

Instructions:

1. All questions are compulsory.
2. Sketch well labeled scientific diagrams wherever necessary.
3. Solve each main question on separate page.
4. Figures to the right indicate 'marks'.
5. Only first attempt will be evaluated for each multiple choice question (Q. 1 B).
6. Answer to each multiple choice question should be written with correct option.

Ex. i. a) ii. c)

I. Skin : Keratin :: Blood :

Ans: Hemoglobin.

II. Rewrite the food-chain given below with correct sequence.

Grasshopper – Snake – Paddy field – Eagle – Frog

Ans: Paddy field – Grasshopper – Frog – Snake – Eagle.

III. IT Act 2000 is to control the

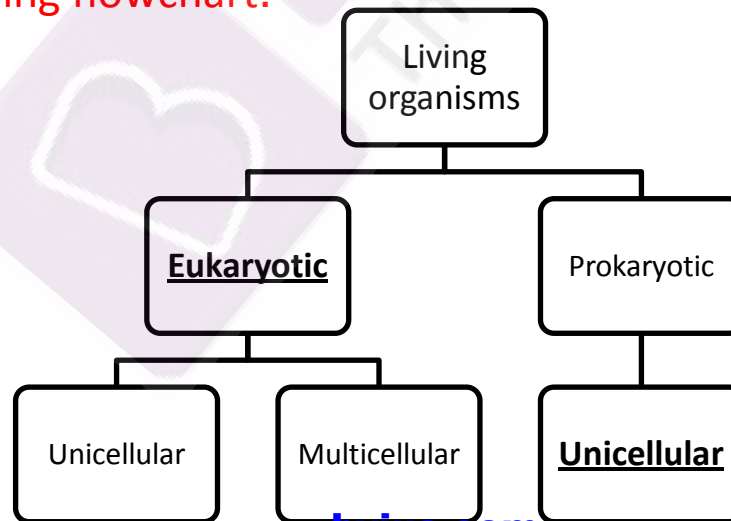
Ans: IT act 2000 is to control the cyber crimes.

IV. Mention any one benefit of biotechnology to the agriculture.

Ans: Pesticide expenses have been minimized due to GM crops like BT cotton.

V. Complete the following flowchart.

Ans:



Que. 1. B) Write the correct option from given multiple choices.

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i. What should be done if the gas cylinder at your home catches fire?

- a) Water should be sprinkled. b) Sand, soil should be put at it.
c) Cylinder should be covered with wet blanket. d) One should run away.

Ans: c) Cylinder should be covered with wet blanket.

ii. In which of the following industries, microbial enzymes are not used?

- a) Glass industry. b) Cheese industry
c) Tanning industry. d) Paper industry.

Ans: a) Glass industry.

iii. Which of the following is not an unisexual flower?

- a) Coconut b) Papaya c) Gulmohor d) Maize

Ans: c) Gulmohor

iv. Which of the following is used in solar cooker to harvest the solar energy?

- a) Solar panels b) Silicon cell
c) Mirrors d) Glass lid

Ans: c) Mirrors

v. Which of the following is first example of class *Homo sapiens*?

- a) Neanderthal b) Dryopithecus c) Cro Magnon d) Ramapithecus

Ans: a) Neanderthal

Que. 2. Attempt the following (Any five) (2 marks each)

1. “Solving the problem of pollution is an effective way of environmental management” Justify the statement.

Ans:

- All biotic and abiotic factors around us constitute the environment.
- Proper use and conservation of all those factors is nothing but the environmental management.
- Harmful changes in quality of those factors due to natural or humane activities is called pollution.
- Hence, if we overcome the pollution, it is ultimately effective way of environmental management.

2. Characters of a phylum are given below. Read those carefully and answer the questions.
- Spines of calcium carbonate are present on the body.
 - These animals are exclusively marine.
 - They perform the locomotion with the help of tube feet.
 - Their skeleton is made up of calcareous plates or spicules.
 - Animals of which phylum show the above characters?
 - Give an example from that phylum.
 - These animals can be classified with the help of which criteria of new system of animals classification?

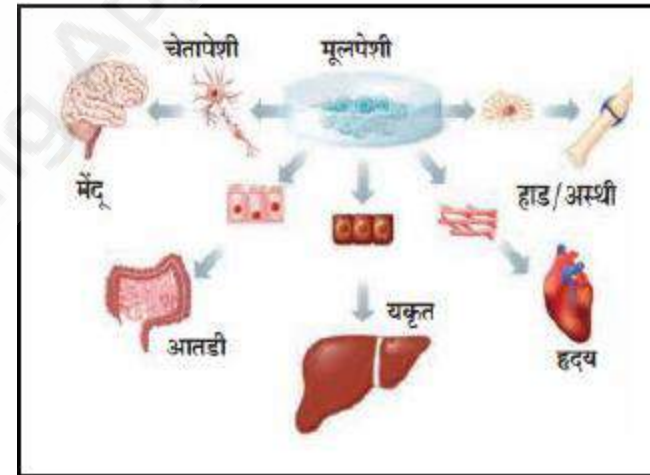
Ans:

- Above mentioned characters are of phylum- Echinodermata.
- Sea star is an example of this phylum.
- In new system of classification, these animals classified with the help of criteria like- body organization, body symmetry, body cavity, etc.

3. i. Which therapy is shown in the picture?
- ii. Which will be possible benefits of this therapy in organ transplantation?

Ans:

- i. Picture shows the 'regenerative therapy' using stem cells.
- ii. It is possible to develop the organs like liver, kidney from stem cells to replace the failed ones.



4. 4. “Biotechnology is not only beneficial but it has some harmful effects too.” Express your opinion about this statement.

- Advantages:

- High yield in less time and less expenses.
- We can avoid the use of pesticides and thereby pollution.
- Quality of the food and food-grains has been improved.

- Disadvantages:

- Attempts to develop ‘super-human’ through genetic manipulation.
- No study about long-term effects of GM crops on environment and living organisms.
- Financial loot of poor countries and farmers due to monopoly through patenting of GM crops.
- Genetically modified pest-resistant crops may prove harmful to beneficial insects.

Which aspects will you check for pre-disaster management in your school?

- Acquiring the ability or being prepared to face various disaster is pre-disaster management.
- Types of possible disasters in the school: Natural- Earthquake, storms, man-made- Fire, Accidents in laboratories, stampede, etc.
- Essential planning acc/to type of disaster: Mock drill, Fire fighting implements, emergency exit, first-aid box, etc.

Observe the connections of cells shown in the following images.

i. Which connection will give maximum potential difference?

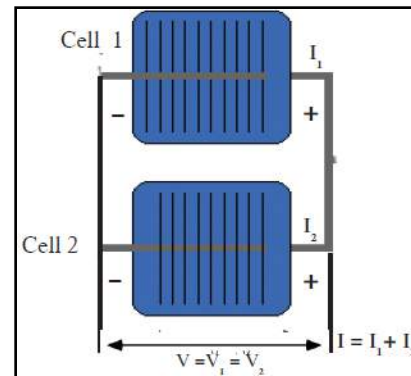
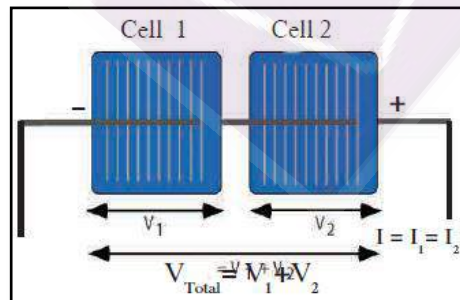
ii. Give one advantage and one disadvantage of this energy .

- Ans:

i. Type of connection of solar cells in 'A' is 'in series' connection and it will give maximum potential difference.

ii. **Advantage:** Solar energy is an eco-friendly source of energy. It does not cause any pollution.

Disadvantage: As it can be produced in presence of sunlight only, it needs to be stored in batteries for use.



4. What do these symbols indicate? Explain our opinion about those symbols.

- Ans.:

- A) Recycling

- B) Save water.

- Opinion

i. I will increase the public awareness about plastic recycling.

ii. I will discuss with friends about various strategies on judicious use of water and implementations accordingly.



(A)



(B)

Que. 3. Attempt the following. (Any five)

15

1. What do we call the degenerated or partially developed useless organs in living organisms? Enlist such organs in human body? How the same organs are useful in other animals?

Ans.:

- Degenerated or partially developed useless organs are called vestigial organs.
- Wisdom tooth, Appendix, Body hairs, Coccyx, are some vestigial organs in human body.
- Coccyx supports the tail in other animals. Body hairs protect form cold.

Que. 3. Attempt the following. (Any five)

15.

2. "A couple shall have a male child or female child totally depends upon husband" Prove truthfulness of this statement with scientific reason.

- human have two types sex-chromosomes- X & Y. In males XY & in females, XX.
- Due to this, men produce two types of sperms- X-containing and Y-containing sperm. However, in women, only X-containing egg cells are produced.
- Due to this, during fertilization of egg cell, if X-containing sperm fuses, it forms female child and if Y-containing sperm fuses, it forms male child.
- Thus, "A couple shall have a male child or female child totally depends upon husband" is true statement.

Que. 3. Attempt the following. (Any five)

15.

3. Read the information given below and solve the questions based on it.

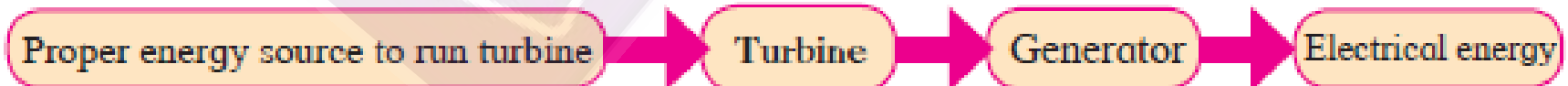
Electric energy is produced in various ways like hydroelectric, wind power, Solar energy, bio-fuel, etc. These energy sources are inexhaustible, sustainable. Besides, it does not cause any environmental problem.

- i. Above information is about which type of energy?
- ii. Whether the fossil fuel is an example of this energy?
- iii. Draw the flow chart of production of electric energy.

Ans: i. Above information is about 'green energy'

ii. Fossil fuel is not an example of green energy.

iii.



Que. 3. Attempt the following. (Any five)

15.

4. Track the changes in methods of animal classification.

How the methods of animal classification changed over the time?

- Formation of groups and sub-groups of animals depending upon similarities and differences is called as animal classification.
- Animal classification has been changed from time to time in the sequence as mentioned below-
- **Artificial method**: Aristotle, Theophrastus, Pliny, John Ray, Linnaeus
- **Natural method**: Morphology, Cytology, Chromosomes, Biochemistry,
- **Method based on evolution**: Dobzhansky, Mayer.
- **Five kingdom**: Robert Whittaker
- **New method**: base on criteria like- body organization, body symmetry, germ layers, body cavity, segmentation.

Que. 3. Attempt the following questions. (Any five)

15.

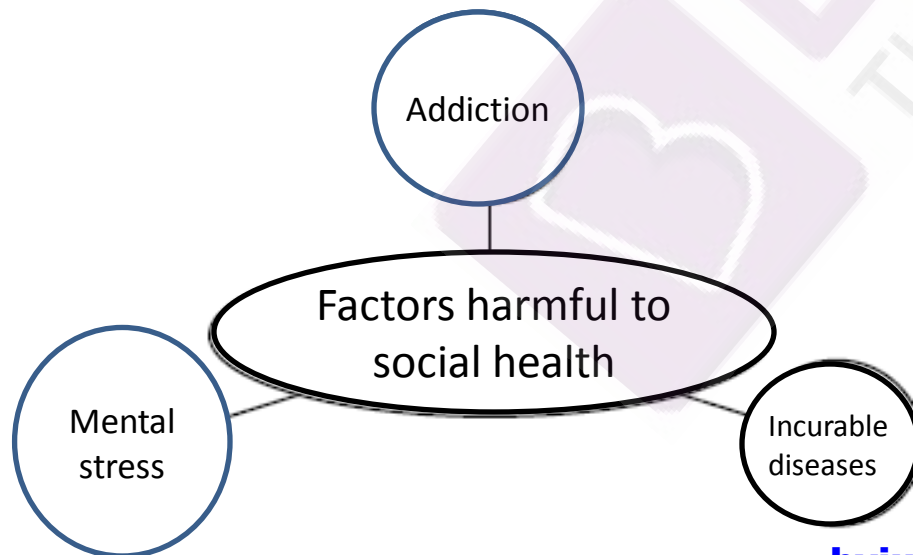
5. Complete the following concept-diagram using factors harming the social health and based on it, answer the following questions.

i. Tobacco products can be included in which of those factors?

ii. How the tobacco products are harming the social health?

-Ans: i. Tobacco products are included in **'ADDICTION'**.

ii. Tobacco products cause the serious diseases like 'cancer'. Occurrence of such diseases on large scale is nothing but a harm to the social health.



Que. 3. Attempt the following questions. (Any five)

15.

6. i. Which mental illness is shown in the picture given below?
ii. Which social message would you like to give through it?

Ans:

- The picture depicts 'insensitivity' type of mental disorder.

- Social message:

1. Instead of making video-clips of the accident, provide help to the victims.
2. Inform the police immediately.
3. As per the situation, provide CPR (Cardiac-Pulmonary Resuscitation) to the victim; if necessary.
4. Call '108' for ambulance.



Que. 3. Attempt the following questions. (Any five)

15.

7. Explain in brief the sensitive issues of general public about disaster?

- Ans:

- Sensitive issues about disaster: loss of life, financial loss, injuries, spreading of diseases, post-disaster rehabilitation.

- Loss of life occurs in various types of disasters. If the sole earning member dies in the disaster, livelihood of the family becomes difficult.

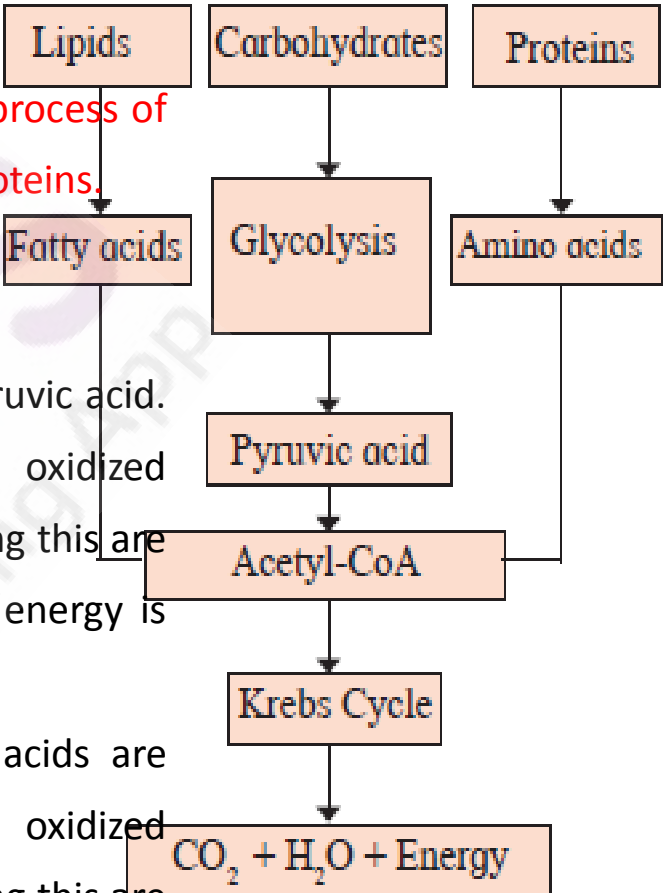
- Family faces a huge economic loss due to burning the home to ashes in fire.

- Post-disaster rehabilitation is also a sensitive issue. Many times, there is delay in financial help from the government authorities. It is highly appreciable to raise the fund and extend helping hand on the part of society.

Que. 4. Attempt the following. (Any one)

5.

i. i. **Redraw the flow-chart with corrections. Explain in brief the process of obtaining energy through oxidation of carbohydrates, lipids & proteins.**



Ans: Corrected flow-chart-

Process of obtaining the energy-

- i. Carbohydrates— Carbohydrates like glucose are oxidized to pyruvic acid. Pyruvic acid is converted to acetyl-co-enzyme-A which is oxidized through Kreb’s cycle. The molecules of NADH₂ produced during this are oxidized through electron transfer chain reaction and finally energy is obtained.
- ii. Proteins- Proteins are digested to amino acids and amino acids are converted into acetyl-co-enzyme-A. Acetyl-co-enzyme-A is oxidized through Kreb’s cycle. The molecules of NADH₂ produced during this are oxidized through electron transfer chain reaction and finally energy is obtained.
- iii. Lipids- Lipids are converted to fatty acids and fatty acids to acetyl-co-enzyme-A. Acetyl-co-enzyme-A is oxidized through Kreb’s cycle. The molecules of NADH₂ produced during this are oxidized through electron transfer chain reaction and finally energy is obtained.

Que. 4. Attempt the following (Any one)

5.

2. i. Lack of management of which factor is shown in the picture?
- ii. How can that factor be managed with the help of microbes?
- iii. How the oil spills in oceans are cleared?

- Ans.:

- i. The picture shows the lack of management of waste water / sewage.
- ii. Microbes which can decompose any compound as well as destroy the pathogens of cholera, typhoid, etc. are mixed with sewage. They release methane and CO_2 by decomposition of the carbon compounds present in sewage. Phenol oxidizing bacteria decompose the xenobiotic chemicals present in sewage.
- iii. Hydrocarbonoclastic bacteria like *Alcanivorax borkumensis* & *Pseudomonas* are used to clear the oil spillage from ocean water. These bacteria decompose the hydrocarbons and bring about the reaction of released carbon with oxygen to produce CO_2 & water.

