SCIENCE 2 PRELIM: SOLUTION PAPER 1

Q.1 (A) Multiple Choice Questions. **(5)**

1) In ..... longitudinal binary fission occurs.
a. amoeba b. hydra c. euglena d. paramecium

Ans. In **euglena** longitudinal binary fission occurs.

2) Water reservoir possesses _____ energy.
a. Nuclear b. Thermal c. Kinetic d. Potential

Ans. d. Potential

3) Forest Conservation Act was enacted in ..... .
a. 1980 b. 1986 c. 2000 d. 1972

Ans. Option a.

4) Citric acid used in production of beverages, toffees, chocolates is obtained by fermentation of ..... by aspergillus niger.
a. Grapes b. Sugar molasses c. Apple d. Coffee nuts

Ans. Option b.

5) Excessive use of mobile phones leads to
a. Radiation damage to body
b. People become solitary
c. People cannot establish harmonious relationships with others
d. All of the above

Ans. Option d.

(B) Answer the following questions. **(5)**

1) Find co-related terms

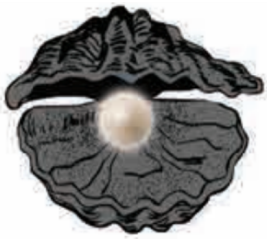
Natamyscin : Microbial restrictor : : Xanthenes : .....

Ans. Natamyscin : Microbial restrictor : : Xanthenes : **Edible colours**

2) Find the odd one out.

With respect to reproduction.


(a)


(b)


(c)


(d)

Ans. Bivalve

3) Match the pair.

Column "A"	Column "B"	Column "C"
i. Coal	Potential energy	Wind electricity plant

ii. Uranium	Kinetic energy	Hydroelectric plant
iii. Water Reservoir	Nuclear energy	Thermal plant
iv. Wind	Thermal energy	Nuclear power plant

Ans.

i. Coal	Thermal energy	Thermal plant
ii. Uranium	Nuclear energy	Nuclear power plant
iii. Water Reservoir	Potential energy	Hydroelectric plant
iv. Wind	Kinetic Energy	Wind electricity plant

4) State true or false.

Life of many people is at stake because of organ and body donation

Ans. False

5) Name the following.

Hormones synthesised using fatty acids.

Ans. Progesterone,estrogen, testosterone, aldosterone.

Q.2 A) Give scientific reason. (Any two) **(4)**

1) Vertebrates have slowly originated from invertebrates.

Ans. 1. From the fossil records it is observed that fossils of birds and mammals are in the uppermost layer.
2. Below which are the fossils of reptiles, and underneath them are those of amphibians, and below them are fossils of pisces. Hence, invertebrates must have formed first. Vertebrates such as pisces, amphibians, reptiles, and aves must have evolved from the invertebrates

2) Earthworms belong to phylum Annelid and is a terrestrial free-living organism.
Or
Earthworms are called friends of farmer.

Ans. Earthworms belong to phylum Annelid and is a terrestrial free-living organism.
ii. It lives in soil on the land which is generally used for agricultural purposes.
iii. It feeds on decaying and decomposing matter or any food material in the soil.
iv. During this, the animals eat soil with the food and then eliminates the soil with its excreta.
v. The digestive juices and enzymes with the excreta increase the fertility of the soil in which the growth of the plant flourishes.
vi. Thus, Earthworms are known to be a friend of farmers. Also the Earthworms are used for preparing a compost called vermicompost, from the decaying waste.

3) Girls are facing the problem of stress due to gender inequality.

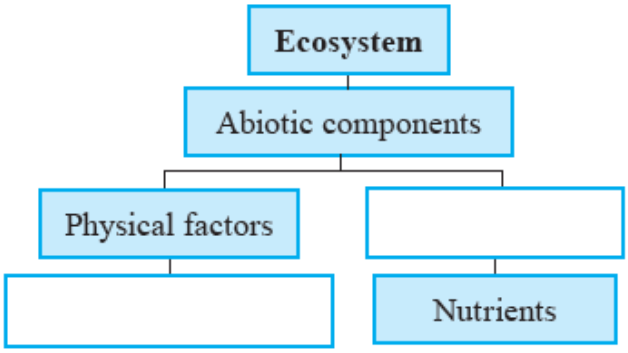
Ans. In most of the households there are many bindings on girls and excessive freedom for boys. Boys do not participate in the domestic duties whereas girls have compulsion for the same. In society too, girls have to face the problems like teasing and molestation. This creates insecurity among the minds of girls. The social change has made women independent and equal but still the male dominated society and the gender inequality persists causing more stress for young girls.

B) Answer the following questions. (Any three) **(6)**

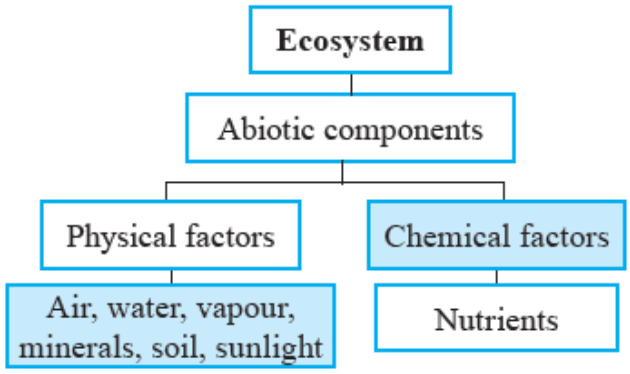
1) What are the characteristics of asexual reproduction ?

Ans. i. Only one parent is involved in asexual reproduction in which the cells divide mitotically.
ii. Since there is no fusion of two different cells, the daughter cells produced by asexual reproduction are genetically identical to the parent cells.

2)



Ans.



3) Distinguish between

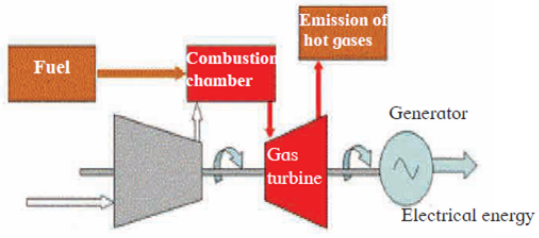
Pisciculture and Aquaculture

Ans.

	Pisciculture	Aquaculture
i.	Pisciculture is the process of growing fish In tanks or enclosures and selling it or using its products for domestic or commercial use.	Aquaculture is a process of growing any aquatic animals And aquatic plants like algae and other organism. and selling them for commercial purposes.
ii.	Fish can be grown both in salt water or fresh water.	It involves breeding feeding, harvesting and many other processes. The most popular one's grown under controlled environments are shrimps, crab fish, lobster and few others. Aqua culture com also be franchised both in fresh water or salt water.

4) Write short notes

Explain the given figure.



Ans.

i. The given figure shows Power generation plant based on energy of natural gas.

ii. In this plant, the turbine is run by a gas at very high temperature and pressure generated by combustion of natural gas.

iii. There are three main sections in this type of plant. Pressurised air is introduced into the combustion chamber using a compressor.

iv. In the combustion chamber the natural gas burns in presence of the air. The gas at very high temperature and pressure generated in this chamber runs the turbine. The turbine then drives the generator to produce electricity.

v. The efficiency of this type of power generation plant is higher than that of power generation plant based on coal.

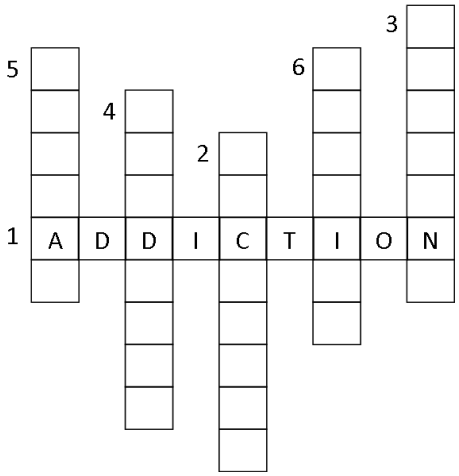
vi. Moreover, since the natural gas does not contain sulphur, burning of natural gas results in less pollution.

5) Geological disasters

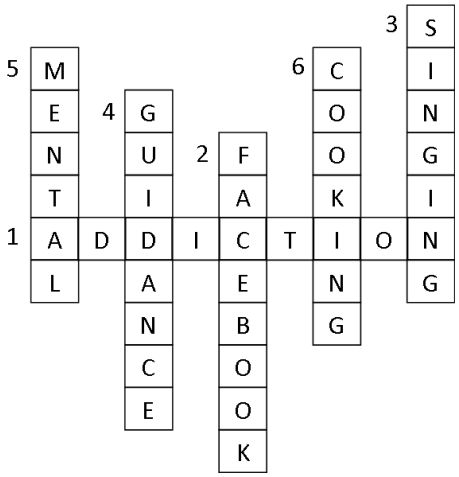
Ans. Earthquakes, tsunami, volcano, landslides, erosion, flood.

Q.3 Answer the following questions. (Any five) **(15)**

1) i. Continuous consumption of alcoholic and tobacco-materials
ii. This app may cause the cyber crimes.
iii. A remedy to resolve stress.
iv. Requirement for stress free life.
v. Various factors affect ..... health.
vi. Art of preparing food items.



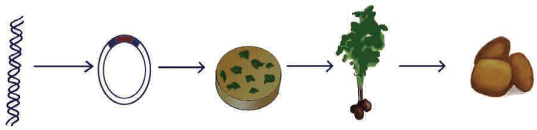
Ans.



2) Now-a-days, instead of chemical catalysts, microbial enzymes are used in chemical industry ? Explain ?

Ans.
i. These enzymes are active at low temperature, pH and pressure; due to which energy is saved and erosion-proof instruments are also not necessary.
ii. Enzymes carry out specific processes; hence unnecessary byproducts are not formed due to which expenses on purification are minimised.
iii. In case of microbial enzymatic reactions, elimination and decomposition of waste material is avoided and enzymes can be reused.
iv. Hence, such enzymes are eco-friendly.
v. Some examples of microbial enzymes are oxidoreductases, transferases, hydrolases, lyases, isomerases, ligases, etc.
vi. Thus, now-a-days , instead of chemical catalysts, microbial enzymes are used in chemical industry.

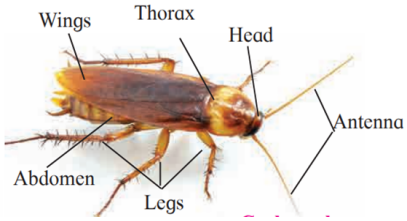
3) Complete the paragraph:
(**bacteria, biotechnology, virus, organic, immunity, edible, transgenic, E. coli**)



Work on production of ..... vaccines is in progress and presently, potatoes are being produced with the help of ..... . These potatoes are called as ..... potatoes. These potatoes will act against ..... like Vibrio cholerae, Escherichia coli. Consumption of these raw potatoes generates the ..... against cholera and the disease caused due to ..... .

Ans. Work on production of **edible** vaccines is in progress and presently, potatoes are being produced with the help of **biotechnology**. These potatoes are called as **transgenic** potatoes. These potatoes will act against **bacteria** like Vibrio cholerae, Escherichia coli. Consumption of these raw potatoes generates the **immunity** against cholera and the disease caused due to **E. coli**.

4) Observe the following diagram and answer the given questions.



i. To which phylum does the animal included in the diagram belong?
ii. What is the exoskeleton made up of?
iii. What is the symmetry?

Ans. i. The animal shown in the diagram is cockroach. It belongs to phylum Arthropoda.
ii. The exoskeleton is made up of chitin.
iii. The cockroach shows bilateral symmetry.

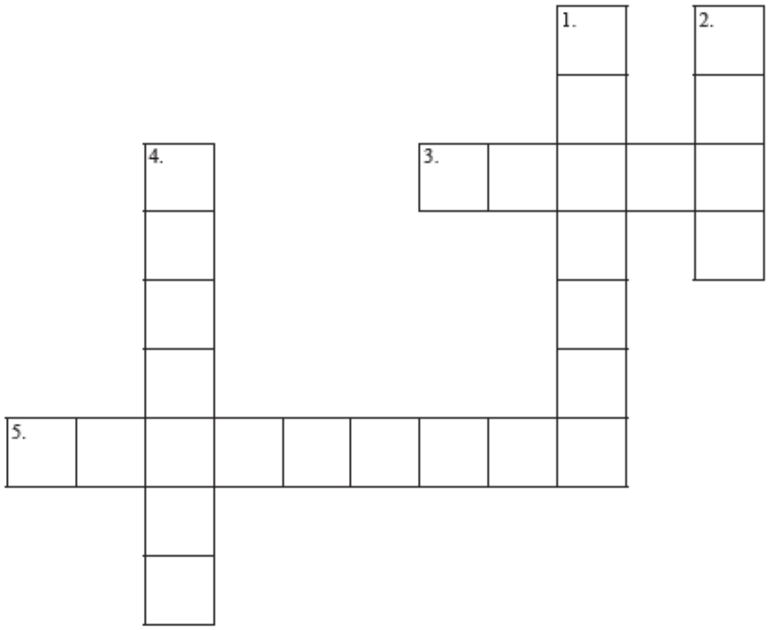
5) Explain the importance of Anatomical evidences with examples.

Ans. i. Anatomical evidences are the similarities in structures and anatomy between different organisms.
ii. The hand of a human, foreleg of ox, flipper of whale, and forelimbs of bat appear different superficially or morphologically.
iii. Also, the function of these structures is different in different animals.
iv. However, there is a similarity in the structure of bones and bony joints in the organs of these animals.
v. These similarities indicate that the animals evolved from a common ancestor thus providing proof of evolution.

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

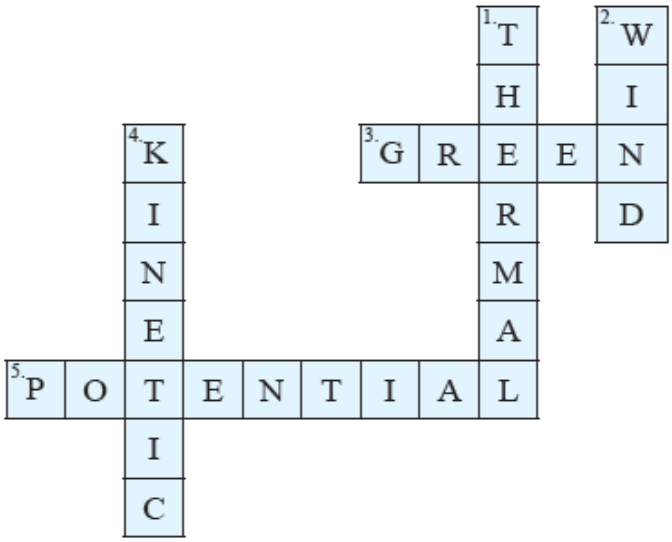
Ans. i. All biotic and abiotic factors around us constitute the environment.
ii. Proper use and conservation of all those factors is nothing but the environmental management.
iii. Harmful changes in quality of those factors due to natural or humane activities is called pollution.
iv. Hence, if we overcome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

7) Solve the following crossword puzzle.



1. Maximum energy generation in India is done using ..... energy.
2. ..... energy is a renewable source of energy.
3. Solar energy can be called ..... called energy.
4. ..... energy of wind is used in wind mills.
5. ..... energy of water in dams is used for generation of electricity.

Ans.

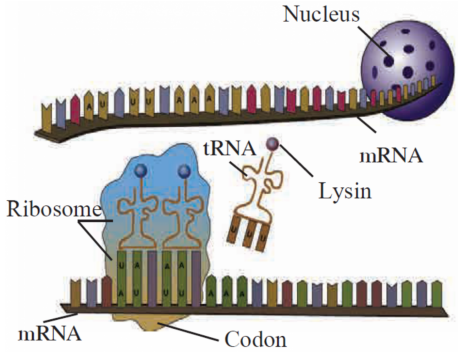


8) (a) What is meant by disaster management?
(b) Classify the following activities into pre-disaster management and post-disaster management:
(i) Identifying the pro-disaster areas.
(ii) Quick establishment of help centre.
(iii) Participation of preferably local peoples saved from the disaster in arranging the help to victims.
(iv) Getting special training for disaster management.

Ans. 1. Disaster management is the action implemented through proper planning, organized activity, and coordination in order to reduce the impact of a disaster.
2. **Pre-disaster management:** Identifying the pro-disaster areas,Getting special training for disaster management.
Post-disaster management: Quick establishment of help centre, Participation of preferably local peoples saved from the disaster in arranging the help to victims.

Q.4 Answer the following in details (Any one) **(5)**

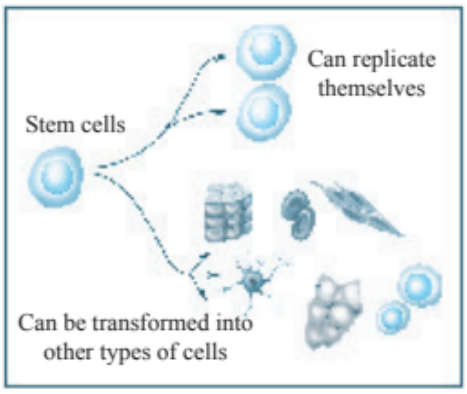
1)



i. How is mRNA formed ?
ii. What is a codon ?
iii. During Translocation, the movement occurs of ..... over mRNA.
iv. How does tRNA bind to mRNA ?
v. How are amino acids bonded together ?

Ans. i. mRNA is transcribed from DNA by the process of transcription.
ii. The code for each amino acid consists of three nucleotides. It is called as 'triplet codon'.
iii. During Translocation, the movement occurs of Ribosome over mRNA.
iv. tRNA binds to mRNA by complementary sequence of codon called as anti-codon.
v. Amino acids are bonded together by peptide bonds.

2)



a. What is shown in the figure?
b. What can the stem cells make in this figure?
c. What can these stem cells transform into?
d. What is the importance of this process?
e. Which organs can be transplanted by this process?

Ans. a. Stem cell therapy is shown in the figure.
b. In this figure it is shown that stem cell can be transformed into other types of cells such as neurons, RBCs, WBCs, hepatocytes etc.
c. Stem cells can be transformed into cells of brain, intestine, liver, heart, bone etc.
d. Importance of this process:
1. Stem cells are used to replace the dead cells in case of conditions like diabetes, myocardial infarction, Alzheimer's disease, Parkinson's disease, etc.
2. It is also used to produce blood cells required in conditions like anaemia, thalassemia, leukemia, etc.
e. In case of failure of organs like kidney and liver, those can be produced with the help of stem cells and transplanted.