ell}{A}$ Where ρ is called resistivity of the conductor. It is also called as specific resistance. If we put $\ell = 1\text{m}$ and $A = 1\text{m}^2$ then $\therefore R = \rho$ Thus resistivity of a conductor is defined as the resistance of a conductor of unit length and unit area of cross - section. The S.I. unit of resistivity is ohm - metre ($\Omega\text{-m}$). 	3
(5)	<ol style="list-style-type: none"> The reaction between acid and base to form salt and water is called as neutralization reaction. $\text{Acid} + \text{Base} \rightarrow \text{Salt} + \text{Water}$ When an acid is treated with base, the base neutralizes the acid and destroys its acidity. Since an acid and base neutralize each other's effect, it is called as neutralization reaction. Eg.: When hydrochloric acid reacts with sodium hydroxide, then a neutralization reaction takes place to give salt and water. $\text{NaOH}_{(aq)} + \text{HCl}_{(aq)} \rightarrow \text{NaCl}_{(aq)} + \text{H}_2\text{O}_{(l)}$ 	3
(6)	<ol style="list-style-type: none"> Mendeleev was the first who successfully classified all known elements. Mendeleev kept some blank places in his periodic table. These vacant spaces were for elements that were yet to be discovered. He also predicted properties of these elements even before they were discovered. Later they were found to be correct. 	3

3. In the periodic table, some gaps were left by Mendeleev for unknown elements that could be found in the future. Three such unknown elements were named as Eka-Boron, Eka-Aluminium and Eka-Silicon. Even the properties of these unknown elements were predicted and these were found to accurate.

Predicted element	Actual element discovered after
Eka-boron	Scandium
Eka-Aluminium	Gallium
Eka-Silicon	Germanium

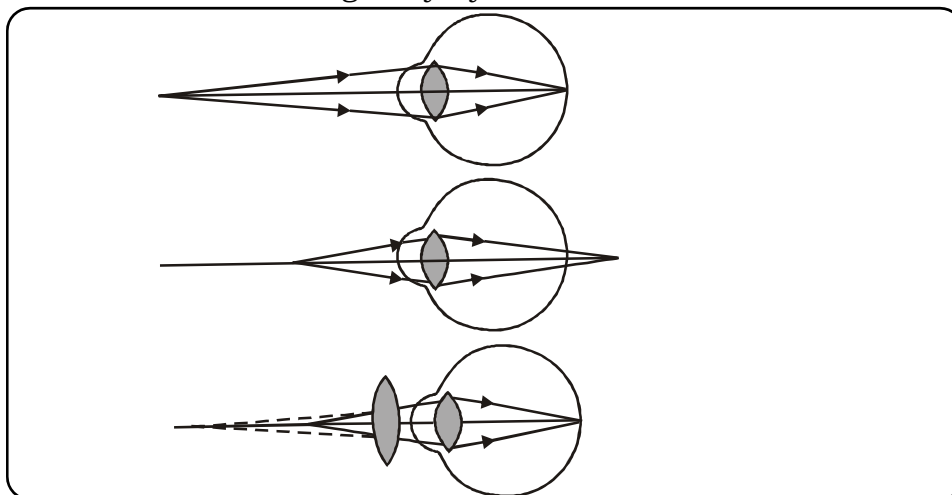
4. When noble gases were discovered later, they were placed in Mendeleev's periodic table without disturbing the positions of other elements.

Q.4. Attempt any ONE of the following :

(1)

- It is the defect in which human eye can see distant objects clearly but is unable to see nearby objects clearly.
 - Weak action of ciliary muscles causes low converging power of eye lens.
 - The distance between eye lens and retina decreases on account of either shortening of eyeball or flattening of lens. In this case focal length of the eye lens is too long.
- A convex lens of suitable focal length can correct this defect.
- The rays coming from nearby object are first converged by convex lens and then converged by eye lens to retina.

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(2)

Physical properties of washing soda.

- It is a white crystalline solid.
- It is readily soluble in water.
- On heating or exposure to air, it loses its water of crystallization and forms a white amorphous powder.
- It turns red litmus blue indicating its basic nature.

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	<p>Uses of washing soda.</p> <ol style="list-style-type: none"> 1. It is used in washing clothes as a cleansing agent. 2. It is used for softening of hard water to soft water. 3. It is used in refining of petroleum. 4. It is used in manufacturing detergent powder, paper and glass. <p>Physical properties of bleaching powder.</p> <ol style="list-style-type: none"> 1. It is a white powder and has a strong smell of chlorine. 2. It is fairly soluble in water. <p>Uses of bleaching powder.</p> <ol style="list-style-type: none"> 1. It is used to disinfect water. 2. It is used for bleaching cotton and linen in textile industry and bleaching wood pulp in paper industry. It is also used for bleaching washed clothes in laundry, the bleaching action is due to chlorine released by it. 3. It is used as an oxidizing agent in many chemical industries. 4. It is used to prepare organic solvent chloroform which is also used as an anaesthetic. <p style="text-align: center;">SECTION - B</p> <p>Q.5. (A) Answer the following sub-questions :</p> <ol style="list-style-type: none"> (1) The digested food is absorbed by the villi in the small intestine. 1 (2) False. Silver and gold do not react with dilute acids. 1 (3) The process of converting sulphide ore into oxide by heating strongly in presence of excess air is called roasting. 1 (4) Brass is an alloy of copper and zinc. 1 (5) Al_2O_3. 1 <p>Q.5. (B) Rewrite the following statements by selecting the correct options :</p> <ol style="list-style-type: none"> (1) Rekha was shown slides of leaves. She could distinguish monocot and dicot leaf on the basis of shape of stomata. 1 (2) The process of respiration is slower in plants than in that of the animals because plant's energy requirement is less. 1 (3) In the experiment on photosynthesis, the leaf is boiled in alcohol kept in a water bath because alcohol catches fire on heating directly. 1 (4) Complete the following reaction for the photosynthesis : 1 $6CO_2 + 6H_2O \xrightarrow[\text{Sunlight}]{\text{Chlorophyll}} C_6H_{12}O_6 + 6O_2.$ <ol style="list-style-type: none"> (5) Acetic acid has pungent odour. 1 <p>Q.6. Attempt any FIVE of the following :</p> <ol style="list-style-type: none"> (1) When aluminium metal is exposed to air or on heating forms a thin layer of aluminium oxide. 2 $\begin{array}{ccccccc} 4Al_{(s)} & + & 3O_{2(g)} & \xrightarrow{\text{Heat}} & 2Al_2O_{3(s)} & & \\ \text{Aluminium} & & \text{Oxygen} & & \text{Aluminium oxide} & & \end{array}$	
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(2)	<ol style="list-style-type: none"> 1. Sexual reproduction promotes diversity of characters in the offsprings. 2. In sexual reproduction, due to genetic variation there is more opportunity for new combination of characters and therefore, it plays a prominent role in the origin of new species. 3. It also leads to variation, which is necessary for evolution. Variation enables the organisms to adapt and survive in the changing environment. 4. It helps to prevent the complete extinction of animal and plant species. 	2				
(3)	<p>The pairs of visible contrasting characters in garden peas (<i>Pisum sativum</i>) are :</p> <ol style="list-style-type: none"> 1. Tall/short plants 2. Red/white flowers 3. Round/wrinkled seeds 4. Axial/terminal position of flowers 5. Green/yellow coloured pods 6. Grey/white colour of the seed coat 7. Full/constricted shaped pods. 	2				
(4)	<ol style="list-style-type: none"> (i) Due to population explosion, today the world is facing a water crisis, energy crisis and other crises caused by pollution and depletion of natural resources. (ii) So we have to conserve our present resources and safeguard the environment from future damage. This can be achieved by using eco-friendly technology. (iii) Eco-friendly technology utilizes resources efficiently with minimum wastage and ensures that environmental damage is minimal. 	2				
(5)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Anode</th> <th style="text-align: center; padding: 5px;">Cathode</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"> <ol style="list-style-type: none"> 1. It is the electrode connected to the positive terminal(end) of the battery. 2. It acquires a positive charge during electrolysis and so negatively charged ions(anions) migrate to the anode. </td> <td style="padding: 5px;"> <ol style="list-style-type: none"> 1. It is the electrode connected to the negative terminal(end) of the battery. 2. It acquires a negative charge during electrolysis and so positively charged ions(cations) migrate to the cathode. </td> </tr> </tbody> </table>	Anode	Cathode	<ol style="list-style-type: none"> 1. It is the electrode connected to the positive terminal(end) of the battery. 2. It acquires a positive charge during electrolysis and so negatively charged ions(anions) migrate to the anode. 	<ol style="list-style-type: none"> 1. It is the electrode connected to the negative terminal(end) of the battery. 2. It acquires a negative charge during electrolysis and so positively charged ions(cations) migrate to the cathode. 	2
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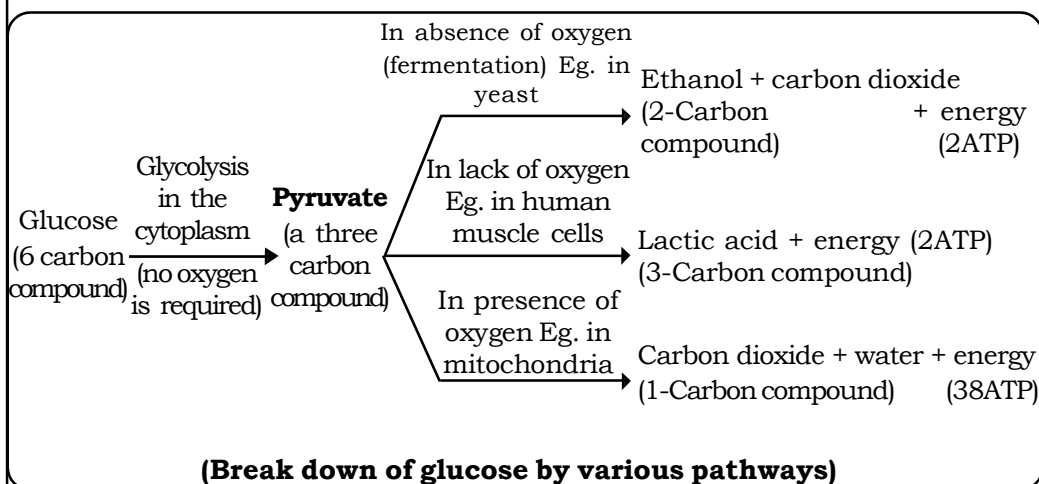
<p>(6)</p>	<ol style="list-style-type: none"> 1. Copper reacts with moist carbon dioxide in air to form copper carbonate. As a result, copper vessel loses its shiny brown surface forming a green layer of copper carbonate. 2. The copper carbonate is a mixture of copper carbonate and copper hydroxide, CuCO_3 & Cu(OH)_2. 3. The tartaric acid present in the tamarind neutralises the basic copper carbonate and dissolves the layer. 4. So, tarnished copper vessels are cleaned with lemon or tamarind juice to give the surface of the copper vessel its characteristic lustre. 	<p>2</p>										
<p>Q.7. Attempt any FIVE of the following :</p>												
<p>(1)</p>	<p>Objectives of the UNEP:</p> <ol style="list-style-type: none"> (i) Encouraging international participation and cooperation in addressing environmental issues and environmental policy. (ii) Monitoring the status of the global environment and interpreting environmental data collected. (iii) Creating environmental awareness in governments, society, and the private sector. (iv) Coordinating UN activities pertaining to the environment. (v) Developing regional programmes for sustainability. (vi) Helping environmental authorities, especially those in developing countries, form and implement policies. (vii) Helping to develop international law. 	<p>3</p>										
<p>(2)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Voluntary movements</th> <th style="text-align: center; padding: 5px;">Involuntary movements</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">1. Movements which are under our control are called voluntary movements.</td> <td style="padding: 5px;">1. Movements which are not under our control are called involuntary movements.</td> </tr> <tr> <td style="padding: 5px;">2. Voluntary movements require thinking.</td> <td style="padding: 5px;">2. Involuntary movements do not require thinking.</td> </tr> <tr> <td style="padding: 5px;">3. Voluntary movements are controlled by cerebellum.</td> <td style="padding: 5px;">3. Involuntary movements are controlled by midbrain and hindbrain.</td> </tr> <tr> <td style="padding: 5px;">4. Eg. Moving a table, kicking a ball, walking, clapping hands etc.</td> <td style="padding: 5px;">4. Eg. Blood flow, breathing, sneezing etc.</td> </tr> </tbody> </table>	Voluntary movements	Involuntary movements	1. Movements which are under our control are called voluntary movements.	1. Movements which are not under our control are called involuntary movements.	2. Voluntary movements require thinking.	2. Involuntary movements do not require thinking.	3. Voluntary movements are controlled by cerebellum.	3. Involuntary movements are controlled by midbrain and hindbrain.	4. Eg. Moving a table, kicking a ball, walking, clapping hands etc.	4. Eg. Blood flow, breathing, sneezing etc.	<p>3</p>
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3. Carboxylic acid	- COOH	Acetic acid	CH_3COOH																	
(4)	<p>A human adult at rest, on an average breathes about 12-20 times per minute i.e. 28800 times per day. The mechanism of breathing in human beings involves two processes : Inhalation and Exhalation.</p> <ol style="list-style-type: none"> Inhalation : When the muscular diaphragm of the body contracts, volume of the thoracic cavity increases and air pressure inside the cavity decreases. The air from outside enters the lungs through the nostrils and the alveolar sacs are filled with air rich in oxygen. Exhalation : When the diaphragm relaxes or becomes convex, the thoracic cavity decreases in volume. Lungs come to their original size, forcing the air outside the lungs through the same path but in the opposite direction. 	3																		
(5)	<p>When a copper coin is dipped in silver nitrate solution, the solution becomes blue and shining white deposit of silver metal is deposited on the copper coin. In this reaction, copper displaces silver forming copper nitrate and silver metal.</p> $Cu_{(s)} + 2AgNO_{3(aq)} \rightarrow Cu(NO_3)_{2(aq)} + 2Ag_{(s)}$ <p>Copper Silver nitrate Copper nitrate Silver</p>	3																		
(6)	<ol style="list-style-type: none"> The hyphae of bread mould (Mucor) are thread like structures. The mould forms spores inside the sporangium. When the spores are ready to leave the sporangium, it breaks open. If they land in a moist place, they germinate to form new mould. 		3																	

Q.8. Attempt any ONE of the following :

- (1)
1. Cellular respiration is a biochemical process in which the simple nutrients like glucose are oxidized within the cells to release energy.
 2. This process takes place in the mitochondria of the cells and involves a series of biochemical reactions.
 3. The process of cellular respiration varies greatly in different organisms yet the first step is common in all. The six carbon molecule glucose ($C_6H_{12}O_6$) is broken down in the cytoplasm into a three carbon molecule called pyruvate. This process is anaerobic and is called glycolysis.

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4. The energy released during cellular respiration is used to synthesize ATP which is used to fuel all other activities in the cell.
5. The energy released during aerobic respiration is more than the energy released during anaerobic respiration.

- (2)
1. Darwin's theory of evolution is based on natural selection.
 2. On the basis of observations, Darwin suggested that only the fittest survive. All those plants and animals which are not fit, die.
 3. These fit species reproduce and pass on the relevant characteristics to the following generation which in turn would make them fit for survival.
 4. The process of selection of characteristics that contribute to the fitness for survival was called natural selection by Darwin.
 5. Only those factors which help any individual to survive are retained and others are lost.

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6. This process continues from generation after generations. The total effect is that after several generations, the number of individuals having the relevant factors, that are better adapted to their surroundings, is much more than in the previous generations. These adapted individuals may also be very different from the original species.
7. This process is described as a natural selection of these individuals which have characteristics best adapted for survival.
8. Selection by nature is not deliberate but is natural. The criterion for the natural selection is only one i.e. successful adaptation for growth and reproduction in the given environment.
9. The theory of natural selection which was proposed by Charles Darwin helped to explain the process of development of living things.
10. However, the theory did not explain how an individual plant or animal acquired factors that made it better adapted to its surroundings.
11. In the course of time these questions were answered by the discovery of the laws governing heredity and mutation and thus Darwin's theory came to be universally accepted.

