



# BOARD ACTIVITY SHEET: March 2025

## Science and Technology Part - 2

Time: 2 Hours

Max. Marks: 40

- Note:**
- All questions are compulsory.
  - The numbers to the right of the questions indicate full marks.
  - In case of MCQs [Q. No. 1(A)] only the first attempt will be evaluated and will be given credit.
  - Scientifically and technically correct, labeled diagrams should be drawn wherever necessary.
  - Each new question should be started on a new page.

**Q.1. (A) Choose the correct option and write the correct alternative:** [5]

- A molecule of glucose is completely oxidised in aerobic respiration and molecules of  $H_2O$  and \_\_\_\_\_ are produced along with energy.  
(A)  $CO_2$  (B)  $O_2$  (C) NaOH (D)  $HNO_3$
- Vinegar contains \_\_\_\_\_ acid.  
(A) acetic (B) lactic (C) tartaric (D) hydrochloric
- Any nucleotide of the gene suddenly changes its position that causes a minor change which is nothing but the \_\_\_\_\_.  
(A) changes (B) mutation (C) disability (D) translocation
- In humans, sperm production occurs in the \_\_\_\_\_ organ.  
(A) vas deferens (B) ejaculatory duct  
(C) testes (D) urinogenital duct
- Solar photovoltaic cells convert the solar radiation energy directly into \_\_\_\_\_ energy.  
(A) Chemical (B) Solar (C) Mechanical (D) Electrical

**(B) Answer the following questions:** [5]

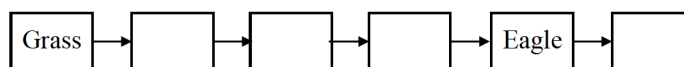
- Find the odd one out:  
Fragmentation, Regeneration, Budding, Fertilization.
- Write the correct co-relation:  
Diabetes: Insulin :: Cancer: \_\_\_\_\_
- State whether true or false:  
Study of fossils is an important aspect of the study of evolution.
- Give any *two* commercial uses of Biotechnology.
- Being a fish, I perform respiration with the help of lungs. Who am I?

**Q.2. (A) Give scientific reasons (any two):** [4]

- Sometimes, higher plants and animals too perform anaerobic respiration.
- It is not right to consider the mother responsible, for giving birth to a girl child.
- The energy generated from nuclear fuels is not environment friendly.

**(B) Answer the following questions (any three):** [6]

- Complete the following food chain:



- Distinguish between the following:  
Class Pisces and Class Reptiles





viii. Write down the reasons, effects and remedial measures taken for any *one* disaster seen or heard by you.

**Q.4. Answer the following questions (any one):**

**[5]**

- i. What is biodiversity? Write any *four* steps to conserve biodiversity.
- ii. What is stem cell? Write any *four* uses of stem cells.

Target Publications



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- Note:**
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  - In case of MCQs [Q. No. 1(A)] only the first attempt will be evaluated and will be given credit.
  - Scientifically and technically correct, labeled diagrams should be drawn wherever necessary.
  - Each new question should be started on the new page.

**Q.1. (A) Choose and write correct option number as answer:** [5]

- Regeneration occurs in \_\_\_\_\_.  
 (A) *Amoeba* (B) *Paramoecium*  
 (C) *Euglena* (D) *Planaria*
- Lactobacillus brevis* gives us the beverage \_\_\_\_\_.  
 (A) cocoa (B) coffee  
 (C) wine (D) cider
- A minor change occurs due to change in position of any nucleotide is termed as \_\_\_\_\_.  
 (A) transcription (B) translocation  
 (C) mutation (D) translation
- Atomic power plant in Maharashtra is \_\_\_\_\_.  
 (A) Chandrapur (B) Koyana  
 (C) Tarapur (D) Anjanwel
- Example of phylum Arthropoda is \_\_\_\_\_.  
 (A) scorpion (B) starfish  
 (C) earthworm (D) *Hydra*

**(B) Solve the following:** [5]

- Pick the odd man out :  
 duckbill platypus, pomfret, lungfish, *Peripatus*.
- Write co-relation :  
 Skin: Melanin :: Pancreas : \_\_\_\_\_
- State, true or false :  
 Production of various useful aquatic organisms with the help of water is called blue revolution.
- Write full form of WHO.
- Match the pair:

	'A'		'B'
(1)	Male	(a)	44 + XX
		(b)	44 + XY
		(c)	44 + YY

**Q.2. (A) Give scientific reasons (any two):** [4]

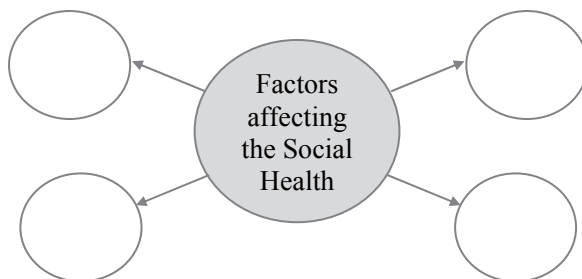
- Though tortoise lives on land as well as in water, it cannot be included in class-Amphibia.
- Hydroelectric energy, solar energy and wind energy are called renewable energies.
- We feel tired after exercise.

**(B) Answer any three of the following:** [6]

- Write *four* adverse effects of radiations on human body.



ii. Redraw and complete the given chart.

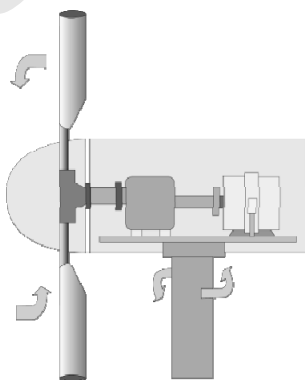


- iii. Write any *four* important facts which must be thought over while considering the scope of disaster.
- iv. Name *two* fuels obtained by microbial processes. Why is it necessary to increase the use of such fuels?
- v. What is DNA fingerprinting? Where is it mainly useful?

**Q.3. Answer any five:**

[15]

- i. (a) What are vitamins?  
 (b) Classify them according to their solubility.  
 (c) Give one example of each type as per above classification.
- ii. Explain the following terms:  
 (a) Stem cells  
 (b) Cloning  
 (c) Genetically modified crops.
- iii. Complete the given paragraph by filling the blank spaces from the options given in the bracket.  
 [oxygen, pyridines, mechanical, CO<sub>2</sub>, petroleum, fatal, polyester, *Nocardia*]  
 Spilling of \_\_\_\_\_ oil occurs in ocean due to various reasons. This oil may prove \_\_\_\_\_ and toxic to aquatic organisms. It is not easy to remove the oil layer from surface of water by \_\_\_\_\_ method.  
 However, bacteria like *Pseudomonas* spp. and *Alcanovorax borkumensis* have to ability to destroy the \_\_\_\_\_ 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 \_\_\_\_\_, \_\_\_\_\_ and water is formed in this process.
- iv. Observe the given picture and answer the questions.

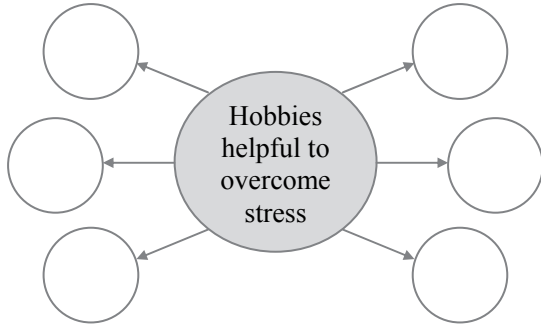


Questions:

- (a) Identify the given diagram.
- (b) What is the source of energy in this project?
- (c) Why this source is supposed to be ecofriendly?



v. Complete the following chart:



vi. Write names of any *six* materials which are to be in the first aid box.

- vii. (a) Define vestigial organs.
- (b) Write names of any *two* vestigial organs in the human body.
- (c) Write name of those animals in which these vestigial organs are functional.

viii. Read the statements and answer accordingly:

- (a) Calcareous spines are present on the body. Tube feet are used for locomotion and capturing prey also.
  - Identify the phylum and give *one* example.
- (b) I live in your small intestine. Pseudocoelom is present in my thread like body.
  - Identify the phylum and give *one* example.
- (c) My body is spindle shaped. I respire with the help of gills.
  - Identify my class and give *one* example.

**Q.4. Answer any one:**

[5]

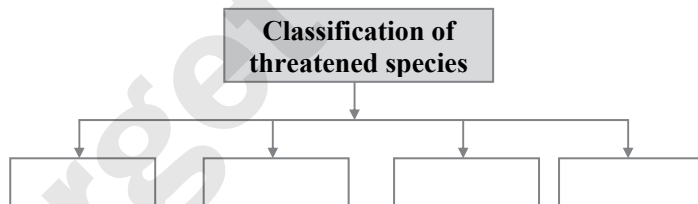
i. Answer the following questions based on human male reproductive system:

- (a) In which organ sperms are formed?
- (b) What is the length of a sperm?
- (c) What is the work of vas deferens?
- (d) By which type of cell division, sperms are formed?
- (e) Name any *two* unpaired organs of male reproductive system.

ii. Answer the following questions based on environmental conservation and biodiversity:

(a) Complete the flow chart:

2



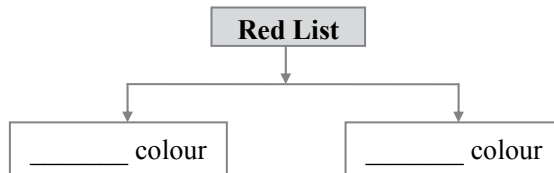
(b) How can biodiversity be conserved? Give any *four* points.

2

(c) Complete the flow chart:

1

Colour of the pages in Red List of Endangered Species





# BOARD ACTIVITY SHEET: JULY 2024

## Science and Technology Part - II

Time: 2 Hours

Max. Marks: 40

- Note:**
- i. All questions are compulsory.
  - ii. Use of 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 every MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For e.g. i. (A) ii. (B) iii. (C)
  - vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

**Q.1. (A) Choose correct option and write its number for the following questions: [5]**

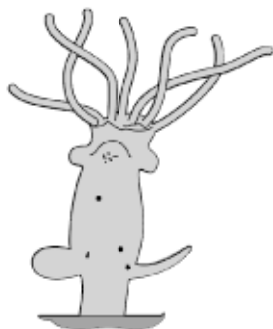
- i. Evolution means \_\_\_\_\_. 1  
 (A) Internal change (B) Gradual change  
 (C) External change (D) Quick change
- ii. One of the rare species is \_\_\_\_\_. 1  
 (A) Lesser florican (B) Red panda  
 (C) Tiger (D) Shekhru
- iii. The machine which converts the kinetic energy of wind to electrical energy is called \_\_\_\_\_. 1  
 (A) Solar cell (B) Thermal  
 (C) Generator (D) Wind turbine
- iv. Chemically, vinegar is \_\_\_\_\_. 1  
 (A) Acetic acid (B) Amino acid  
 (C) Hydrochloric acid (D) Gluconic acid
- v. We get \_\_\_\_\_ kcal energy per gram of proteins. 1  
 (A) 4 (B) 3 (C) 2 (D) 1

**(B) Solve the following questions: [5]**

- i. Find odd man out: 1  
 Starfish, Snail, Frog, Amoeba
- ii. Match the correct pairs: 1

Column 'A'		Column 'B'	
(1)	Biotic components	(a)	Soil
		(b)	Plant
		(c)	Sunlight

- iii. Write the correlation: 1  
 White revolution: Dairy :: Blue revolution: \_\_\_\_\_
- iv. Observe the diagram and identify the phylum: 1





- v. State, whether given statement is right or wrong:  
Peer group influence is stronger in case of adolescents.

1

Q.2. (A) Give scientific reasons (any two):

- i. Fibers are one of the important nutrients.
- ii. Though tortoise lives on land as well as in water, it cannot be included in class-Amphibia.
- iii. Hydroelectric energy, solar energy and wind energy are called renewable energies.

(B) Answer the following questions (any three):

[6]

- i. Write down four benefits of Biotechnology.
- ii. Distinguish between Sexual reproduction and Asexual reproduction.
- iii. Observe the following diagrams and complete table:

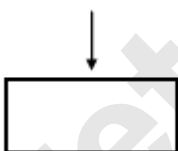


(A)

Disaster



Precaution

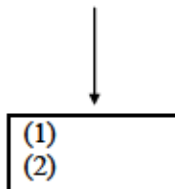


(B)

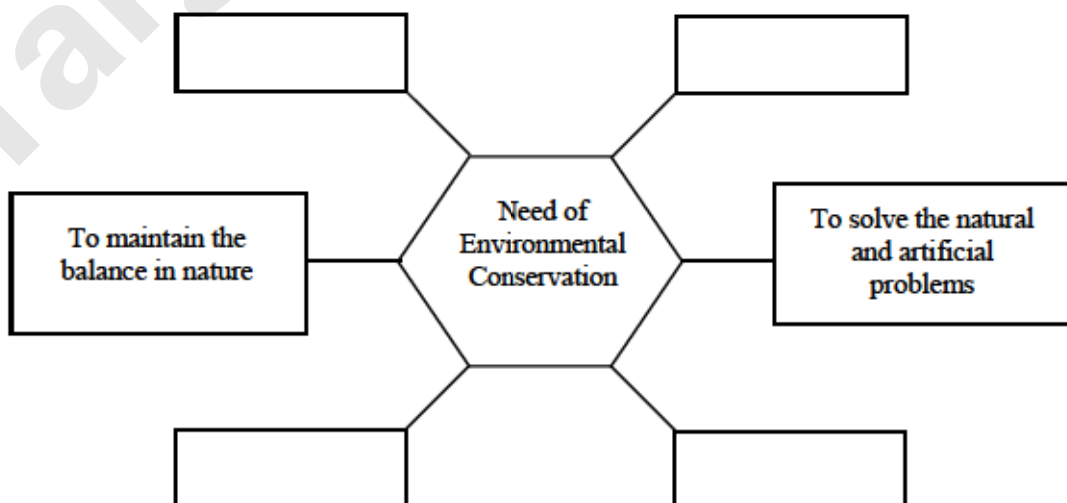
Snake Bite



Primary Stage



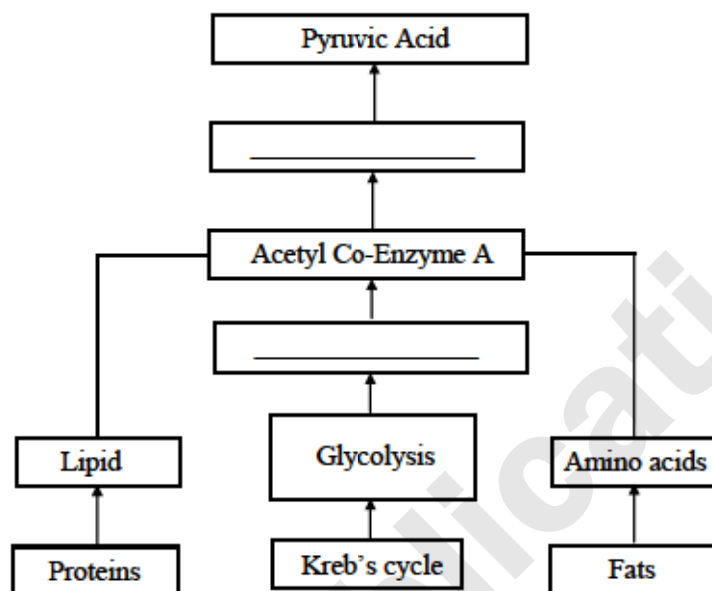
- iv. Write down any two features of Industrial Microbiology.
- v. Complete the following flow chart:





Q.3. Solve the following questions (any *five*):

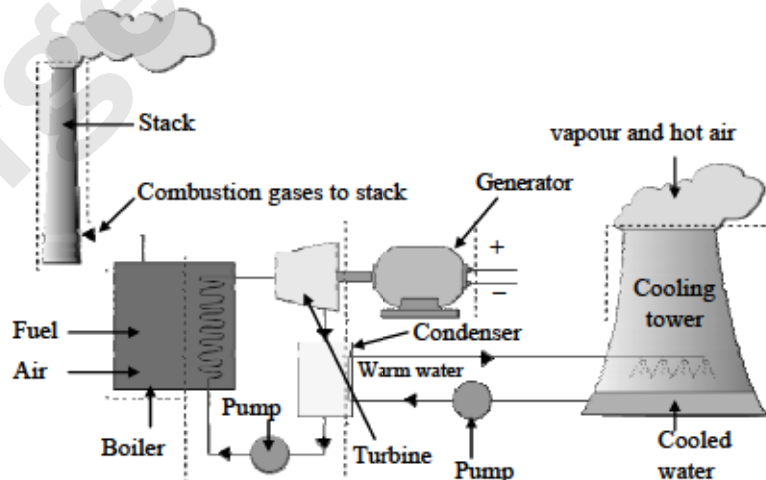
- Write any *three* characteristic features of class "Aves".
- What are vestigial organs?
  - Write *two* names of some vestigial organs in human body.
  - Write the names of those animals in whom same organs are used? Give *two* examples.
- How energy is formed from oxidation of carbohydrates, fats and proteins?  
Correct the diagram given below:



- What is the meaning of the following symbols? Write your role accordingly.



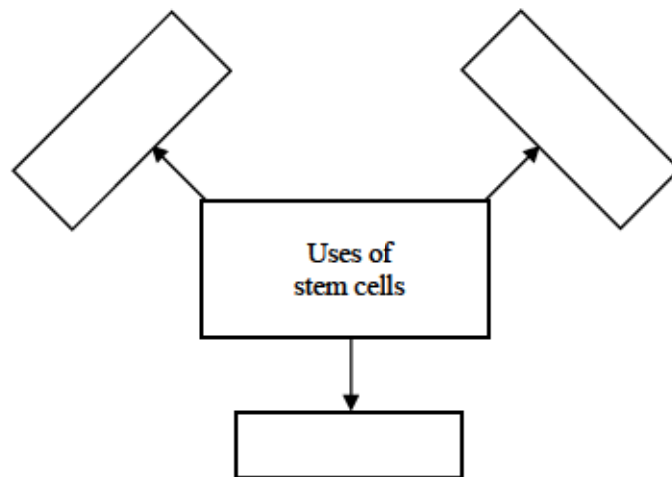
- Observe the diagram and answer the following questions:



- Which type of energy is created in the above diagram?
  - Which type of fuel is used in power plant?
  - State *one* problem created in such type of power plant.
- Explain the importance of Biopesticides in organic farming.



vii. Complete the following conceptual picture and write its uses in treatment of various diseases:



viii. Which are *three* objectives of disaster management?

Q.4. Solve the following questions (any *one*):

[5]

- |     |     |  |   |
|-----|-----|--|---|
| i.  | (a) | Draw well labelled diagram of female reproductive system.          | 2 |
|     | (b) | Which type of hormones are secreted in female reproductive system? | 1 |
|     | (c) | When does menopause period stop?                                   | 1 |
|     | (d) | How many ovaries are there in female foetus at the time of birth?  | 1 |
| ii. |     | Give <i>two</i> examples of each:                                  |   |
|     | (a) | Hobbies to reduce stress.  | 1 |
|     | (b) | Diseases endangering the social health.                            | 1 |
|     | (c) | Physical problems arising due to excessive use of mobile phones.   | 1 |
|     | (d) | Activities under the jurisdiction of cyber crime laws.             | 1 |
|     | (e) | Write problems due to alcoholism.                                  | 1 |



# BOARD ACTIVITY SHEET: MARCH 2023

## Science and Technology Part - 2

Time: 2 Hours

Max. Marks: 40

- Note:**
- i. All questions are compulsory.
  - ii. Use of 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 every MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
For Eg.: (i) (A), (ii) (B), (iii) (C)
  - vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

- Q.1. (A) Write the correct alternative:** [5]
- i. Vestigial organ \_\_\_\_\_ present in human body is proof of evolution.  
(A) Human hand (B) Appendix  
(C) Ear muscles (D) Tail-bone

**Note:** \* Above question has three possible answers, [Option (B), (C) and (D)].

**Modified Question:**

- i. Vestigial organ \_\_\_\_\_ present in human body is proof of evolution.  
(A) Human hand (B) Appendix  
(C) Ear (D) Tail
- ii. Type of sexual reproduction is \_\_\_\_\_.  
(A) Fragmentation (B) Regeneration  
(C) Gamete formation (D) Budding

**Note:** \* Gamete formation is a process involved in sexual reproduction. It is not a type of sexual reproduction.

**Modified Question:**

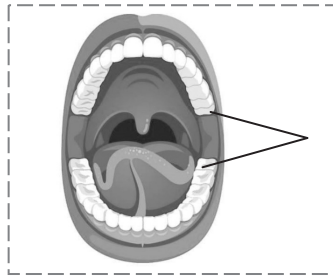
- ii. \_\_\_\_\_ is not a type of asexual reproduction.  
(A) Fragmentation (B) Regeneration  
(C) Gamete formation (D) Budding
- iii. The apex consumer is \_\_\_\_\_.  
(A) Eagle (B) Frog  
(C) Snake (D) Grasshopper
- iv. The Hydroelectric capacity of Koyna dam is \_\_\_\_\_.  
(A) 2400 MW (B) 1960 MW  
(C) 1900 MW (D) 1961 MW
- v. Animal with bilateral symmetry is \_\_\_\_\_.  
(A) Star fish (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 selfie on road is the invitation for 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

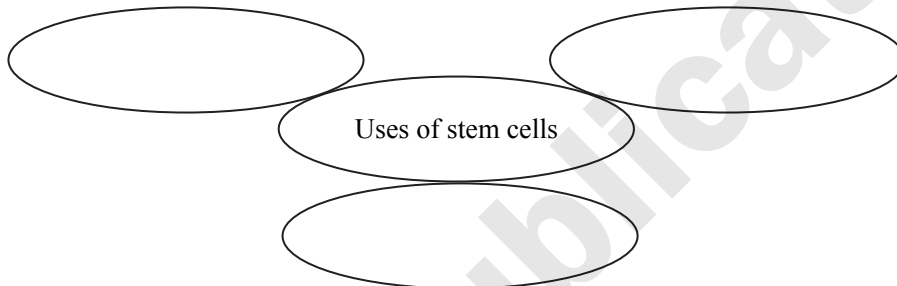


- v. Write the name of indicated part in diagram:  
Human jaw



- Q.2. (A) Give scientific reasons (any two):** [4]  
 i. Sometimes higher plants and animals too perform anaerobic respiration.  
 ii. It is absolutely necessary to control the fission reaction in nuclear power plant.  
 iii. Flower is structural unit of sexual reproduction in plants.

- (B) Answer the following questions (any three):** [6]  
 i. Write a short note on Environmental Conservation.  
 ii. Distinguish between Chordates and Non-chordates.  
 iii. Write the correct answer in blank circles.

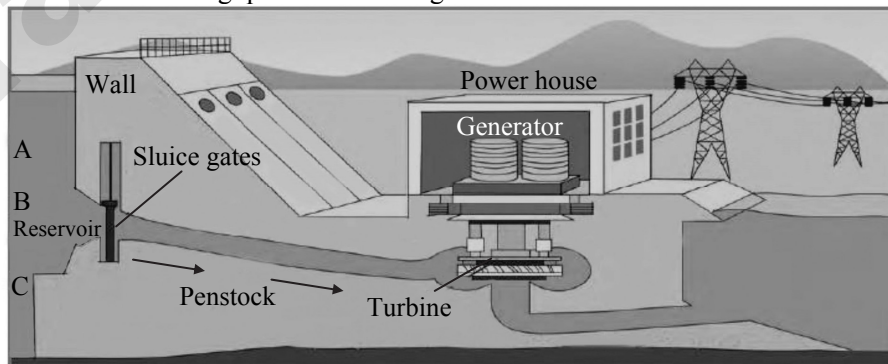


- iv. Write down any two objectives of disaster management.  
 v. What are the benefits of mixing ethanol with petrol and diesel?

- Q.3. Answer the following questions (any five):** [15]  
 i. Darwin's theory of natural selection.  
 ii. Complete the following chart:

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

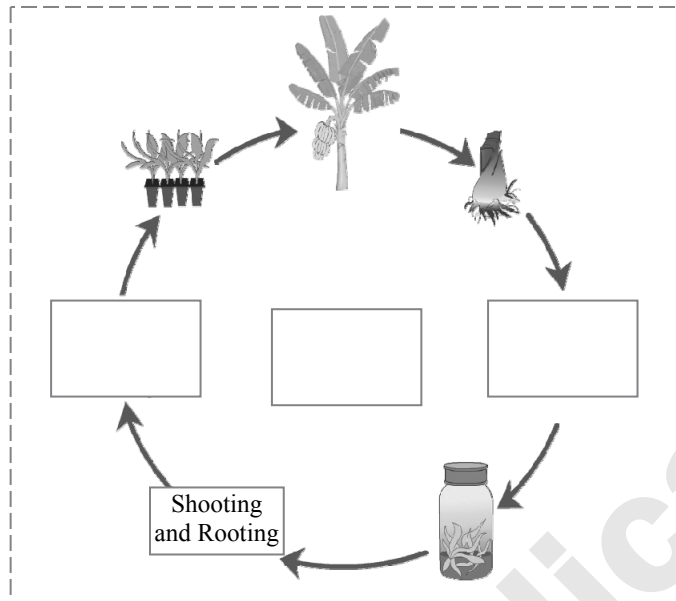
- iii. Write the factors affecting environment.  
 iv. Answer the following questions from figure:



- (a) With reference to point B, potential energy of how much water reservoir in the dam will be converted into kinetic energy?



- (b) What will be the effect on electricity generation, if the channel taking water to turbine starts at point A?
- (c) What will be the effect on electricity generation, if the channel taking water to turbine starts at point C?
- v. Cockroach, Frog, Sparrow, Star fish, from these animals which can regenerate its broken body part?
- vi. Complete the diagram showing various processes in tissue culture.



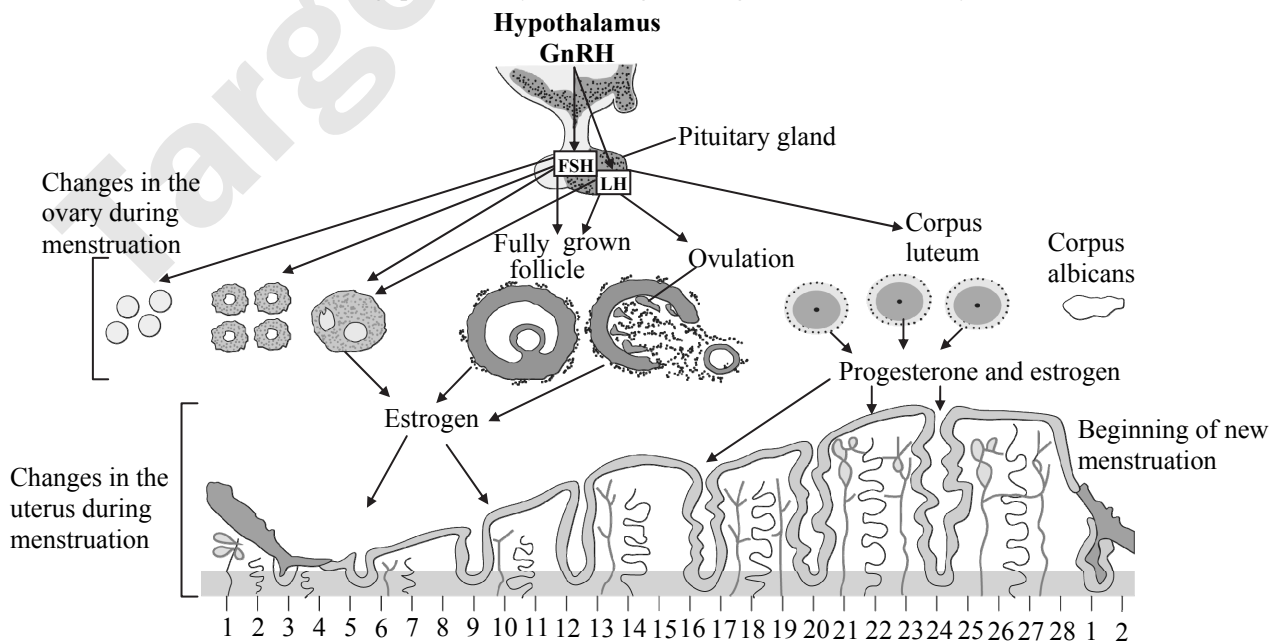
- vii. Which fuels are obtained from biomass?
- viii. Complete the following passage by using appropriate words given in brackets:  
(Delhi, 12, 2005, army, National Disaster, rescue work, State Reserve Police, 2015)

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:







# BOARD ACTIVITY SHEET: July 2023

## Science and Technology Part - 2

Time: 2 Hours

Max Marks: 40

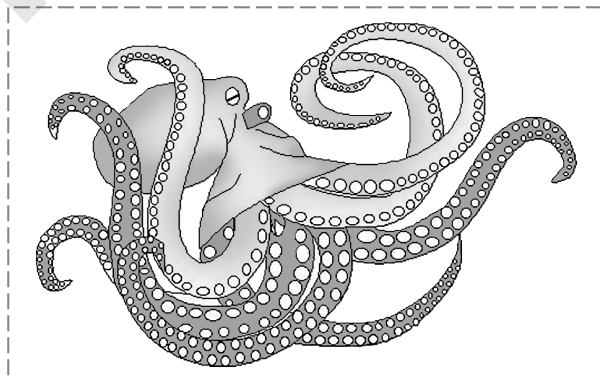
- Note:**
- All questions are compulsory.
  - The numbers to the right of the questions indicate full marks.
  - Answer to every main question must start on a new page.
  - In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
  - For every MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.  
For Eg.: (i) (A), (ii) (B), (iii) (C) or (iv) (D)
  - Scientifically correct and labelled diagrams should be drawn wherever necessary.
  - Each answer must have correct question number and sub-question number.

**Q.1. (A) Choose the correct alternative and write correct option number as answer: [5]**

- Genetic disorder like sickle cell anemia may be caused due to \_\_\_\_\_.  
(A) mutation (B) translation  
(C) translocation (D) transcription
- Protein like interleukin produced by biotechnology is used against \_\_\_\_\_ disease.  
(A) anemia (B) cancer  
(C) diabetes (D) haemophilia
- We get \_\_\_\_\_ of energy from one gram of lipid.  
(A) 9 cal (B) 4 kcal  
(C) 4 cal (D) 9 kcal
- The \_\_\_\_\_ bacteria are useful for cleaning the hydrocarbons and oil pollutants from soil and water.  
(A) Lactobacilli (B) Acidobacillus  
(C) Pseudomonas (D) Streptococcus
- Human males have \_\_\_\_\_ numbers of chromosomes.  
(A) 44 + XX (B) 44 + XY  
(C) 22 + XY (D) 22 + XX

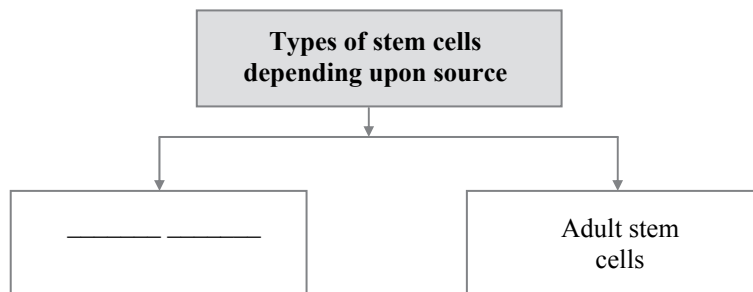
**(B) Answer the following: [5]**

- Pick the odd man out:  
 $\beta$ -carotene, lycopenes, xylitol, lutein.
- Identify the phylum of the given animal:





iii. Complete the given flow chart



iv. State, if True or False:  
Communication media like mobile phone, television, internet should be used often.

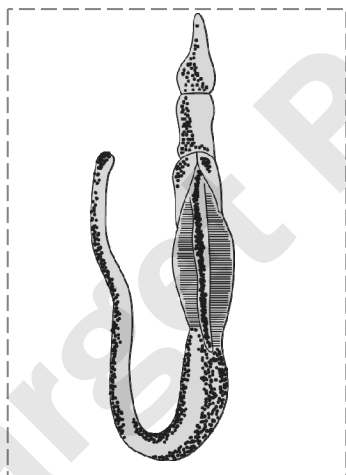
v. Write the co-relation:  
Ovary : Estrogen :: Testes: .....

**Q.2. (A) Give scientific reasons (any two):** [4]

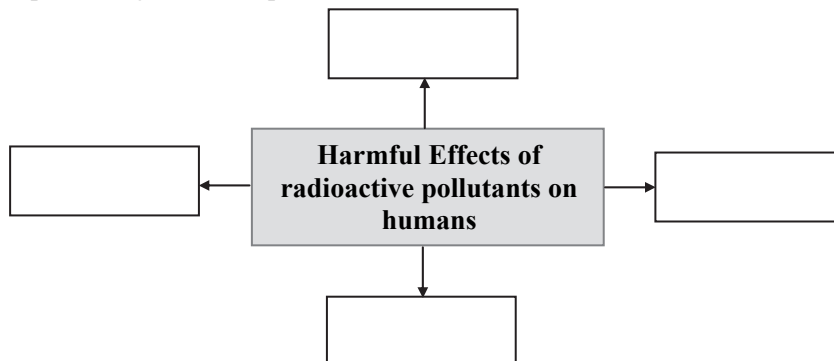
- i. Duck billed platypus is a connecting link.
- ii. Biofuel is important among the renewable sources of energy.
- iii. Humans have a crucial role in maintaining environmental balance.

**(B) Answer the following (any three):** [6]

- i. Draw a neat and labelled diagram of mitochondria and tri-carboxylic acid cycle.
- ii. Write any two objections that were raised against Darwin's Theory of Natural Selection.
- iii. Observe the given animal and answer the following questions:
  - (a) Identify the given animal and its phylum.
  - (b) Write any two characteristics of that phylum.



- iv. Write any two objectives of disaster management.
- v. Complete the given conceptual chart:

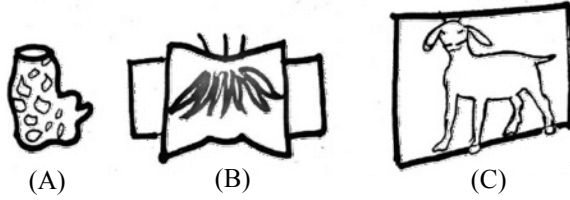




**Q.3. Answer the following questions (any five):**

[15]

i. Observe the given figures and answer the following:



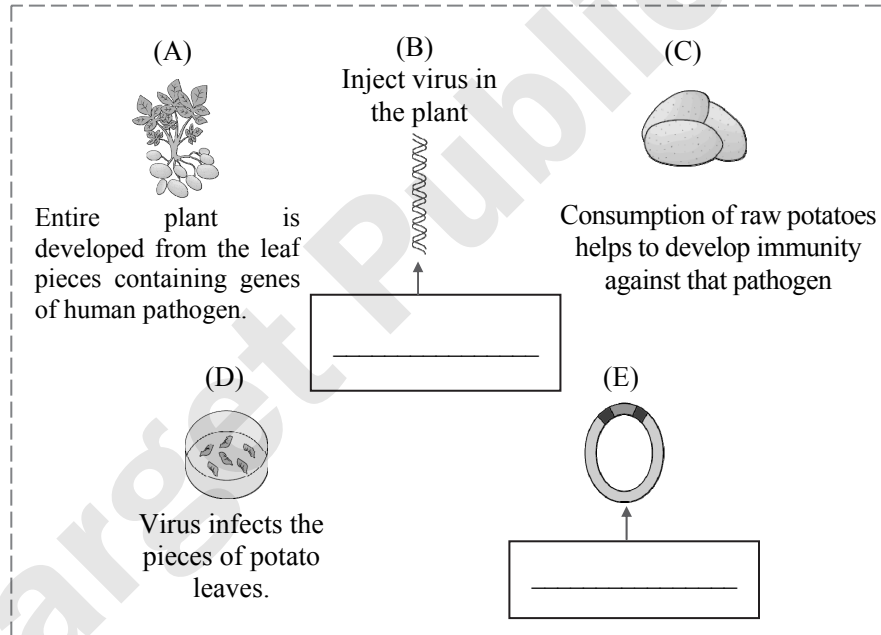
Identify the types of body symmetry and give *one* example of each apart from the given figure.

ii. Write a short note on — The types of Biodiversity.

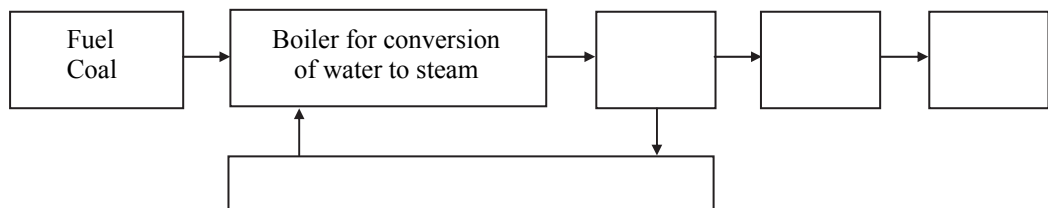
iii. Complete the given chart:

Sr. No.	Body Constituents	Proteins/Amino Acids
1.	Blood	.....
2.	.....	Ossein
3.	Skin	.....
4.	.....	Insulin
5.	Muscle	.....
6.	.....	Various proteins of cell membrane

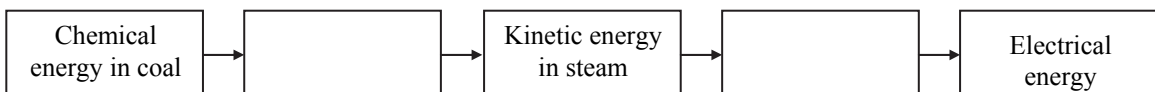
iv. Rearrange and write proper alphabetical sequence only and complete the given blanks:



v. (a) Complete the given flow chart for electrical energy production based on thermal power plant.



(b) Complete the flow chart for energy transformation in thermal power plant.



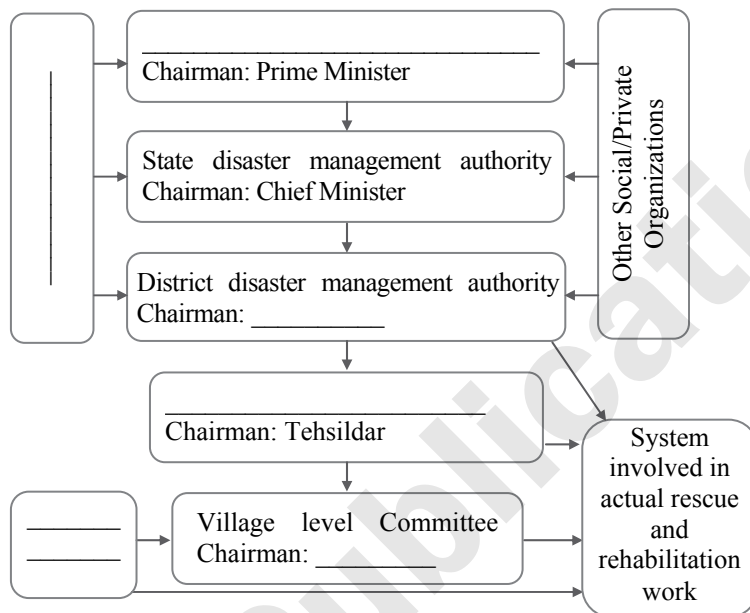


vi. Complete the paragraph with the help of words given in the bracket:

(nutritive, ethanol, salt, actinomycetes, fermentation, carbon dioxide, lactic acid, *Saccharomyces cerevisiae*)

Different types of breads are produced from flour of cereals. Dough is formed by mixing of baker's yeast - ....., water, ..... and other necessary materials with flour. Due to ..... of carbohydrates by yeast, sugar is converted into ..... and ..... . Dough rises up due to CO<sub>2</sub> and the bread becomes spongy. Bread and other products produced with the help of yeast become .....

vii. Fill in the blanks in the structure of Disaster Management Authority.



viii. (a) Write any *two* advantages and *two* problems associated with hydroelectric power plant.  
 (b) Is hydroelectric power generation environment friendly? What is your opinion?

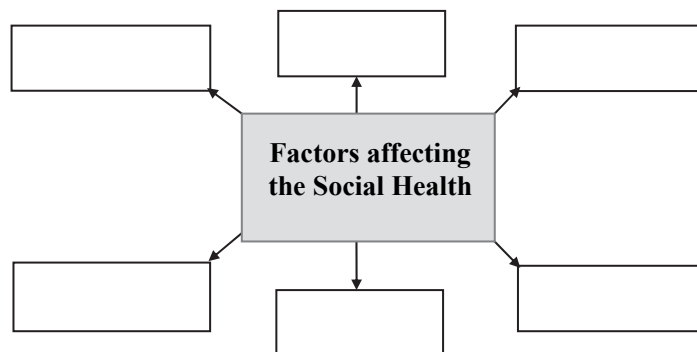
**Q.4. Answer the following (any one):**

[5]

- i. Answer the following questions in complete sentence based on female reproductive system:
  - (a) How many immature oocytes are present at the time of birth in the ovary of female foetus?
  - (b) What is ovulation?
  - (c) What is menopause?
  - (d) Draw scientifically correct diagram of female reproductive system.
  - (e) Label the following parts:
    - (i) Ovary
    - (ii) Uterus

ii. (a) Complete the flow chart:

(3)





- (b) Observe the following pictures and answer the following: (2)
- (i) Whether the incidence shown in the picture is rational or irrational? Justify your answer.



- (ii) Identify the picture. What is the punishment given to the person shown in the picture?



Target Publications



# BOARD QUESTION PAPER: MARCH 2022

## Science and Technology Part - 2

Time: 2 Hours

Max Marks: 40

- Note:**
- All questions are compulsory.
  - Use of a calculator is not allowed.
  - The numbers to the right of the questions indicate full marks.
  - In case of MCQs (Q. No. 1(A)) only the first attempt will be evaluated and will be given credit.
  - For each MCQ, the correct alternative (A), (B), (C), (D) with subquestion number is to be written as an answer.  
For Eg: (i) (A), (ii) (B), (iii) (C)
  - Scientifically correct, labelled diagrams should be drawn wherever necessary.

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

- Bones contain \_\_\_\_\_ amino acids.  
(A) Melanin (B) Haemoglobin  
(C) Ossein (D) Insulin
- Giant squirrel is an example of \_\_\_\_\_ threatened species.  
(A) Endangered (B) Rare  
(C) Vulnerable (D) Indeterminate
- Human being belongs to \_\_\_\_\_ class.  
(A) Mammalia (B) Amphibia  
(C) Reptilia (D) Cyclostomata
- Organs like \_\_\_\_\_ can be donated after death.  
(A) Skin (B) Heart  
(C) Lungs (D) Bones
- Volcano is a \_\_\_\_\_ disaster.  
(A) Social (B) Political  
(C) Biological (D) Geological

**(B) Answer the following:** [5]

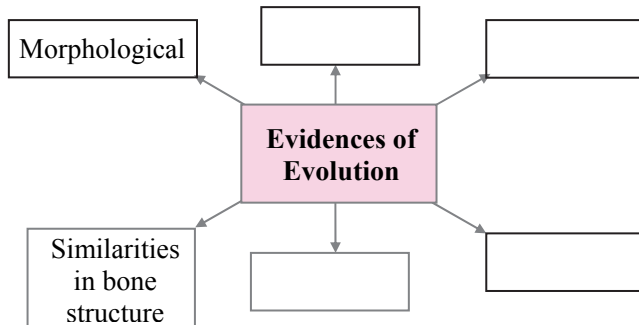
- Find the odd one out:  
Earthquake, Flooding, Tsunami, War
- State true or false:  
Oxidation of proteins is carried out in aerobic respiration.
- Complete the correlation:  
Western ghat : Asiatic lion : : Sunderban sanctuary : \_\_\_\_\_
- Which type of fuel is used in thermal power plant?
- Identify the picture and name it.





- Q.2. (A) Give scientific reasons (any two):** [4]
- i. Cell division is one of the important properties of cell and organisms.
  - ii. Cockroach belongs to phylum Arthropoda.
  - iii. Power generation plant based on natural gas is eco-friendly.

- (B) Answer the following (any three):** [6]
- i. Complete the following diagram:



- ii. What do we learn from the story of Jadav Molai Payeng?
- iii. Distinguish between sexual reproduction and asexual reproduction. (two points)
- iv. Define genetically modified crops and give any two examples.
- v. What are vitamins? Write two types of vitamins.

- Q.3. Answer the following (any five):** [15]
- i. Explain the meanings of the following symbols:

(1)



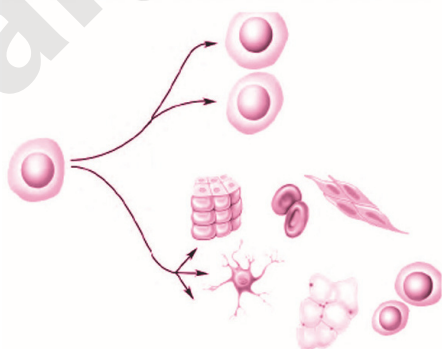
(2)



(3)



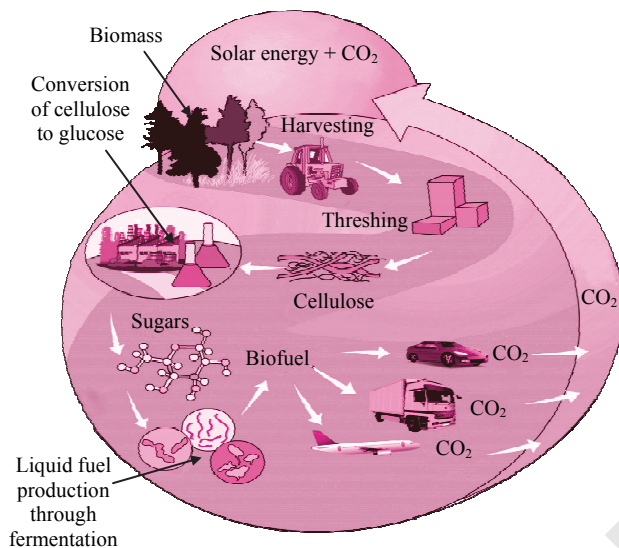
- ii. Write any three characteristics of class reptilia.
- iii.
  - (1) Which substance is used to produce cheese?
  - (2) Which enzyme was used earlier for cheese production?
  - (3) Which enzyme is used to produce vegetarian cheese?
- iv.
  - (1) Which process is shown in the given diagram?
  - (2) What is the importance of this process?
  - (3) Which organs can be transplanted by this process?



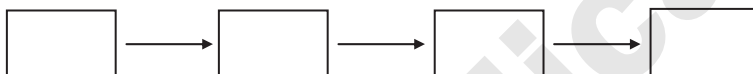
- v. What is meant by disaster? Write any two examples of each natural and man-made disaster.
- vi. Write the objections raised against Darwin's theory of natural selection.



vii.



- (1) Which process is shown in the above given picture?
  - (2) Give *two* examples for liquid fuels and solid fuels obtained by this process.
- vi. (1) Complete the stages in electric generator using wind energy.



- (2) Write limitations in an electric generator using wind energy.

**Q.4. Answer any *one* of the following:**

[5]

- i.
  - a. Sketch and label the essential and accessory whorls of flower.
  - b. What is pollination?
  - c. Give any *two* examples of agents of pollination.
- ii. What will you do?
  - (1) You are spending more time on internet.
  - (2) Child of your neighbour is addicted to tobacco chewing.
  - (3) Your sister has become incommunicative.
  - (4) You have to use free space around your home for good purpose.
  - (5) Your brother studying in XII has developed the stress.



# BOARD ACTIVITY SHEET: July 2022

## Science and Technology Part - 2

Time: 2 Hours

Total Marks: 40

- Note:**
- All questions are compulsory.
  - Use of a calculator is not allowed.
  - The numbers to the right of the questions indicate full marks.
  - In case of MCQs [Q. No. 1(A)], only the first attempt will be evaluated and will be given credit.
  - For each MCQ, the correct alternative (A), (B), (C) or (D) with subquestion number is to be written as an answer.  
**For E.g.:** (i) (A), (ii) (B), (iii) (C).
  - Scientifically correct, labelled diagrams should be drawn whenever necessary.

**Q.1. (A) Choose the correct option and write its number for the following questions: [5]**

- Glycolysis and \_\_\_\_\_ are two steps of anaerobic respiration.  
(a) Kreb's cycle (b) Electron transfer chain reaction  
(c) Fermentation (d) Reduction
- \_\_\_\_\_ is used in thermal power plant.  
(a) Coal (b) Uranium (c) Natural gas (d) Water
- Chemically, vinegar is 4% \_\_\_\_\_.  
(a) Gluconic acid (b) Amino acid  
(c) Citric acid (d) Acetic acid
- Government of India has encouraged the \_\_\_\_\_ for improving the production by launching NKM-16.  
(a) Apiculture (b) Vermiculture  
(c) Pisciculture (d) Sericulture
- Alcohol consumption mainly affects \_\_\_\_\_ system.  
(a) Respiratory (b) Nervous  
(c) Digestive (d) Circulatory

**(B) Answer the following questions: [5]**

- Write the scientific name of human being.
- Find the odd man out:  
Actin, Ossein, Myosin, Aldosterone
- State whether True or False:  
The power available from the solar cell is AC.
- I have calcareous spines and I move with tube feet, which phylum do I belong to?
- Write any one example of natural disasters.

**Q. 2. (A) Give scientific reasons: (any two) [4]**

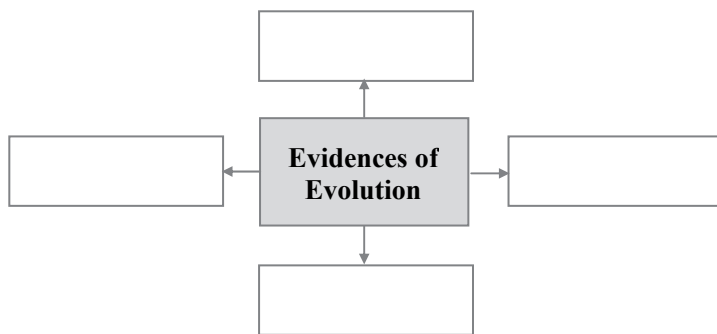
- Water is an essential nutrient.
- Tobacco chewing is injurious to health.
- It is absolutely necessary to control the fission reaction in nuclear power plants.



[6]

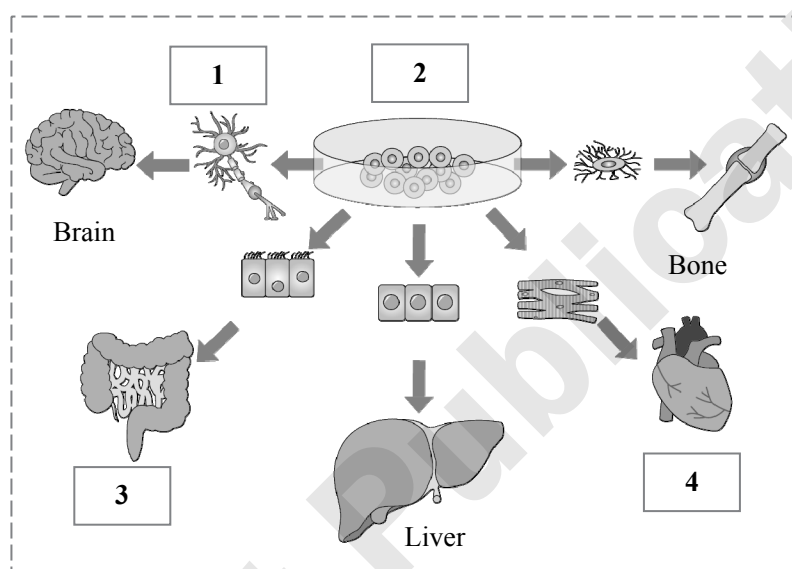
(B) Answer the following questions: (any three)

i. Complete the following chart:



ii. What is environment? Write two types of environment.

iii. Observe the given diagram and write proper names in the blocks.



iv. Which precautions should be followed to maintain the reproductive health?

v. Distinguish between butterfly and bat with the help of two distinguishing characteristics.

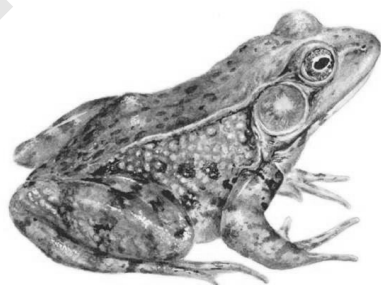
Q. 3. Answer the following questions: (any five)

[15]

i. Redraw the table taking into account the relation between entries in the three columns.

Column I	Column II	Column III
Coal	Kinetic energy	Nuclear power plant
Uranium	Thermal energy	Wind electricity plant
Wind	Nuclear energy	Thermal plant

ii.

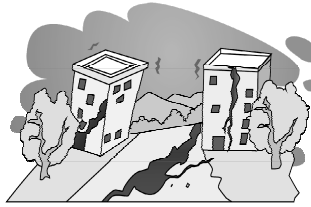


(a) Identify the class of the animals shown in the figure.

(b) Write two characteristics of that class.



- iii. Which precautions are necessary for proper decomposition of domestic waste?
- iv. Write the importance of medicinal plants.
- v. What will you do? Why?
  - (a) You are spending more time on Internet/mobile games, phone, etc.
  - (b) You have to use free space around your house for good purpose.
  - (c) Your brother studying in Std. XII has developed stress.
- vi. The following are some picture of disasters. Which precautions would you take during these disasters?



(a)



(b)



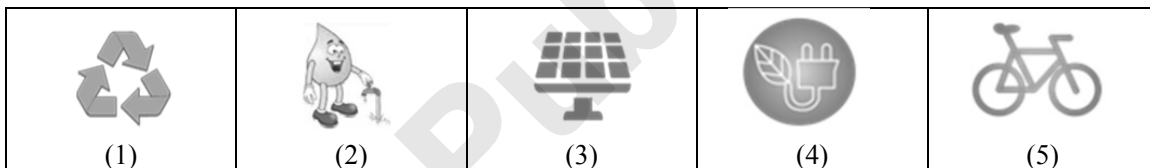
(c)

- vii. Explain the concept of connecting links with two examples.
- viii.
  - (1) Write two sources of lipids.
  - (2) How much energy is obtained from lipids?
  - (3) What is produced after digestion of lipids?

**Q. 4. Answer the following questions: (any one)**

[5]

- i. Draw a neat and labelled diagram of female reproductive system and give the functions of:
  - (a) Oviduct    (b) Ovary    (c) Uterus
- ii. Explain the meanings of the following symbols:





# BOARD QUESTION PAPER: MARCH 2020

## Science & Technology Part - 2

Time: 2 Hours

Total Marks: 40

**Note:**

- i. All questions are compulsory.
- ii. Use of 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 every MCQ, the correct alternative (A), (B), (C) or (D) with sub-question number is to be written as an answer.  
For e.g. (i) (A), (ii) (B), (iii) (C).
- vi. Scientifically correct, labelled diagrams should be drawn wherever necessary.

**Q.1. (A) Choose the correct option and write its number for the following questions: [5]**

- i. Transfer of information from molecule of DNA to mRNA is called \_\_\_\_\_ process.  
(A) Transcription (B) Translation (C) Translocation (D) Mutation
- 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
- iii. Incomplete combustion of fuels leads to formation of \_\_\_\_\_.  
(A) Carbon monoxide (B) Carbon dioxide  
(C) Chlorofluorocarbon (D) Hydrogen sulphide
- iv. The spindle fibres start appearing from \_\_\_\_\_ stage of karyokinesis.  
(A) Prophase (B) Metaphase (C) Anaphase (D) Telophase
- 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

**Q.1. (B) Solve the following questions: [5]**

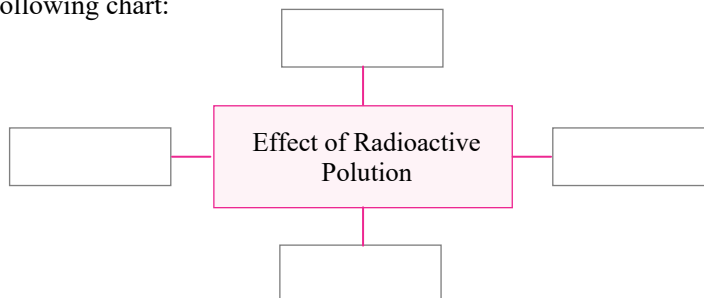
- i. Find odd one out:  
Drying, Salting, Cooking, Soaking with sugar.
- ii. Write the correct co-relation:  
Annelida: Earthworm :: Platyhelminthes: \_\_\_\_\_
- iii. State whether True/False:  
Tobacco containing substances cannot cause cancer of mouth and lungs.
- iv. Write function of testes.
- v. I am connecting link between Reptilia and mammals. What is my name?

**Q.2. (A) Give Scientific Reasons. (Any two) [4]**

- 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.

**Q.2. (B) Solve the following questions. (Any three) [6]**

- i. Complete the following chart:

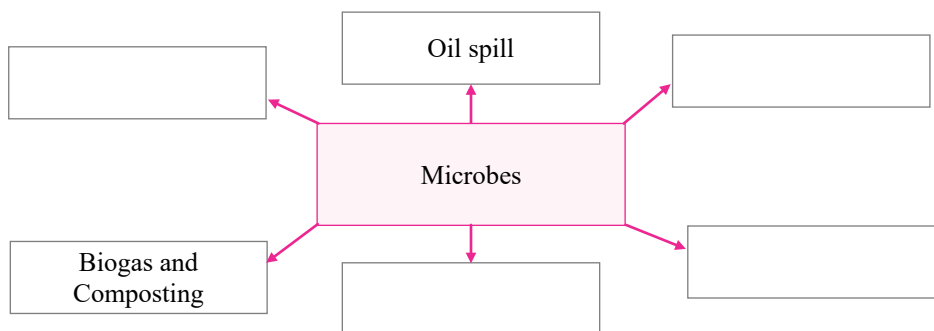




- ii. Distinguish between Aves and Mammalia.
- iii. By observing given picture, write any two effects of this disaster:



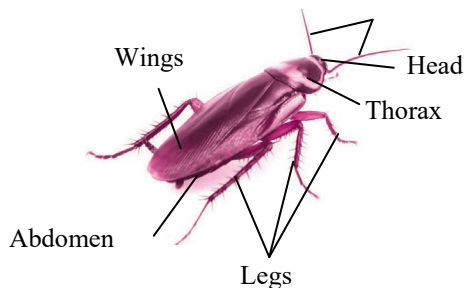
- iv. Explain four ways to minimize stress.
- v. Complete the following conceptual picture:



**Q.3. Solve the following questions (Any five):**

[15]

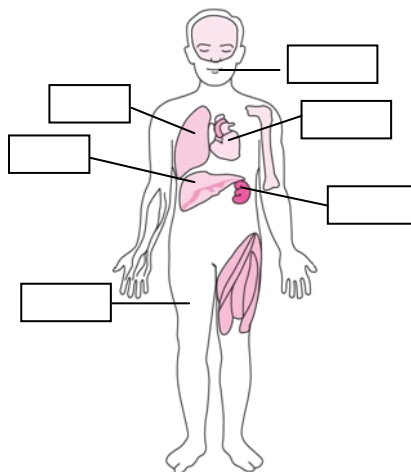
- i. Explain the importance of Anatomical evidences with examples.
- ii. What will you do? Why?
  - a. Child of your neighbor is addicted to tobacco chewing.
  - b. Your friend has developed the hobby of snapping selfies.
  - c. Your sister has become incommunicative. She prefers to remain alone.
- iii. Which precautions are necessary for proper decomposition of domestic waste?
- iv. Observe the following diagram. Write the answers of the following questions.



- a. To which phylum does the animal included in the diagram belong?
- b. What is the exoskeleton made up?
- c. What is the symmetry?
- v. Explain the following concepts in short:
  - a. Surrogacy
  - b. In Vitro Fertilization (IVF)
  - c. Sperm Bank



vi. Label the body organization of human in the following figure:



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

viii. Complete the paragraph using proper words:

(Mechanical, *Rhizobium*, Aquatic, Toxic, CO<sub>2</sub>, 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 as hydrocarbonoclastic bacteria (HCB). HCB decompose the \_\_\_\_\_ and bring about the reaction of carbon with oxygen. \_\_\_\_\_ and water is formed in this process.

**Q.4. Solve the following questions (Any one):**

**[5]**

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

- a. Prevention                      b. Control                      c. Production
- d. Awareness                      e. Conservation

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.



# BOARD QUESTION PAPER: JULY 2020

## Science and Technology Part - 2

Time: 2 Hours

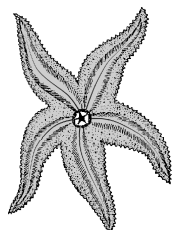
Max. Marks: 40

- Note:**
- All questions must be attempted.
  - Wherever necessary scientifically correct diagrams and correct labelling should be drawn.
  - Start every main question on a new page.
  - Numbers to the right indicate full marks.
  - For Question No.1(A) MCQ marks will be given only for the first attempt.
  - The answer to every MCQ should be written as shown:  
Example – Q. No. 1(A) (i) (b).

- Q.1. (A) Choose the correct alternative from the given options:** [5]
- Water reservoir possesses \_\_\_\_\_ energy.  
(A) Nuclear (B) Thermal  
(C) Kinetic (D) Potential
  - In mitotic division, nuclear membrane completely disappear in \_\_\_\_\_ phase.  
(A) Telophase (B) Prophase  
(C) Metaphase (D) Anaphase
  - Genetic changes occur due to \_\_\_\_\_ pollution.  
(A) Radioactive (B) Air (C) Water (D) Soil
  - In human, sperm production occurs in the \_\_\_\_\_ organ.  
(A) Seminal vesicle (B) Testes  
(C) Prostate gland (D) Cowper's gland
  - Which sanctuary of Assam is under threat due to dams and indiscriminate use of water?  
(A) Tadoba (B) Kaziranga (C) Manas (D) Sundarban

**(B) Answer the following sub-questions as per given instruction:** [5]

i.



Name the locomotory organ of animal shown in the above figure.

- Find the correct co-relation:  
Spirogyra: Fragmentation :: Planaria : \_\_\_\_\_.
- Write whether the following statement is True or False:  
DNA fingerprinting is mainly useful in Forensic Sciences.
- Write the molecular formula:  
4% acetic acid (Vinegar).
- Which molecules are necessary for the formation of plasma membrane?

- Q.2. (A) Give scientific reasons (any two):** [4]
- While performing the exercise, we feel tired.
  - Hydroelectric energy, solar energy and wind energy are called renewable energies.
  - Microbial enzymes are used instead of chemical catalysts in chemical industry.

**(B) Answer the following questions (any three):** [6]

- Distinguish between Aerobic respiration and Anaerobic respiration (any two points).
- Write a short note on Sacred groves.
- Explain the term:  
Modern technology of reproduction IVF.

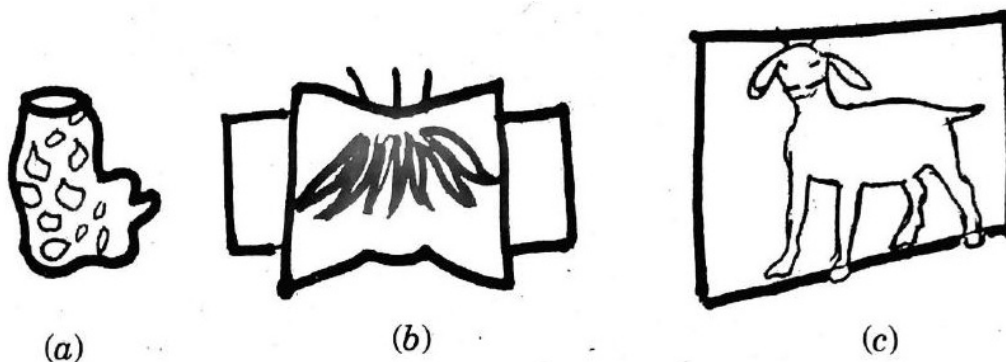


- iv. How is Balanoglossus connecting link between chordates and non-chordates?
- v. Explain Darwin's theory of natural selection.

**Q.3. Answer any five questions from the following.**

[15]

i.

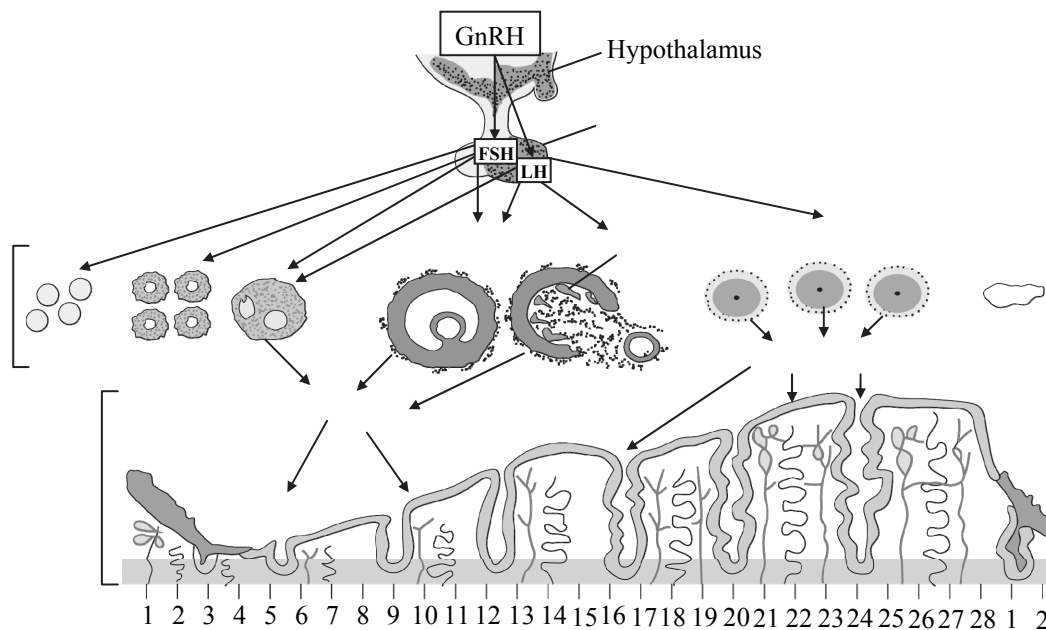


Identify and explain the above different types of symmetry.

- ii. Write any six factors affecting the social health.
- iii. Complete the following chart:

	Substance obtained by microbial processing	Roles
(a)	Citric acid	_____
(b)	Ascorbic acid	_____
(c)	Beta carotene	_____
(d)	Glycolipids	_____
(e)	Vanillin	_____
(f)	Xylitol	_____

- iv. Explain the three different levels of Biodiversity.
- v. Observe the following figure and answer the questions:



- a. Identify the process in above figure and after how many days it will repeat again?
- b. Write the names of hormones involved in this process.
- vi. What are the advantage of hydroelectric power generation?
- vii.
  - a. Define vestigial organs.
  - b. Write name of any two vestigial organs in human body.
  - c. Explain how one human vestigial organ is functional in another animal.

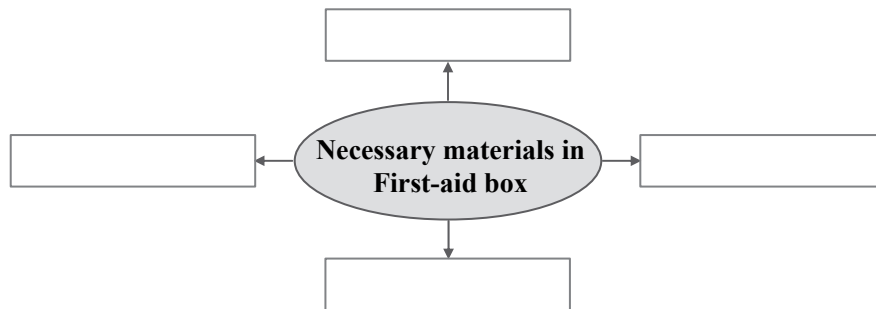


- viii. What will you do in the following cases and why?
- a. Child of your neighbour is addicted to tobacco chewing.
  - b. You have to use free space around your home for good purpose.
  - c. Your friend has developed the hobby of snapping selfies.

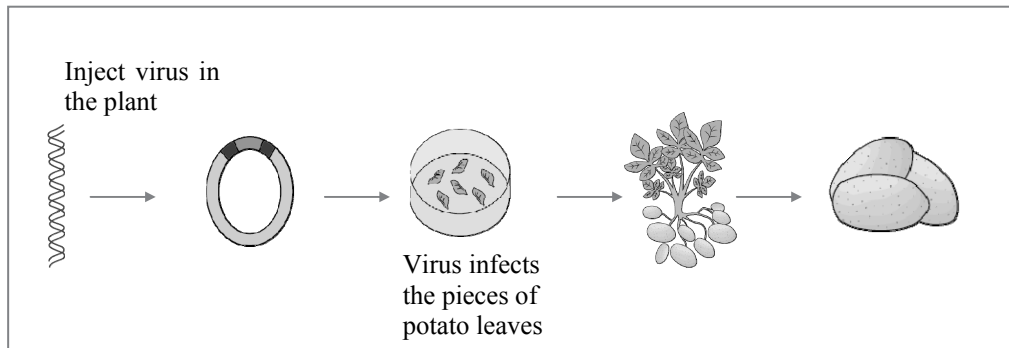
**Q.4. Solve any one of the following:**

[5]

- i. a. What is meant by disaster management? [1]
- b. Classify the following activities into pre-disaster management and post-disaster management: [2]
- (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.
- c. Complete the diagram: [2]



- ii. Observe the figure and answer the following questions:



- a. Identify the process given in the above figure. [1]
- b. Write the importance of above process. [2]
- c. Write any *two* benefits of Biotechnology. [2]



# BOARD QUESTION PAPER: MARCH 2019

## SCIENCE AND TECHNOLOGY PART - 2

**Time: 2 Hours**

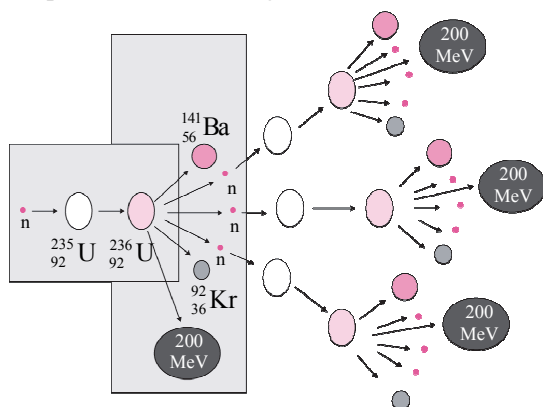
**Total Marks: 40**

**Note:**

- i. All questions are compulsory.
- ii. Draw scientifically correct labelled diagrams wherever necessary.
- iii. Start writing each main question on new page.
- iv. Figures to the right indicate full marks.
- v. For each MCQ (i.e. Q. No. 1-B) evaluation would be done for first attempt only.
- vi. For each MCQ correct answer must be written along with its alphabet.

**Eg.:** (i) (A)....., (ii) (B) ....., (iii) (C) .....

1. **(A) Solve the following questions.** **[5]**  
 i. Identify the process shown in figure and name it. **(1)**



- ii. Pranav and Pritee are twins in your class. They belong to \_\_\_\_\_ twins type. **(1)**
- iii. There is a oil layer on the water surface of river in your area. What will you do? **(1)**
- iv. Fill in the boxes with the help of the given clue: **(1)**  
 Continuous consumption of alcohol and tobacco material \_\_\_\_\_

A							O
---	--	--	--	--	--	--	---

- v. Find out the correlation: **(1)**  
 White revolution : Increase in dairy production :: Green revolution : \_\_\_\_\_.

**(B) Choose the correct alternative and rewrite the statements:** **[5]**

- i. Somatic and stem cells undergo \_\_\_\_\_ type of division.
 

(A) meiosis	(B) mitosis
(C) budding	(D) cloning
- ii. Which of the following is a man-made disaster?
 

(A) Earthquake	(B) Flood
(C) Meteoric	(D) Leakage of toxic gases
- iii. In a food chain autotrophic plants are present at the \_\_\_\_\_ level.
 

(A) Tertiary nutrition	(B) Secondary nutrition
(C) Producer	(D) Apex
- iv. \_\_\_\_\_ is a cold blooded animal.
 

(A) Bat	(B) Snake
(C) Rabbit	(D) Elephant
- v. \_\_\_\_\_ is a connecting link between annelida and arthropoda.
 

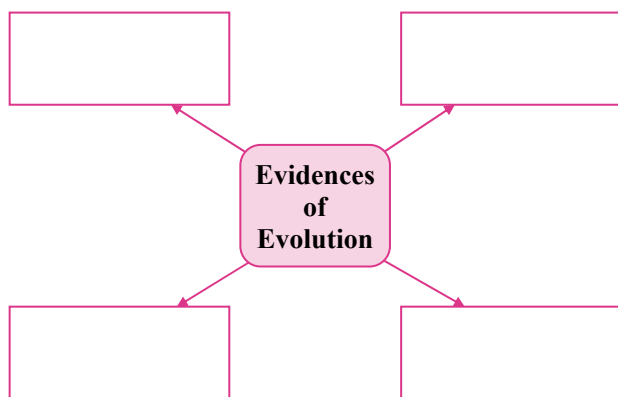
(A) Duck-billed platypus	(B) Peripatus
(C) Lungfish	(D) Whale



2. Solve any five of the following questions:

[10]

i. Complete the following chart:



ii. Draw a neat diagram of the structure of chromosome and label the parts:

- a. Centromere
- b. p-arm.

iii. What are the advantages of hydroelectric power generation?

iv. State any four benefits of animal classification.

v. State any four objectives of disaster management.

vi. Give scientific reason:

Microbial enzymes are used instead of chemical catalyst in a chemical industry.

vii. Read the following extract and answer the questions that follow:

A liberal view behind the concept of organ and body donation is that after death our body should be useful to other needful persons so that their miserable life would become comfortable. Awareness about these concepts is increasing in our country and people are voluntarily donating their bodies.

Life of many people can be saved by organ and body donation. Blinds can regain their vision. Life of many people can be rendered comfortable by donation of organs like liver, kidneys, heart, heart valves, skin etc. Similarly, body can be made available for research in medical studies. Many government and social organizations are working towards increasing the awareness about body donation.

a. What is the liberal view behind the organ and body donation?

b. Name any four organs that can be donated.

3. Solve the following questions (any five):

[15]

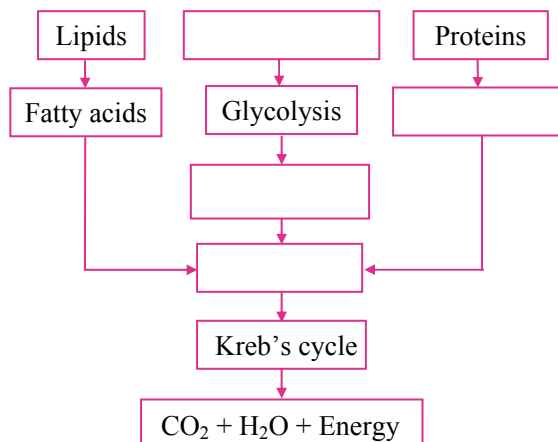
i. Answer the following questions:

a. What do you mean by central dogma?

b. What is transcription?

c. What is meant by triplet codon?

ii. Complete the following chart and state which process of energy production it represents:





- iii. a. Playing games on mobile while eating is right or wrong. Justify.



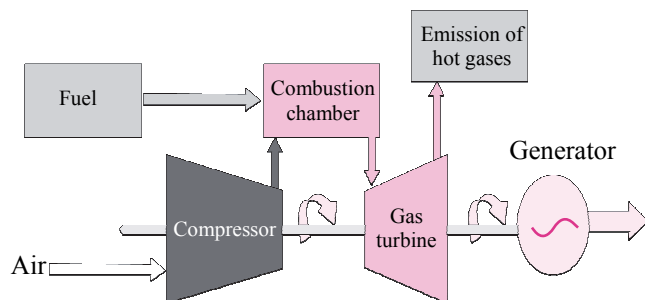
- b. What do you conclude from the following picture?



- c. Observe the following picture and state what can be the outcome?



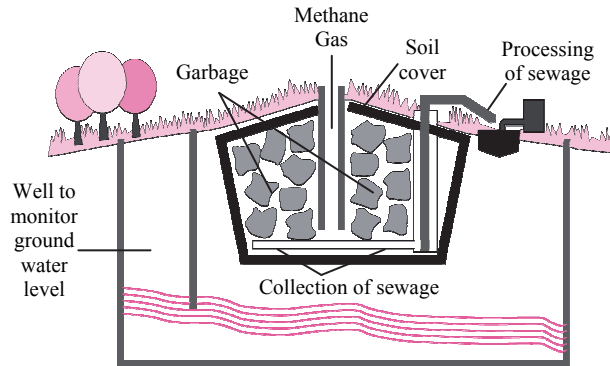
- iv. Observe the diagram and answer the questions:



- a. Which energy is generated from the power plant?
- b. State its source.
- c. Which is more ecofriendly — Power generation from coal or Power generation from natural gas? Why?



- v. Identify my class/phylum and give one example of it:
  - a. I have mammary glands and exoskeleton in the form of hair.
  - b. We form the highest number of animals on the planet. We have bilateral symmetry and our exoskeleton is in the form of chitin.
  - c. I live in your small intestine, my body is long and thread like and pseudocoelomate.
- vi. Observe the following figure and answer the questions:



- a. Identify the process shown in the figure.
- b. Explain the process in short.
- vii. a. What is biotechnology?
- b. Explain any two commercial applications of it.

4. Solve any one of the following questions:

[5]

- i. a. Identify the following symbols and state their significance:

(2)

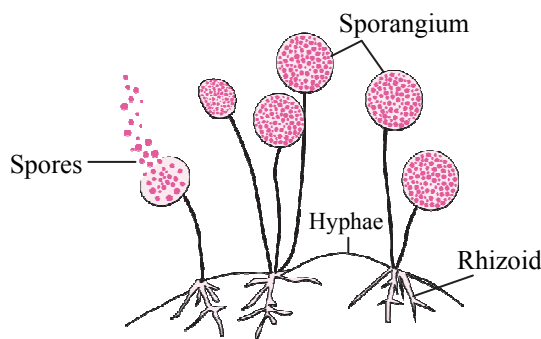


(1)



(2)

- b. How can biodiversity be conserved? (3)
- ii. Answer the following questions:
  - a. "Gender of child is determined by the male partner of couple." Draw a diagram explaining the above statement. (2)
  - b. Prepare a slogan for campaign against female foeticide. (1)
  - c. In the following figure, explain how new fungal colonies of mucor are formed: (1)



- d. Identify and state the type of reproduction represented in the above figure. (1)

**BOARD QUESTION PAPER: July 2019****Science and Technology Part - 2****Time: 2 Hours****Total Marks: 40****Note:**

- i. Solve the questions in sequence.
- ii. Draw diagrams wherever necessary.

**1. (A) Solve the following questions:****[5]**

- i. Match the columns:

(2)

	Column 'A'		Column 'B'
a.	Haemoglobin	1.	Skin
b.	Ossein	2.	Blood
		3.	Bones

- ii. Find odd one out: (1)  
Diabetes, Anaemia, Leukemia, Thalassemia

- iii. Write the correct co-relation: (1)  
Transverse Binary Fission : *Paramoecium* :: Longitudinal Binary Fission :

- iv. Who am I? (1)  
I have suckers. I am blood sucking ectoparasite and my body is segmented.

**(B) Choose the correct alternative and rewrite the sentences:****[5]**

- i. Calcareous spines are present on the body of \_\_\_\_\_ animal. (1)  
(A) Fish (B) Snail  
(C) Sponge (D) Star fish

- ii. \_\_\_\_\_ beverage is obtained by fermentation of apple juice. (1)  
(A) Cider (B) Wine  
(C) Coffee (D) Cocoa

- iii. \_\_\_\_\_ is man-made disaster. (1)  
(A) Earthquake (B) Flood  
(C) Leakage of poisonous gas (D) Meteorite

- iv. \_\_\_\_\_ microbes provide organic manure to the paddy fields. (1)  
(A) Azolla (B) Anabaena  
(C) Azotobacter (D) Acetobacter

- v. The length of a sperm is about \_\_\_\_\_ micrometers. (1)  
(A) 400 (B) 5  
(C) 60 (D) 600

**2. Answer the following questions (any five):****[10]**

- i. Hydroelectric energy, solar energy and wind energy are called renewable energies. Why? (2)
- ii. Complete the following table: (2)

	Plant/Microbes	Function
1.	<i>Pteris vitata</i>	-----
2.	<i>Pseudomonas</i>	-----
3.	-----	Absorption of uranium and arsenic
4.	-----	Absorption of radiations of nuclear waste



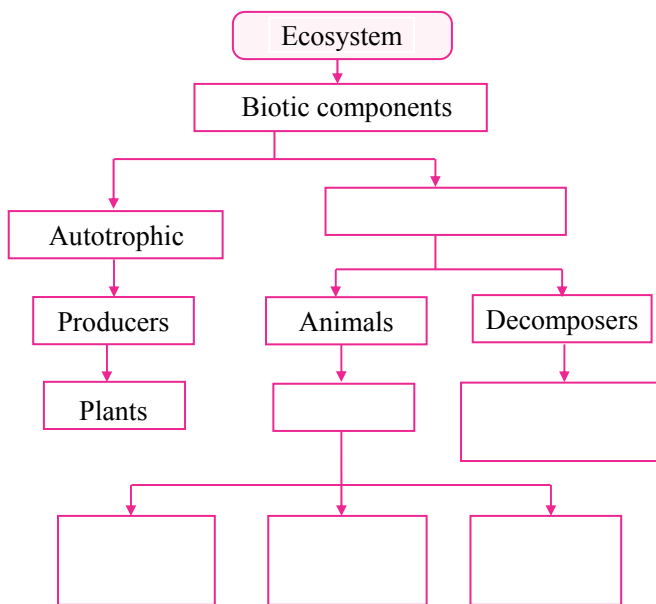
- iii. Define vestigial organs. Write any two names of vestigial organs in human body. (2)
- iv. Despite of various diagnostic tests, a couple could not have a child. In this situation, which remedies will you suggest? (2)
- v. Write any four harmful effects of consumption of alcoholic drinks on human body. (2)
- vi. Complete the following table: (2)

Source	Microbe	Amino Acid
Sugar molasses and salt	-----	Citric acid
-----	<i>Lactobacillus delbrueckii</i>	-----
Corn steep liquor	<i>Aspergillus itaconius</i>	-----

- vii. First aid training is essential. Why? (2)

**3. Answer the following questions (any five):** [15]

- i. What will you do? Why? (3)
  - a. Child of your neighbour is addicted to tobacco chewing?
  - b. Your friend has developed the hobby of snapping selfies.
  - c. Your sister has become incommunicable. She prefers to remain alone.
- ii. a. Write main types of vitamins. (3)
- b. Name water soluble vitamins.
- c. Name fat soluble vitamins.
- iii. Complete the flow chart: (3)



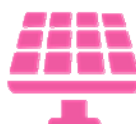
- iv. a. What are the meaning of the following symbols? Write your role accordingly. (3)



A



B



C



- v. The building in which you are residing has caught fire on the ground floor. What necessary rescue steps will you take? (3)
- vi Explain with suitable examples importance of anatomical evidences in evolution. (3)
- vii. Answer the following questions:
  - a. In our country, there seems to be lack of awareness regarding reproductive health. Why? (1)
  - b. Write the symptoms of disease gonorrhoea. (1)
  - c. What precautions will you take maintain reproductive health? (1)

**4. Answer any one of the following questions:**

**[5]**

- i. Identify the class of given animals and write one characteristic of each animal:
  - a. Kangaroo                      b. Penguin                      c. Crocodile
  - d. Frog                              e. Sea-horse
- ii. Draw schematic of power plant based on natural gas and answer the following questions:
  - i. At which place natural gas power plant is situated in Maharashtra?
  - ii. How is pollution reduced in natural gas based power plant?
  - iii. Give two examples of eco-friendly electricity process.