

Time: 2 Hours

MARCH – 2023

[Max. Marks: 40]

Note: i) All questions are compulsory.

ii) Use of a calculator is not allowed.

iii) The numbers of the right of the questions indicates full marks.

iv) In case of MCQs (Q.1. (A)), only the first attempt will be evaluated and will be given credit.

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

Q.1. (A) Write the correct alternative.

[5]

- i. _____ present in human body is not a proof of evolution.
 - a. Human hand
 - b. Appendix
 - c. Ear muscles
 - d. Tail-bone
- ii. Type of sexual reproduction is _____.
 - a. Fragmentation
 - b. Regeneration
 - c. Gamete formation
 - d. Budding
- iii. The apex consumer is _____.
 - a. Eagle
 - b. Frog
 - c. Snake
 - d. Grasshopper
- iv. The Hydroelectric capacity of Koyna dam is _____.
 - a. 2400 MW
 - b. 1960 MW
 - c. 1900 MW
 - d. 1961 MW
- v. Animal with bilateral symmetry is _____.
 - a. Starfish
 - b. Human
 - c. Paramecium
 - d. Amoeba

(B) Answer the following questions as per the given instructions. [5]

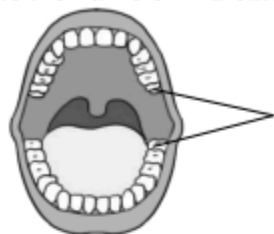
- i. State whether the following statement is true or false:
To take a selfie on the road is an invitation for an accident.
- ii. Write the correct co-relation:
Insulin : diabetes :: Interferon :

iii. To which class does bat belong?

iv. Match the correct pair:

Column A	Column B
(1) Forest Conservation Act	(a) 1986
	(b) 1980
	(c) 1970

v. Write the name of indicated part in diagram of Human jaw:

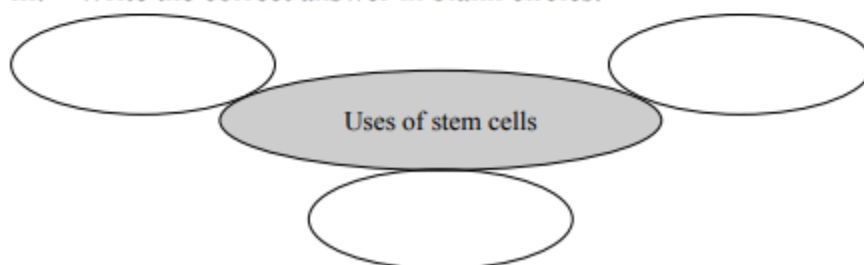


Q.2. (A) Give scientific reasons. (Any two) [4]

- Sometimes higher plants and animals too perform anaerobic respiration.
- It is absolutely necessary to control the fission reaction in nuclear power plant.
- Flower is structural unit of sexual reproduction in plants.

(B) Answer the following questions. (Any three) [6]

- Write a short note on Environmental Conservation.
- Distinguish between Chordates and Non-chordates.
- Write the correct answer in blank circles.



- Write down any two objectives of disaster management.
- What are the benefits of mixing ethanol with petrol and diesel?

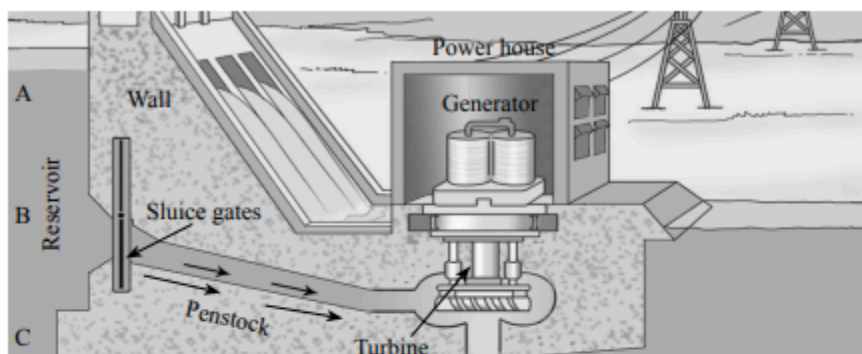
Q.3. Answer the following questions. (Any five) [15]

- Write Darwin's theory of natural selection.
- Complete the following chart:

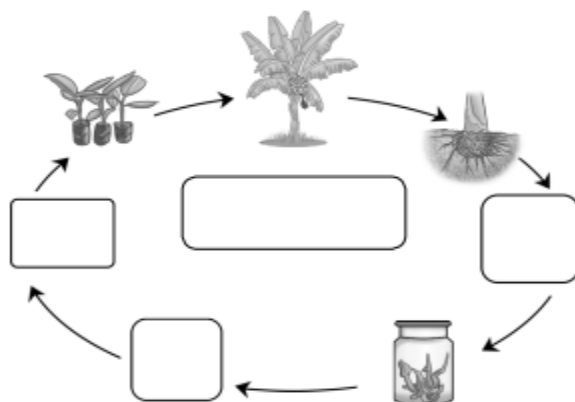
Sr. No.	Proteins	Name of the Organs
1.	Melanin, Keratin	
2.		Pancreas
3.	Haemoglobin, antibodies	

iii. Write the factors affecting environment.

iv. Answer the following questions from figure:



- With reference to point B, Potential energy of how much water reservoir in the dam will be converted into kinetic energy?
 - What will be the effect on electricity generation, if the channel taking water to turbine starts at point A?
 - What will be the effect on electricity generation, if the channel taking water to turbine starts at point C?
- Cockroach, Frog, Sparrow, Starfish, from these animals which can regenerate its broken body part?
 - Complete the diagram showing various processes in tissue culture.



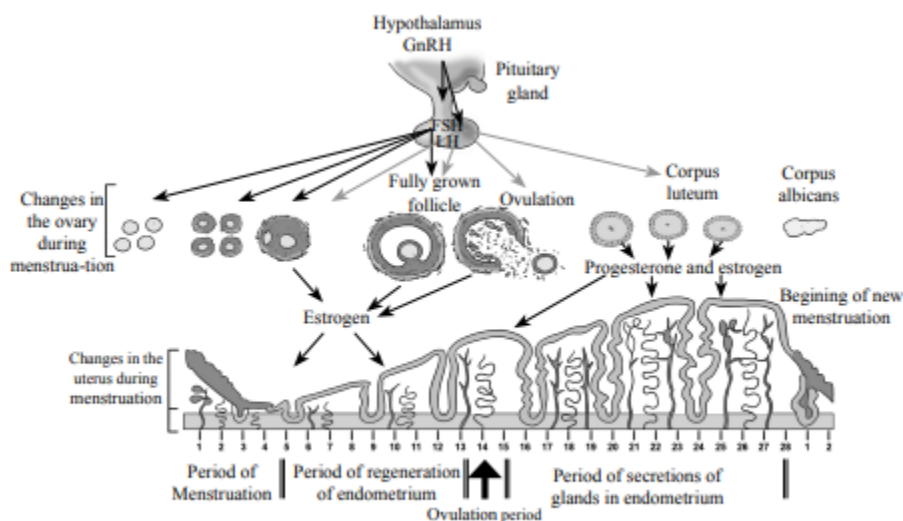
- vii. Which fuels are obtained from biomass?
- viii. Complete the following passage by using appropriate words given in brackets:

(Delhi, 12, 2005, army, National Disaster, rescue work, State Reserve Police, 2015)

National Disaster Response Force has been established as per the Disaster Management Act, _____. Divisions of this force are working in army. Overall, _____ divisions are working in the country. Its headquarter is in _____ and it is in action all over the country with the help of _____. In Maharashtra, _____ Response Force is in action through State Reserve Police Force. Personnel of this force have substantial contribution in _____ in disasters like cyclones, cliff-sliding, building collapse, etc.

Q.4. Answer any one of the following questions. [5]

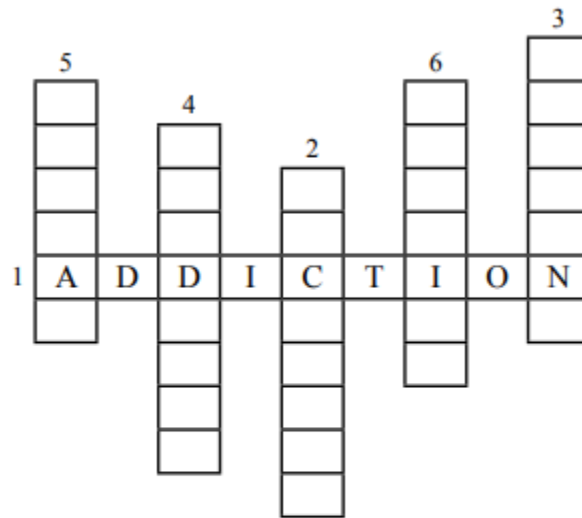
- i. Answer the following questions by observing the diagram of menstrual cycle:



- a. What is the period of menstruation?

- b. On which day does ovulation occur during menstrual cycle?
- c. In menstrual cycle which reproductive organs undergo changes?
- d. Which period is said to be period of regeneration of endometrium?
- e. Which period is said to be period of secretions of glands in endometrium?

ii. Solve the following crossword:



1. Continuous consumption of alcoholic and tobacco materials.
2. This app may cause the cyber crimes.
3. A remedy to resolve stress.
4. Requirement for stress free life.
5. Various factors affect _____ health.
6. Art of preparing food items.

Time: 2 Hours

MARCH – 2023

[Max. Marks: 40]

Q.1. (A) Write the correct alternative. [5]

- i. a. Human hand present in human body is not a proof of evolution. [1]
- ii. c. Type of sexual reproduction is Gamete formation. [1]
- iii. a. The apex consumer is Eagle. [1]
- iv. b. The Hydroelectric capacity of Koyna dam is 1960 MW. [1]
- v. b. Animal with bilateral symmetry is Human. [1]

(B) Answer the following questions. [5]

- i. State whether the following statement is true or false:
To take a selfie on the road is an invitation to an accident.

Ans. True [1]

- ii. Write the correct co-relation:
Insulin : diabetes :: Interferon : _____

Ans. Viral infection [1]

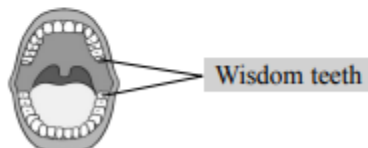
- iii. To which class does bat belong?

Ans. Bat belongs to Mammalia. [1]

- iv. Match the correct pair:

Ans. (1) Forest conservation Act - (b) 1980 [1]

- v. Write the name of indicated part in diagram of Human jaw.



Ans. Wisdom teeth [1]

Q.2. (A) Give scientific reasons. (Any two) [4]

- i. Sometimes higher plants and animals too perform anaerobic respiration.

Ans. 1. Anaerobic respiration is performed when there is deficiency of oxygen. [1]

- 2. Sometimes, higher plants and animals perform anaerobic respiration when there is depletion of oxygen level in the surrounding. [1]

3. Higher animals such as human beings also perform anaerobic respiration. For example – When we exercise, our muscle cells perform anaerobic respiration, as oxygen is used faster and hence it gets depleted in the muscles. [1]

[Note : Students can write any two points.]

ii. It is absolutely necessary to control the fission reaction in nuclear power plant.

Ans. 1. In nuclear power plants neutrons are bombarded on atom of Uranium 235. After each fission reaction of Uranium-235, three neutrons are released along with an energy of 200 MeV. [1]

2. These three neutrons, in turn, cause fission of three other Uranium-235 atoms, thus releasing more energy. If this chain reaction is allowed to continue, it may get out of control as energy is released very quickly which may result in a nuclear explosion. [1]

Hence, it is necessary to control the fission reaction in nuclear plants.

iii. Flower is structural unit of sexual reproduction in plants.

Ans. 1. A flower contains the essential whorls, androecium and gynaecium - the male and female reproductive parts, respectively. [1]

2. It produces the male gametes (pollen grains) and female gametes (ovules). Fertilization takes place by the union of male and female gametes. [1]

Hence, flower is a structural unit of sexual reproduction in plants.

(B) Answer the following questions. (Any three) [6]

i. Write a short note on Environmental Conservation.

Ans. 1. Environmental conservation is the protection of the environment for the future generations. [1/2]

2. We are facing many environmental problems due to various natural and artificial factors like population explosion, and industrialization, etc. [1/2]

3. Environmental conservation can be achieved in the following ways:

- a. Creating awareness through environmental education
 - b. Protecting the environment by enacting laws and acts
 - c. Planting trees
 - d. Preventing any harm to the plant species and abiotic factors [1/2]
4. All the developed, developing, and underdeveloped countries of the world have accepted the responsibility of environmental protection. Hence, protecting the environment should also be our social responsibility. [1/2]

ii. Distinguish between Chordates and Non-chordates.

Ans.

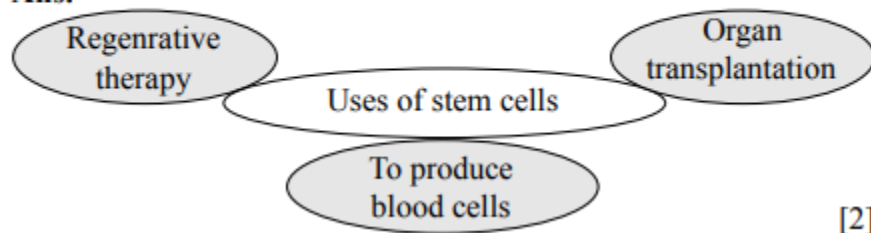
Non-chordates	Chordates
1. The body is not supported by notochord.	1. The body is supported by notochord.
2. Pharyngeal gill slits are absent.	2. Pharyngeal gill-slits or lungs are present for respiration.
3. The nerve cord is present on the ventral side and it is solid.	3. The nerve cord is present on dorsal side and it is hollow.
4. The heart if present, is on dorsal side.	4. The heart is present on ventral side of the body.

[Any 2 points : 1 mark each]

iii. Write the correct answer in blank circles.

(For incomplete chart refer Mar 2023 question paper)

Ans.



[2]

iv. Write down any two objectives of disaster management.

Ans. The objectives of disaster management are:

1. To reduce deaths during a disaster and to give relief to the people.
2. To supply essential commodities to the people affected by disaster and reduce their suffering.
3. To restore human life in the region to normalcy by creating reconciliation.

4. To rehabilitate them in an appropriate manner.
 5. To formulate plans and protective measures to avoid disasters and to reduce the intensity of the effects of disasters.
- [Note: Students can write any two points, 1 mark each]

v. What are the benefits of mixing ethanol with petrol and diesel?

- Ans.** 1. Ethanol is obtained by the fermentation of molasses. When ethanol is mixed with the petrol and diesel, it reduces the amount of fossil fuels to be used and thereby our reliance on them.
2. It reduces combustion emissions.
 3. It produces good amount of energy.
 4. It makes the whole process of production and usage more cost-effective and lesser harmful to the environment.
- [Note: Students can write any two points, 1 mark each]

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

i. Write Darwin's theory of natural selection.

- Ans.** 1. Darwin proposed the theory of natural selection which explains the survival of the fittest. According to him, all the organisms reproduce prolifically. All the organisms compete with each other in a life-threatening manner. [1]
2. In this competition, only those organisms sustain which show the modifications essential for winning the competition. Nature selects only those organisms which are fit to live and the rest perish. [1]
 3. These sustained and selected organisms reproduce and thereby give rise to new species with their own specific characters. [1]

ii. Complete the following chart:

(For incomplete chart refer Mar 2023 question paper)

Ans.

Sr. No.	Proteins	Name of the Organs
1.	Melanin, Keratin	Skin
2.	Insulin, trypsin	Pancreas
3.	Haemoglobin, antibodies	Blood

[1 mark for each blank]

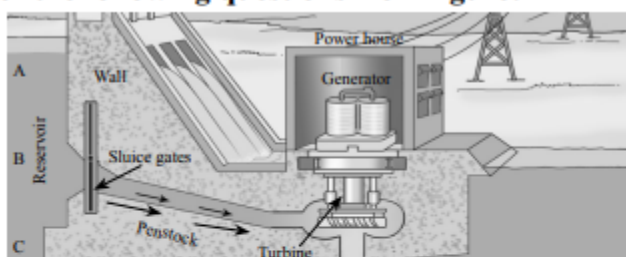
iii. Write the factors affecting environment.

[3]

Ans. Factors affecting the environment are:

1. Abiotic factors such as air, water, and soil
2. Biotic (living) factors such as animals, plants, and microorganisms
3. Natural factors such as earthquakes and forest fires
4. Man-made factors such as deforestation and industrial progress

iv. Answer the following questions from figure:



- a. With reference to point B, Potential energy of how much water reservoir in the dam will be converted into kinetic energy?**

Ans. When the sluice gate at point B is opened, the water from the reservoir will start flowing from point B to the turbine, the potential energy of the water from point B to the top of the water reservoir will be converted into kinetic energy. [1]

b. What will be the effect on electricity generation, if the channel taking water to turbine starts at point A?

Ans. If the channel taking water to the turbine starts at point A, then water will flow with a greater speed. This will result in more efficient rotation of turbine and more generation of electricity. [1]

c. What will be the effect on electricity generation, if the channel taking water to turbine starts at point C?

Ans. If the channel taking water to the turbine starts at point C, it will affect electricity generation adversely. C is on the lower height as compared to channel that carries water to the turbine.

[1]

v. Cockroach, Frog, Sparrow, Starfish, from these animals which can regenerate its broken body part?

Ans. i. Cockroach, frog, sparrow cannot regenerate its broken body part. [1]

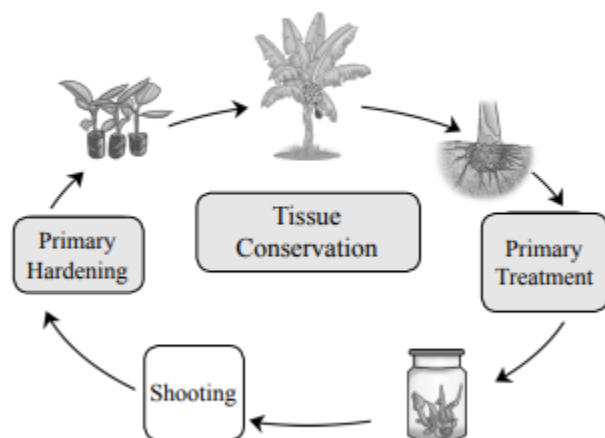
ii. Echinoderms show the power of regeneration. [1]

iii. Only Starfish can regenerate its broken body parts. [1]

vi. Complete the diagram showing various processes in tissue culture.

(For incomplete diagram refer Mar 2023 question paper)

Ans.



[1 mark for each correct label]

vii. Which fuels are obtained from biomass?

- Ans.** i. The biogas and biodiesel are mainly obtained. [1]
ii. The biogas is obtained from dung of cattles. The fermentation of the cattle dung give rise to methane. [1]
iii. From methane, methanol is obtained. Ethanol is obtained from molasses of sugarcane. [1]

viii Complete the following passage by using appropriate words given in brackets:

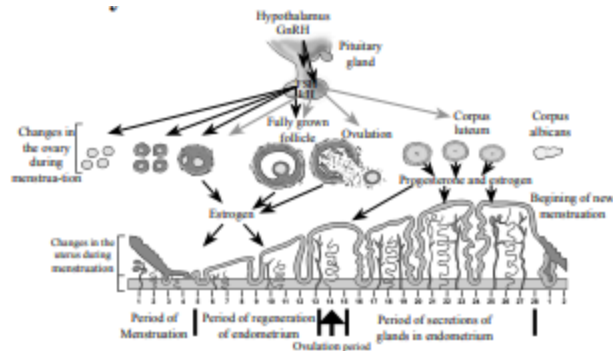
(Delhi, 12, 2005, army, National Disaster, rescue work, State Reserve Police, 2015)

(For incomplete paragraph refer Mar 2023 question paper)

Ans. National Disaster Response Force has been established as per the Disaster Management Act, 2005. Divisions of this force are working in army. Overall, 12 divisions are working in the country. Its headquarter is in Delhi and it is in action all over the country with the help of army. In Maharashtra, National Disaster Response Force is in action through State Reserve Police Force. Personnel of this force have substantial contribution in rescue work in disasters like cyclones, cliff-sliding, building collapse, etc. [1/2 mark for each blank]

Q.4. Answer any one of the following questions. [5]

- i. Answer the following questions by observing the diagram of menstrual cycle:



a. What is the period of menstruation?

Ans. Day 1 to 5 is the period of menstruation. [1]

b. On which day does ovulation occur during menstrual cycle?

Ans. On 14th to 15th day ovulation occurs. [1]

c. In menstrual cycle which reproductive organs undergo changes?

Ans. In menstrual cycle endometrium i.e. inner lining of uterus and ovary undergoes changes. [1]

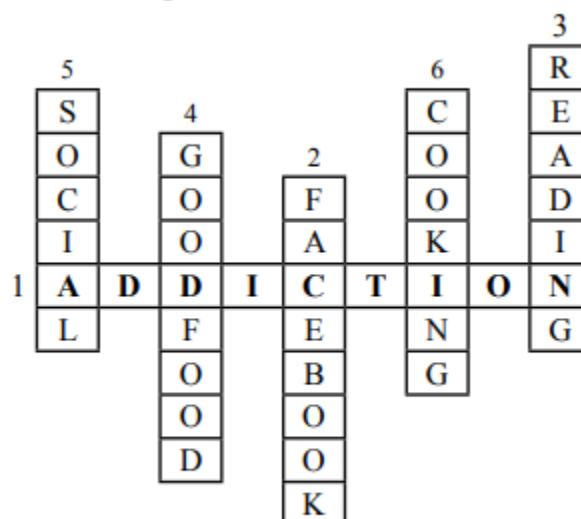
d. Which period is said to be period of regeneration of endometrium?

Ans. Day 5 to 14 is the period of regeneration of endometrium. [1]

e. Which period is said to be period of secretions of glands in endometrium?

Ans. Day 15 to 28 is said to be period of secretion of endometrium. [1]

ii. Solve the following crossword:



[1 mark for each blank]

★★★