

Grade 10 Maharashtra Science 2020

Part - A

Note:

All questions are compulsory.

(ii) Use of a calculator is not allowed.

(iii) The numbers to the right of the questions indicate full marks.

(iv) In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.

(v) For each MCQ, the correct alternative (A), (B), (C), (D) with sub-question number is to be written as answer.

For Eg: (i) (A), (ii) (B), (iii) (C)

(vi) Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q1. (A) Write the correct alternative:

(i) According to Mendeleev's periodic law, properties of elements are periodic function of their

(a) Atomic number

(b) Atomic masses

(c) Densities

(d) Boiling points

Solution:

(b) Atomic masses

(ii) The vapour content in the air is measured using a physical quantity called

(a) Absolute humidity

(b) Relative humidity

(c) Dew point

(d) Humidity

Solution:

(a) Absolute humidity

(iii) For the normal human eye, the near point is at _____ cm.

- (a) 10
- (b) 20
- (c) 25
- (d) 30

Solution:

- (c) 25

(iv) The astronomical object closest to us is _____ in our galaxy.

- (a) Mars
- (b) Venus
- (c) Jupiter
- (d) Moon

Solution:

- (d) moon

(v) In the Wilfley table method, the particles of gangue are separated by _____ separation method.

- (a) Magnetic
- (b) Froth floatation
- (c) Hydraulic
- (d) Gravitational

Solution:

- (d) Gravitational

(B) Answer the following:

(i) Find the odd one out:

Voltmeter, Ammeter, Thermometer, Galvanometer.

Solution:

Thermometer is the odd one.

(ii) Complete the correlation:

Alkene: $C = C$:: Alkyne:

Solution:

Alkene: $C = C$:: Alkyne: $C \equiv C$

(iii) State true or false:

The frequency of AC is 50 Hz.

Solution:

True

(iv) Match the Columns:

Column 'A'	Column 'B'
The wavelength of red light	(a) 600 nm
	(b) 700 nm
	(c) 500 nm

Solution:

The wavelength of red light is (b) 700 nm

(v) Name the first artificial satellite sent by Russia in space.

Solution:

Sputnik

Q2. (A) Give scientific reasons (any two):

(i) The weight of an object changes from place to place though its mass is constant.

- (ii) Stars twinkle but we do not see the twinkling of planets.
- (iii) Elements belonging to the same group have the same valency.

Solution:

(i) The weight of an object varies depending on its location, even though its mass remains constant.

Weight is the force exerted by the Earth to attract an object and is given by the formula $W=mg$, where g represents the acceleration due to gravity.

Since the value of g is not uniform across the Earth and differs from place to place, the weight of an object changes with location. However, the mass of the object remains constant regardless of its position.

(ii) Stars twinkle, but we do not see the twinkling of planets.

- The twinkling of stars occurs due to the movement of atmospheric air, which causes fluctuations in air density and temperature. This results in continuous changes in the refractive index of the atmosphere. As a result, the position and brightness of stars appear to vary constantly, giving the impression of twinkling.
- Planets, on the other hand, are much closer to Earth compared to stars. They do not appear as single point sources but as a collection of multiple point sources. While the atmospheric refractive index causes variations in the position and brightness of these individual points, the overall average position and brightness of the planet remain stable. Therefore, planets do not twinkle like stars.

(iii) Elements belonging to the same group have the same valency.

(1) Valency of an element is defined as the number of electrons present in the outermost shell of its atoms, i.e. valence electrons.

(2) For all the elements in the same group, the number of electrons in the outermost shell are same.

(3) Hence, the elements belonging to the same group have the same valency.

(B) Answer the following (any three):

(i) How much heat energy is necessary to raise the temperature of 5 kg of water from 20°C to 100°C ?

Solution:

Given data: Mass of water (m) = 5 kg.

Change in temperature (ΔT) = 100 – 20 = 80°C

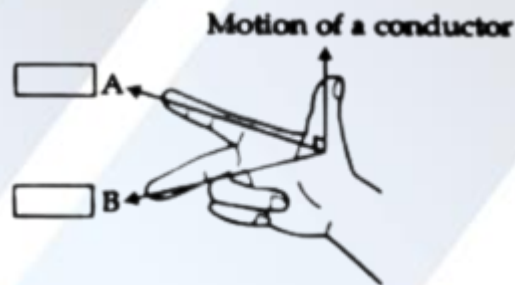
C = 1 kcal/kg°C.

Calculation:

$$\begin{aligned} \text{Energy to be supplied to water} &= \text{Energy gained by water} \\ &= \text{Mass of water} \times \text{specific heat of water} \times \text{Change in temperature of water} \\ &= m \times c \times \Delta T \\ &= 5 \times 1 \times 80 \\ &= 400 \text{ kcal.} \end{aligned}$$

∴ Heat energy necessary to raise the temperature of water = 400 kcal.

(ii) Observe the given figure of Fleming's Right Hand Rule and write the labels of A and B correctly.

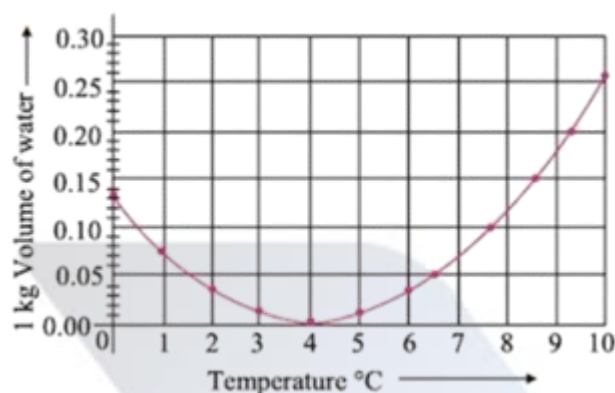


Solution:

(A) Direction of the magnetic field.

(B) Direction of the induced current.

(iii) Observe the given graph and answer the following questions:

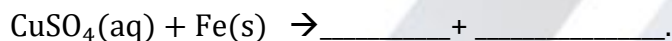


- (a) Name the process represented in the figure.
 (b) At what temperature does this process take place?

Solution:

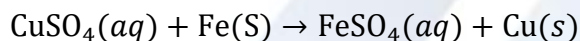
- (a) The process represented in figure is Anomalous behavior of water.
 (b) This process takes place from 4°C to 0°C.

- (iv) Complete the given chemical reaction:



Name the type of the reaction.

Solution:



The reaction is displacement reaction.

- (v) Write a short note on Alloying.

Solution:

- (1) An alloy is the homogenous mixture formed by combining a metal with other metals or non-metals in a specific proportions. The process of creating an alloy is known as alloying.
- (2) The primary purpose behind the alloying is to decrease the intensity of corrosion of metals.
- (3) For example: Bronze is an alloy made from 90% copper and 10% tin. Statues made up of bronze are resistant to the effects of sun and rain.

(4) Stainless steel is an alloy formed from 74% iron, 18% chromium and 8% carbon. It is resistant to staining from air or water and does not rust easily.

(5) In recent times, for mining coins, various types of alloys are used.

Q3. Answer the following (any five):

(i) An element has its electronic configuration as 2,8,2. Now answer the following questions:

(a) What is the atomic number of this element?

(b) What is the group of this element?

(c) To which period does this element belong?

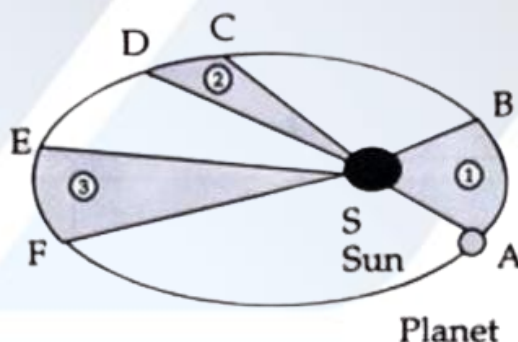
Solution:

(a) Atomic number of the element with electronic configuration 2, 8, 2 is 12. (The element is Magnesium).

(b) Number of electrons in the outermost shell is 2. So, the element belongs Group 2.

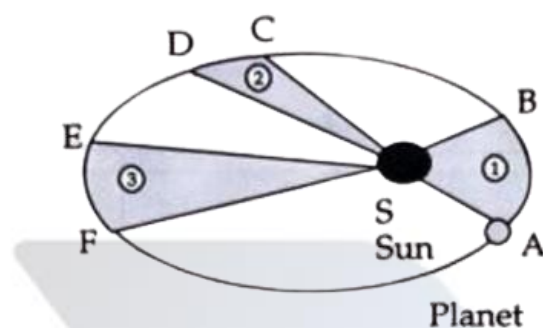
(c) The element has 3 shells in its electronic configuration. Hence, it belongs to period 3.

(ii) Observe the given figure showing the orbit of a planet moving around the Sun and write the three laws related to it:



The orbit of a planet moving around the Sun

Solution: The laws related to the given figure are Kepler's laws.



(1) **Kepler's first law:** The orbit of a planet is an ellipse with the sun at one of the foci. The diagram shows an elliptical orbit of a planet revolving around the sun. In the diagram S represents the position of the sun.

(2) **Kepler's second law:** The line joining the planet and the sun sweeps equal areas in equal intervals of time.

In the diagram, AB and CD are the distances covered by the planet in equal time. The straight lines AS and CS sweep equal area in equal interval of time, which means area ASB and area CSC are equal.

(3) **Kepler's third law:** The square of its period of revolution around the sun is directly proportional to the cube of the mean distance of a planet from the sun. If r is the mean distance of the planet from the sun and T is its period of revolution then.

$$T^2 \propto r^3$$

$$\therefore \frac{T}{r^3} = \text{constant}$$

(iii) Read the given passage and answer the following questions:

The home electrical connection consists of 'live', 'neutral' and 'earth' wires. The 'live' and the 'neutral' wires have potential difference of 220 V. The 'earth' is connected to ground. Due to a fault in the equipment or if the plastic coating on the 'live' and the 'neutral' wires gives a way the two wires come in contact with each other and a large current flows through it producing heat. If any inflammable material (such as wood, cloth, plastic, etc.) exists around that place it can catch fire. Therefore, a fuse wire is used as a precautionary measure.

(a) Name the two wires having potential difference of 220 V.

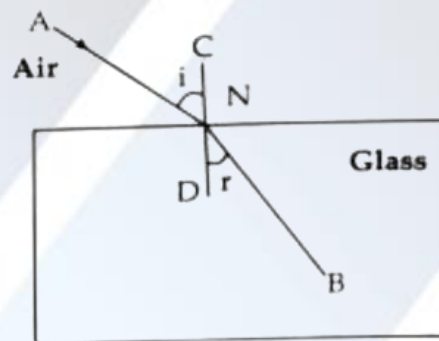
- (b) What is short circuit?
 (c) Write the function of a fuse.

Solution:

- (a) The 'live' and the 'neutral' wires have potential difference of 220 V.
 (b) A short circuit occurs when a fault in the equipment or damage to the plastic insulation on the 'live' and 'neutral' wires causes them to come into direct contact. This results in a large current flowing through the circuit, generating significant heat. If flammable materials like wood, cloth, or plastic are present nearby, they may catch fire, leading to hazardous situations.
 (c) Fuse wire is used as precautionary measure. As soon as high current flows in a circuit, the fuse wire melts and breaks the circuit and any mishap is avoided.

(iv) Observe the given figure and answer the following questions:

- (a) Name the process represented by the figure.
 (b) State the two laws related to the process.



Solution:

- (a) The given figure represent refraction.
 (b) Laws of refraction:
 (1) Incident ray and the refracted ray at the point of incidence N are on the opposite sides of the normal to the surface of the slab at that point i.e. CD, and the three the incident ray, refracted ray and the normal are in the same plane.
 (2) For a given pair of media (here air and glass), and for a given color of light, the ratio of

sine of angle of incidence (i) to the sine of angle of refraction (r) is constant.

(v) What is an artificial satellite? Name any two types of artificial satellite and state their functions.

Solution:

(1) If a manmade object revolves around the earth or any other planet in a fixed orbit, it is called an artificial satellite.

(2) The two types of artificial satellites.

(a) Weather satellite: Its function is study and prediction of weather.

(b) Broadcast satellite: Its function is to telecast television programs.

(vi) Answer the following questions:

(a) Define Hydrocarbons.

(b) Name the types of Hydrocarbons.

(c) Name two carbon compounds used in day-to-day life.

Solution:

(a) The compounds which contain carbon and hydrogen as the only two elements are called hydrocarbons.

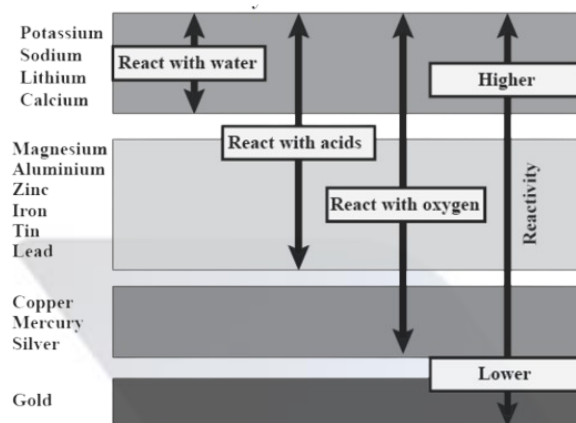
(b) Types of hydrocarbons are saturated hydrocarbons and unsaturated hydrocarbons.

Unsaturated hydrocarbons have double or triple bond between the carbon atoms unlike the saturated hydrocarbons in which all hydrogen atoms and carbon atoms are bonded together with single bonds. Both these types are further classified as straight chain hydrocarbons, branched chain hydrocarbons and cyclic hydrocarbons.

(c) -Polythene $[(CH_2 = CH_2)_n]$ which is used in production of carry bags.

Polyvinyl chloride (PVC) which is used in manufacture of PVC pipes

(vii) Observe the given figure of reactivity series of metals and answer the following:



Reactivity series of metals.

- (a) Name two metals which react with water.
- (b) Name two moderately reactive metals.
- (c) Name the most highly reactive metal and the most less reactive metal.

Solution:

- (a) Sodium and calcium react with water.
- (b) Aluminium and zinc are the moderately reactive metals.
- (c) The most highly reactive metal is Potassium and the most less reactive metal is Gold.

(viii) Complete the following table:

Straight chain of Carbon compounds	Structural formula	Molecular formula	Name
C	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	CH ₄	Methane
C – C	Ethane
C – C – C	C ₃ H ₈
C – C – C – C	$\begin{array}{cccc} \text{H} & \text{H} & \text{H} & \text{H} \\ & & & \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & & \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array}$

Solution:

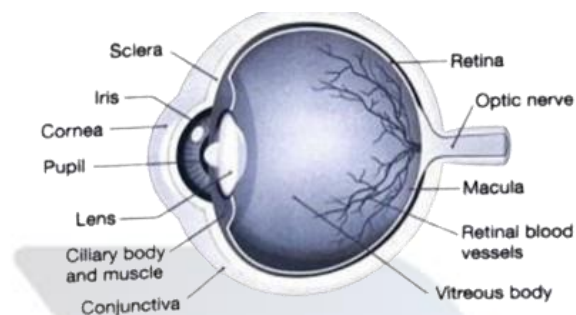
Straight chain of Carbon compounds	Structural formula	Molecular formula	Name
C	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	CH ₄	Methane
C – C	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	C ₂ H ₆	Ethane
C – C – C	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$	C ₃ H ₈	Propane
C – C – C – C	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$	C ₄ H ₁₀	Butane

Answer any one of the following:

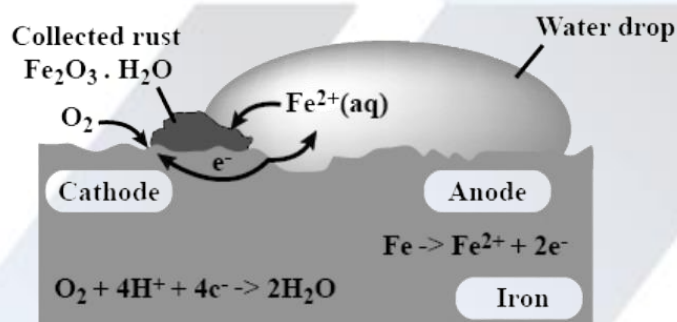
- (i) Draw a scientifically correct labelled diagram of a human eye and answer the questions based on it:
- Name the type of lens in the human eye.
 - Name the screen at which the maximum amount of incident light is refracted?
 - State the nature of the image formed of the object on the screen inside the eye.

Solution:

- (i)



- (a) Lens in the human eye is double convex transparent crystalline lens.
- (b) Maximum amount of incident light is refracted inside the eye at the outer surface of the cornea.
- (c) The image of the object formed on the screen inside the eye is real and inverted.
- (ii) Observe the following picture and answer the following questions:



- (a) What is a rust?
- (b) Write the chemical formula of rust.
- (c) Write the reaction of oxidation of iron at anode.
- (d) Write the reaction of oxidation of iron at cathode.
- (e) What is corrosion?

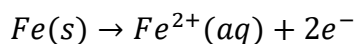
Solution:

(ii)

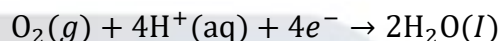
- (a) A certain type of reddish coloured solid layer collects on the metallic surface. This layer is called rust.

(b) Chemical formula of rust is $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$

(c) Iron (Fe) is oxidised to Fe^{2+} in the anode region.



(d) O_2 is reduced to form water in the cathode region.



When Fe^{2+} ions migrate from the anode region, they react with water and further get oxidized to form Fe^{3+} ions.

(e) Due to various components of atmosphere, oxidation of metals takes place, consequently resulting in their damage. This is called corrosion.

Part - B

Note:

(i) All questions are compulsory.

(ii) Use of a calculator is not allowed.

(iii) The numbers to the right of the questions indicate full marks.

(iv) In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.

(v) For each MCQ, the correct alternative (A), (B), (C), (D) with sub-question number is to be written as answer.

For Eg: (i) (A), (ii) (B), (iii) (C)

(vi) Scientifically correct, labelled diagrams should be drawn wherever necessary.

Q1. (A) Choose the correct option and write its number for the following questions.

(i) Transfer of information from molecule of DNA to mRNA is called _____ process.

(a) Transcription

(b) Translation

(c) Translocation

(d) Mutation

Solution:

(a) Transcription

(ii) Body breaks up into several fragments and each fragment starts to live as a new individual. This is _____ type of reproduction.

- (a) Budding
- (b) Fragmentation
- (c) Regeneration
- (d) Binary fission

Solution:

(a) Fragmentation

(iii) Incomplete combustion of fuels leads to formation of _____.

- (a) Carbon monoxide
- (b) Carbon dioxide
- (c) Chlorofluorocarbon
- (d) Hydrogen sulphide

Solution:

(a) Carbon monoxide

(iv) The spindle fibres start appearing from _____ stage of karyokinesis.

- (a) Prophase
- (b) Metaphase
- (c) Anaphase
- (d) Telophase

Solution:

(b) Metaphase

(v) Salts which can be used as supplement of calcium and iron are obtained from _____.

- (a) Carbonic acid
- (b) Acetic acid

- (c) Citric acid
- (d) Gluconic acid

Solution:

- (d) Gluconic acid

(B) Solve the following questions:

(i) Find odd one out:

Drying, Salting, Cooking, Soaking with sugar.

Solution:

Cooking

(ii) Write the correct co-relation:

Annelida: Earthworm:: Platyhelminthes: _____:

Solution:

Planaria

(iii) State whether True/False:

Tobacco containing substances cannot cause cancer of mouth and lungs.

Solution:

False

(iv) Write function of testes.

Solution:

Function of testes is to produce sperms and male hormone-testosterone.

(v) I am connecting link between Reptilia and mammals. What is my name?

Solution:

Duck-Billed Platypus.

Q2. (A) Give scientific reasons. (Any two):

- (i) Indians should follow family planning for controlling the population.
- (ii) We feel exhausted after exercising.
- (iii) Hydroelectric energy, solar energy and wind energy are called renewable energies.

Solution:

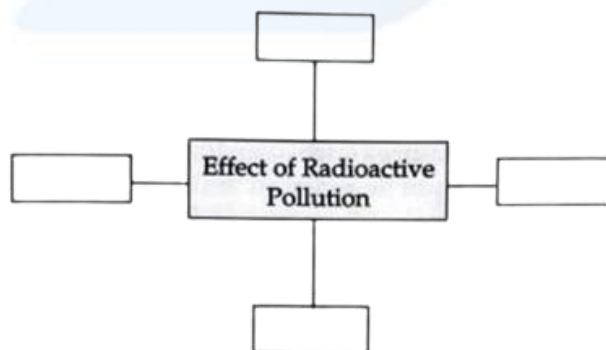
(i) India's population has been growing rapidly, with the current count exceeding 130 crores. This population surge places immense pressure on natural resources, making it difficult to meet the rising demands. Overpopulation also leads to challenges such as lack of education, unemployment, poverty, crime, decreased per capita income, and increased debt. To address these issues, controlling the population through family planning is essential to ensure sustainable development.

(ii) During intense physical activity, oxygen supply to the muscles may fall short, leading to anaerobic respiration. This process produces lactic acid and generates significantly fewer ATP molecules compared to aerobic respiration. The accumulation of lactic acid in the body and reduced energy production result in feelings of exhaustion after exercise.

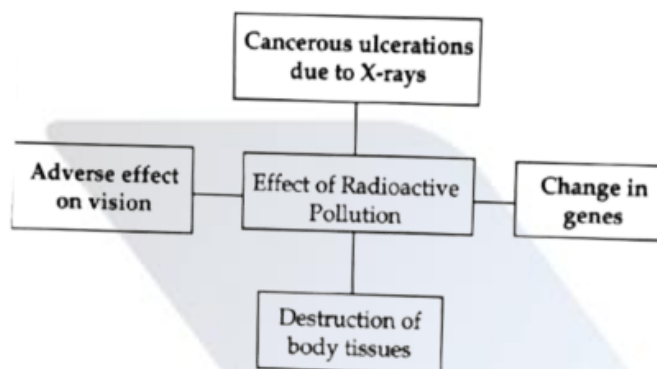
(iii) Conventional energy sources like coal, natural gas, and fossil fuels are finite and will eventually deplete. In contrast, renewable energy sources such as solar, wind, and hydroelectric energy are derived from inexhaustible natural resources—solar radiation, flowing water, and wind. Since these resources are sustainable and can replenish naturally, they are classified as renewable energy sources.

(B) Solve the following questions. (Any three):

(i) Complete the following chart:



Solution:



(ii) Distinguish between Aves and Mammalia.

Solution:

Aves	Mammalia
1. These are adopted for aerial mode of life.	1. These are adapted for terrestrial life.
2. Body is spindle shaped and it is divided into head, neck and trunk.	2. Body is not spindle shaped and it is divided into head, neck, trunk and tail.
3. They have two pairs of limbs and forelimbs are modified to form wings.	3. They have two pairs of limbs, which are adapted for walking and running on the ground.
4. Exoskeleton is in the form of feathers.	4. Exoskeleton is in the form of hair, wool or fun.
5. Jaws are modified into a beak	5. Jaws have teeth which surround the mouth.

6. These are oviparous. They hatch the eggs into nestlings.

6. These are viviparous. They give birth to live young ones.

(iii) By observing given picture, write any two effects of this disaster:



Solution:

The given picture shows the railway accident. The worst effects of this disaster are:

1. Loss of life: In railway accidents hundreds of people die and too many are injured also.
2. Economic loss: The repairing and maintenance of railways result into economic pressure on government and public also.

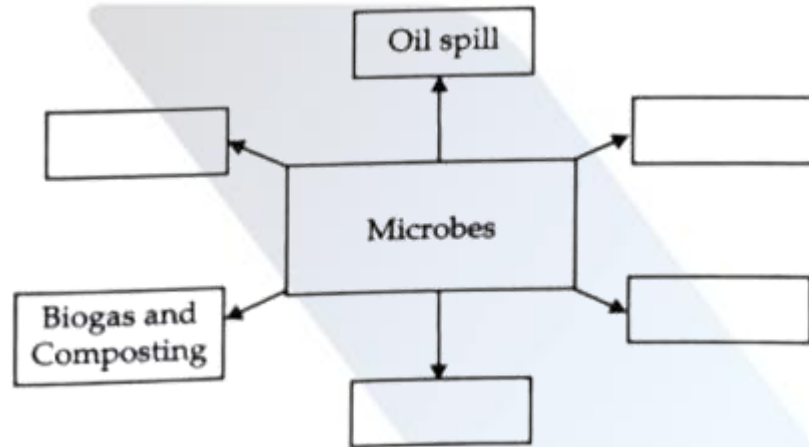
(iv) Explain four ways to minimize stress:

Solution:

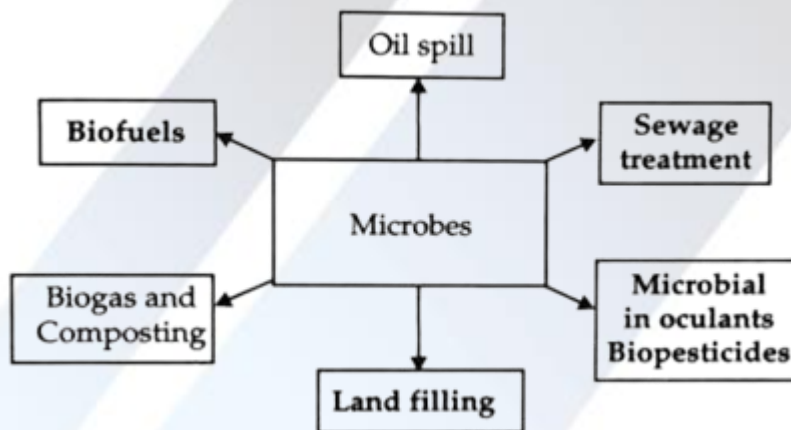
1. One should express his feelings with their near and dear ones, or he should note down his feelings in a diary.
2. One should learn Yoga and Meditation. Also, he should perform physical exercise daily.
3. One should inculcate good hobbies like reading, drawing, cooking, dancing, photography etc., in his routine.

4. We should listen and also learn music, because music reduces the mental stress and it teaches us how to enjoy the life.

(v) Complete the following conceptual picture:



Solution:



Q3. Solve the following questions. (Any five):

- (i) Explain the importance of Anatomical evidences with examples.

Solution:

1. The structure and anatomy of various animal groups show certain similarities.

For example, human hand, cat's foreleg, flipper of whale and patagium of bat, Etc., are similar in their internal anatomy.

2. External morphology of those organs does not show any similarity. Also, the use of These organs is also different in different animals.
3. But there is similarity in structure of bones and bony joints in organs of each of these animals.
4. This similarity indicates that those animals many have a common ancestor.
5. Thus, the anatomical evidence tries to prove the process of evolution.

(ii) What will you do? Why?

- (a) Child of your neighbor is addicted to tobacco chewing.
- (b) Your friend has developed the hobby of snapping selfies.
- (c) Your sister has become incommunicative. She prefers to remain alone.

Solution:

(a) I will explain the harmful effects of tobacco chewing to the child and educate them about how it can lead to mouth cancer. To reinforce this, I will use videos and photographs as evidence. Additionally, I will inform the child's parents about this habit and work together to help the child overcome their addiction.

(b) The person who has the hobby of snapping selfies is always thinking of himself Only. I will try to find out the reason behind his self-centeredness. I will try to motivate him to do some other good things so that his habit of snapping selfies will be lessened.

(c) For my sister, I would build her trust and try to understand the reasons behind her lack of communication. I would engage her in discussions on topics she finds interesting and spend quality time with her. To help her socialize, I would invite her friends over and encourage her to participate in activities related to her hobbies. My efforts would focus on making her feel valued and happy.

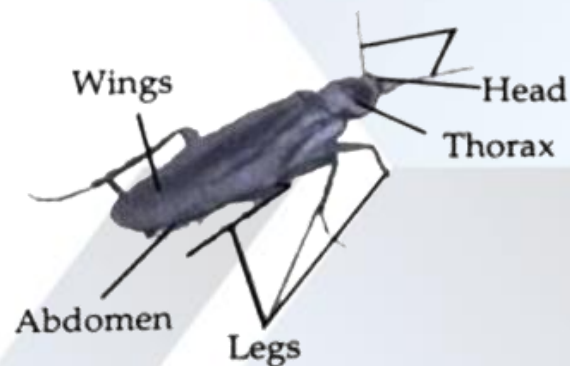
(iii) Which precautions are necessary for proper decomposition of domestic waste?

Solution:

- To ensure proper decomposition of domestic waste, it is essential to separate decomposable (wet) and non-decomposable (dry) garbage.

- Wet garbage can be used to make compost at home, contributing to sustainable waste management.
- Non-decomposable waste, such as plastic, broken metal objects, glass pieces, medicine bottles, and e-waste, should be stored separately.
- Dry garbage can then be sent for recycling or reuse, reducing environmental harm.
- Mixing wet and dry garbage makes decomposition challenging and should be avoided.
- Strict separation of non-decomposable materials is crucial for effective waste management.

(iv) Observe the following diagram. Write the answers of the following.



- To which phylum does the animal included in the diagram belong ?
- What is the exoskeleton made up of?
- What is the symmetry?

Solution:

- Cockroach is shown in the diagram. It belongs to phylum Arthropoda.
- The exoskeleton is made up of chitin.
- Body of cockroach shows bilateral symmetry.

(v) Explain the following concepts in short:

- Surrogacy
- In Vitro Fertilization (IVF)
- Sperm Bank

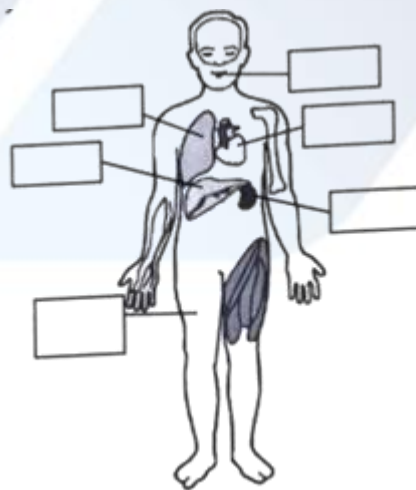
Solution:

(a) Surrogacy: Some women have problems in implantation of embryo in uterus. For such women surrogacy is the remedial technique. In this technique oocyte is collected from the ovary of the woman having problem in implantation in uterus. That oocyte is fertilized in test-tube with the help of sperms collected from her husband. The embryo formed from such fertilization is implanted in the uterus of some other woman having normal uterus. Such a woman in whose uterus the embryo is implanted, is called as surrogate mother and this entire procedure is termed as surrogacy.

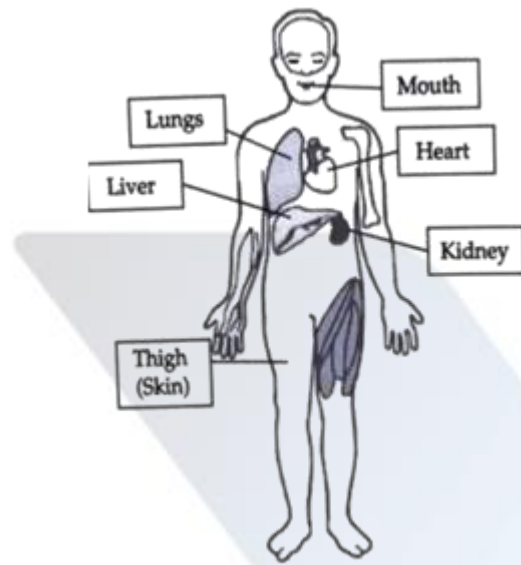
(b) In Vitro Fertilization (IVF): In this technique fertilization is brought about in the test tube and the embryo formed is implanted in uterus of woman at appropriate time. This technique is used for having the child in case of those childless couples who have problems like less sperm count, obstacles in oviduct etc.

(c) Sperm Bank: Semen ejaculated by the desired men is collected after their thorough physical and mental check-up and is stored in the sperm bank. As per the wish of needful couple, oocyte of woman of the concerned couple is fertilized by IVF technique using the semen from sperm bank. Resultant embryo is implanted in the uterus of same woman.

(vi) Label the body organization of human in the following figure:



Solution:



(vii) Make a table based on forms of energy and corresponding devices:

	Forms of Energy	Devices
(a)	Electric	
(b)	Mechanical	Sewing machine, Bicycle
(c)	Thermal	
(d)		Solar cooker, Solar heater

Solution:

Forms of Energy	Devices
(a) Electric	Tube light, fan, Refrigerator, Microwave oven, etc.
(b) Mechanical	Sewing machine, Bicycle
(c) Thermal	Chulha, Furnace, Steam engine.
(d) Solar	Solar cooker, Solar heater

(viii) Complete the paragraph using proper words:

(Mechanical, Rhizobium, Aquatic, Toxic, CO₂, Nitrogen, Pseudomonas, Amoeba, Bacteria, Hydrocarbons)

Spilling of petroleum oil occurs in ocean due to various reasons. This oil may prove fatal and toxic to _____ organisms. It is not easy to remove the oil layer from surface of water by _____ method. However, bacteria like _____ spp and Alcanivorax borkumensis have the ability to destroy the pyridines and other chemicals. Hence, these _____ are used to clear the oil spills, These are called hydrocarbonoclastic bacteria (HCB). HCB decompose the _____ and bring about the reaction of carbon with oxygen. _____ and water is formed in this process.

Solution:

Spilling of petroleum oil occurs in ocean due to various reasons. This oil may prove fatal and toxic to aquatic organisms. It is not easy to remove the oil layer from surface of water by mechanical method. However, bacteria like Pseudomonas spp. and Alcanivorax borkumensis have the ability to destroy the pyridines and other chemicals. Hence, these bacteria are used to clear the oil spills. These are called hydrocarbonoclastic bacteria (HCB). HCB decompose the hydrocarbons and bring about the reaction of carbon with oxygen. CO₂ and water is formed in this process.

Q4. Solve the following questions. (Any one):

(i) Attempts at various levels are performed for conserving the environment. Which role would you like to perform. Give two actions each:

- (a) Prevention
- (b) Control
- (c) Production
- (d) Awareness
- (e) Conservation

Solution:

(a) Prevention:

1. Preventing possible harms.

2. Designing new plans.

(b) Control:

1. Stopping the harmful activities.

2. Changing the mindset.

(c) Production:

1. Revival of harmed factors of environment.

2. Attempting innovation.

(d) Awareness:

1. Education.

2. Guidance.

(e) Conservation:

1. Conserving the available resources.

2. Using the available pool of resources in sustainable manner.

(ii) (a) What is Biotechnology?

(b) Give one use of Biotechnology.

(c) Give one commercial use of Biotechnology.

(d) Write two bacterial examples of biofertilizer.

(e) Write two names of crops genetically developed.

Solution:

(a) Biotechnology refers to the methods of enhancing living organisms through artificial genetic modifications and hybridization for the welfare of human beings.

(b) Biotechnology is used to produce life-saving medicines, such as insulin, for the treatment of diseases like diabetes.

(c) Animal husbandry: In animal husbandry, biotechnology employs methods like artificial insemination and embryo transfer to enhance the quantity and quality of animal products such as milk, meat, and wool. Stronger animals are also developed for labor.

This is one of the commercial use of Biotechnology.

(d) Two examples of bacterial biofertilizers are Rhizobium and Azotobacter.

(e) Examples of genetically engineered crops include BT cotton and Golden rice.

