



EDUTECH ACADEMY

Preliminary Examination [MODEL ANSWER]

Std: SSC (E.M)

Subject: Science & Technology II

Time: 2 Hours

Date : 23/Jan/2026

Max Marks: 40

1. It is necessary to solve all the questions.
2. Draw neat and labelled diagrams wherever necessary.
3. Start every new main question on separate page.
4. Figures on the right indicate marks.
5. For each Multiple Choice Question (1.B), ONLY first answer will be considered.
6. Write answer of each MCQ with option number.
Eg. i) a..... ii) c.....

Q.1(A) Choose the proper alternative and fill in the blanks:

5

- (1) Ans. (b) H_2O
- (2) Ans. (c) burning of charcoal
- (3) Ans. (d) Star fish
- (4) Ans. (c) Disaster management Act, 2005
- (5) Ans. (d) Lactobacilli

(B) Attempt the following:

5

(1) Find the odd one out:

1

Ans. Tarapur (All others are places having hydroelectric projects)

(2) State 'True' or 'False', if 'False' correct it:

1

Ans. False

(3) Write the correlated terms:

1

Ans. Lactic acid

(4) Name the following:

1

Ans. Copper T, condoms, oral contraceptives pills

(5) Answer the following in one line:

1

Ans. Mammalia

Q.2(A) Give reasons:(Any Two)

4

- (1) Ans. 1. Cell division is one of the very important properties of cells and living organisms.
2. Due to this property only, a new organism is formed from existing one, a multicellular organism grows up and emaciated body can be restored.
- (2) Ans. i. There is an inter-relationship between humans and the environment.
ii. In an attempt to live a satisfactory life, humans over-utilized natural resources.
iii. Natural resources are depleting in nature. Humans need to conserve and improve its quality in order to maintain the environmental balance.
iv. Humans are responsible for the deterioration of nature and its components.
v. Hence, only humans can conserve and improve the quality of nature.
- (3) Ans. 1. Renewable energy is any energy that comes from natural resources such as wind, water, sunlight and geothermal heat, which is heat that is retained in the earth.
2. Renewable energy is called renewable because it can be easily replenished without the help of a man.
3. There are several types of renewable energy that is used in different ways to make it usable to humans.
4. Wind energy is converted into wind power. When the wind is harnessed using turbines, it can be used as a way to generate electricity. Because of the advancement in turbine technology and the ability for utility companies to lock in a set price of wind energy costs because the fuel is free, the

overall costs of wind power to the consumer are lower than in past years.

5. It is important to understand that with this type of electric power one should live in a region where natural wind sources are very plentiful.

6. Sunlight, also known as solar energy, is also a common renewable energy source.

7. Sunlight is made useful to humans in the production of electricity by releasing electromagnetic radiation.

8. Once the electromagnetic radiation is captured, usually with the use of photovoltaic cells in a conductor material, it produces electricity and heat.

9. The conductor material ordinarily is silicon because of the abundance of the material.

10. The initial start-up costs for installing solar energy panels into a consumer's home is usually very costly. It may even take up to ten years to see a return on the investment. Geothermal energy is found inside the earth's core.

11. Utility companies can drill into geothermal energy reservoirs to harness the heat. Once the heat or hot water has been trapped, it can spin turbines to make electricity.

SOLUTION (2)

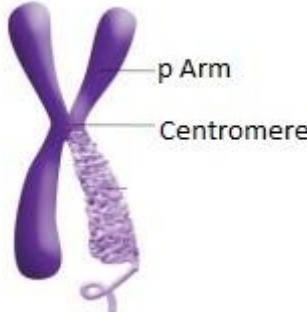
1. The sources of energy which are being produced continuously in nature and are inexhaustible, i.e., they are always available for use are called renewable sources of energy.

2. Hydroelectric energy, solar energy, wind energy are produced from energy sources like water, sunlight and wind respectively that are produced continuously in nature and will not get depleted. Thus, hydroelectric energy, solar energy and wind energy are called renewable energies.

(B) Answer the following:(Any Three)

6

(1) Ans.



(2) Ans. Population explosion, overall local environment, deforestation, construction, natural disasters, excessive fishing etc. are the reasons for endangering the many species of plants and animals. We can save them by implementing the conservation methods. Such methods are:-

1. Practicing afforestation to conserve environment.

2. Declaring stretch of land which needs to be conserved as the sanctuary or a national park.

3. By following various acts and rules which have been formulated to protect the organisms and plants.

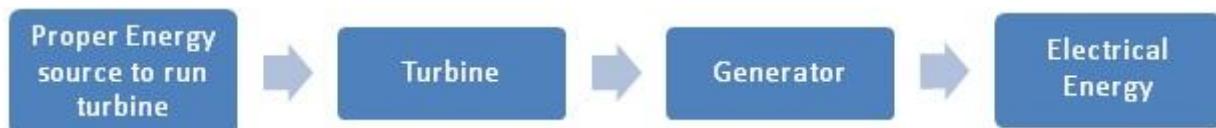
(3) Ans. 1. Probiotics form colonies of useful microbes in alimentary canal and control other microbes and their metabolic activities, improve resistance and lower the ill-effects of harmful substances formed during metabolic activities.

2. Useful microbes become inactive due to antibiotics; probiotics make them active again.

3. Nowadays, probiotics are used for treatment of diarrhea and treatment of poultry also.

4. Hence, probiotics food or products have developed much importance in recent days.

(4) Ans.



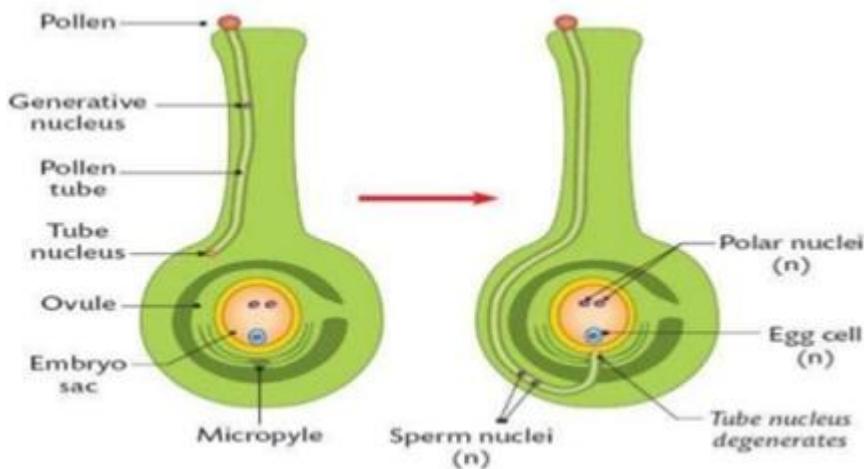
(5) Ans. (i) Yeast cell, bacteria, fungi etc. are microbes which are useful to us.

(ii) Milk products, cheese, coca, pickles, wine and other beverages, probiotic substances, bread, cattle feed etc. can be produced with the help of microbes.

Q.3 Answer the following:(Any Five)

15

(1) Ans. (a) The diagram is representing the double fertilization in plant.
(b)



(2) Ans. 1. Biodiversity is the richness of living organisms in nature due to presence of variety of organisms, ecosystems and genetic variations within a species.
 2. Biodiversity occurs at three different levels i.e. genetic, species and ecosystem diversity.
 3. In genetic diversity, diversity occurs among the organisms of same species. E.g. Each human being is different from other.
 4. Innumerable species of organisms occur in the nature which is known as species diversity. Species diversity includes various types of plants, animals and microbes.
 5. Many ecosystems are present in each region which leads to ecosystem diversity.
 6. Biodiversity can be conserved by protecting the rare species of organisms, establishing national parks and sanctuaries, declaring some regions as bio reserves, making projects for conservation of special species, conserving all plants and animals, observing rules and maintaining records of traditional knowledge.

(3) Ans. (1) Stem Cell Therapy

(2) In stem cell transplants, stem cells replace cells damaged by chemotherapy or disease or serve as a way for the donor's immune system to fight some types of cancer and blood-related diseases, such as leukemia, lymphoma, neuroblastoma and multiple myeloma.

(3) Liver, Kidney.

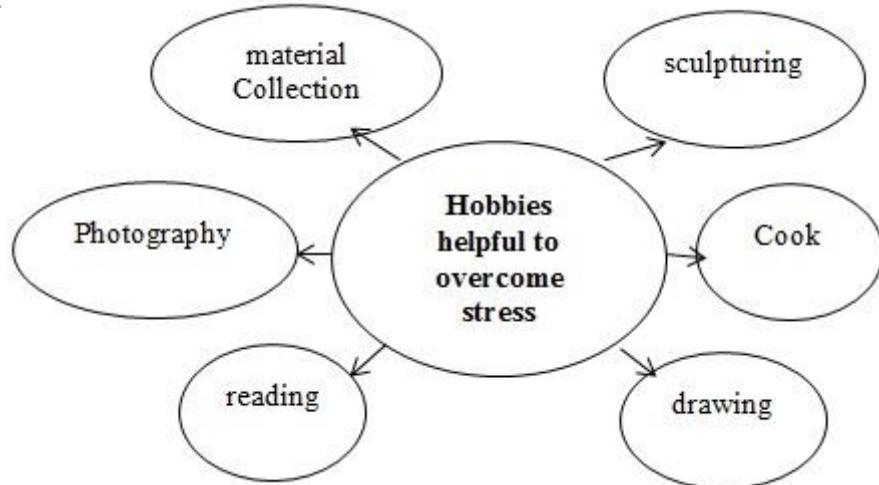
(4) Ans. 1. The human male and female reproductive cycles are controlled by the interaction of hormones from the hypothalamus and anterior pituitary with hormones from reproductive tissues and organs.
 2. In both sexes, the hypothalamus monitors and causes the release of hormones from the pituitary gland.
 3. When the reproductive hormone is required, the hypothalamus sends a gonadotropin-releasing hormone (GnRH) to the anterior pituitary. This causes the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary into the blood.
 4. In males, LH is known as ICSH as its function is different in them.
 5. Gonads of male and female also secrete hormones which are essential for reproductive function.
 6. These hormones are as follow: testosterone in males and estrogen and progesterone in females.
 7. Testosterone helps in masculinity and sperm production whereas female hormones are required for occurrence of changes in the female body for motherhood stage to take place.

(5) Ans. 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 as hydrocarbonoclastic bacteria (HCB). HCB decompose the hydrocarbons and bring about the reaction of carbon with oxygen. CO_2 and water is formed in this process.

(6) Ans. i) These are special types of cells present in the body of multicellular organisms. These cells give rise to all other types of cells present in the body of multicellular organisms.
 A new organism is formed from the zygote that is formed by the union of male and female gamete. At the earliest stage of development, the organism is in the form of a mass of cells. All the cells in that mass are almost alike. Those cells are called as stem cells.

- ii) Production of a replica of any cell or organ or entire organism is called cloning
- iii) Crops developed with desired characteristics by integrating foreign genes into their genome are called genetically modified crops. These crops include high-yielding varieties that are resistant to diseases, alkalinity, weeds, and other stresses like cold and drought.

(7) Ans.



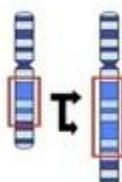
(8) Ans. Objectives of disasters management:-

1. Disposal of human life suffered by human being during the calamity and release of the people.
2. Supply of essential commodities of the people to reduce the effect of disaster.
3. The restore the human life in the region by creating reconciliation in disaster.
4. Rehabitant disaster victims.
5. Considering protective measure in disaster, such disaster will not reach in future and slop takes care to reduce their intensity.

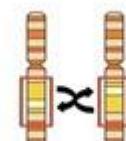
Q.4 Answer the following:(Any One)

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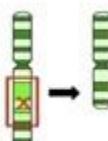
(1) Ans. **Duplication**



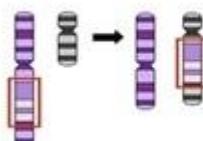
Inversion



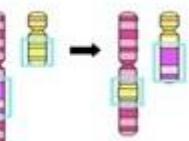
Deletion



Insertion



Translocation



(2) Ans. 1. Frog:-

Classification:

Kingdom: Animalia

Phylum: Chordata

Class: Amphibia

Characters:

1. This animal is strictly aquatic during larval life and perform only aquatic respiration whereas they can live in water as well as on land during adult life and can perform aquatic as well as aerial respiration.
2. They have two pairs of appendages. Digits are without claws.
3. Exoskeleton is absent. Skin is without any derivative and usually kept moist for respiration.
4. External ear is absent but tympanum is present.
5. Neck is absent. Eyes are prominent with eye lids.

2. Lizard:-

Classification:

Kingdom: Animalia

Phylum: Chordata

Class: Reptilia

Characters:

1. These are cold blooded (poikilotherms) animals.
2. They creep on the land as their body cannot be lifted up.
3. Their skin is dry and scaly.
4. Neck is present between head & trunk.
5. External ear is absent.
6. Digits are provided with claws.