

ALL IMP PYQs

Marathon

Science-2 Board Exam

CH: 1, 2, 3

DIKSHA
COACHING CLASSES

LIVE



Science 2

Diksha Coaching Classes

Chp: 1 Heredity and Evolution

Diksha Coaching Classes

MCQ (1- mark)

(Jul-24)

1) Evolution means.....

- (A) Internal change ✓ ~~(B)~~ Gradual change
(D) Quick change (C) External change

Ans (B) Gradual change

2) A minor change occurs due to change in position of any nucleotide is termed as

(Mar-24)

- (A) transcription (B) translocation
(C) mutation (D) translation

Ans (C) mutation

3) Genetic disorder like sickle cell anemia may be caused due to..... (Jul-23)

- (A) mutation (B) translation
(C) translocation (D) transcription

Ans (A) mutation

4) Human males have numbers of chromosomes. (Jul-23)

- (A) $44 + XX$ (B) $44+XY$
(C) $22+XY$ (D) $22+XX$

Ans: (B) $44+XY$

5) Vestigial organ..... present in human body is proof of evolution.
(Mar-23)

- (A) Human hand ~~(B) Appendix~~
(C) Ear muscles (D) Tail Bone

Ans (B) Appendix

6) Transfer of information from molecule of DNA to mRNA is called.....
process. (Mar-20)

- (A) Transcription (B) Translation
(C) Translocation (D) Mutation

Ans (A) Transcription

7)is a connecting link between annelida and arthropoda.

(Mar-19)

(A) Duck-billed platypus

(B) Peripatus

(C) Lungfish

(D) Whale

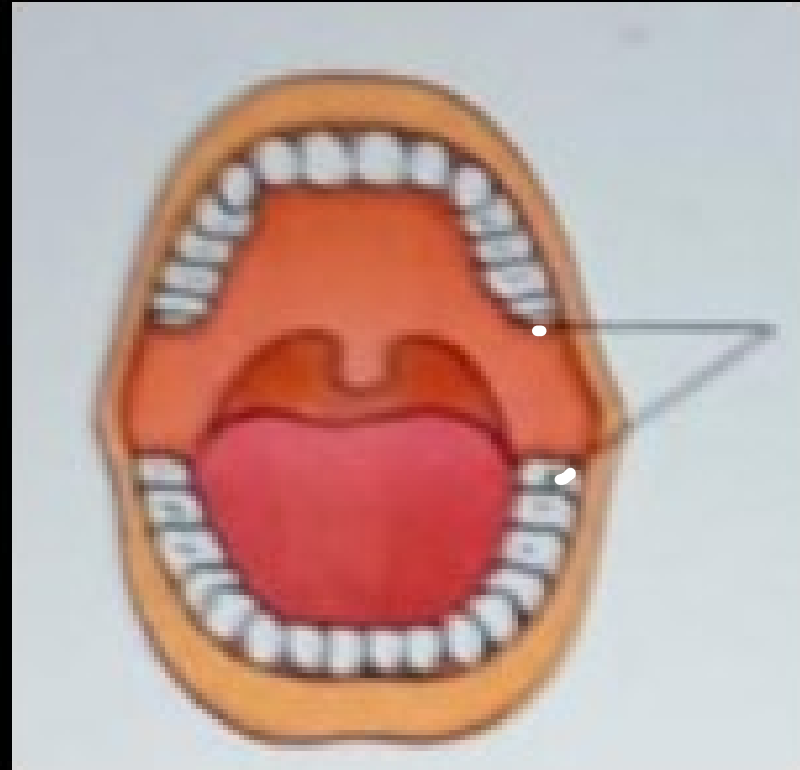
Ans Peripatus

Diksha Coaching Classes

Theory (1- mark)

1) Write the name of indicated part in diagram.

(Mar-23)



Ans Wisdom teeth

2) Write the scientific name of human being.

(Aug-22)

Ans: Homo sapiens

3) Complete the correlation:

(Oct-21)

Wisdom teeth: Vestigial organ :: Lungfish:

Ans: Wisdom teeth: Vestigial organ :: Lungfish: Connecting link

4) Write name of any two vestigial organ in human body. (December-2020)

Ans: Ear muscles and appendix are vestigial organs in human body.

5) Explain how one human vestigial organ is functional in another animal.
(December-2020)

Ans: Ear muscles are vestigial organ for human but in monkeys they are useful for movement of ear pinna.

6) I am connecting link between Reptilia and mammals. What is my name?
(Mar-20)

Ans: Duckbill Platipus

Diksha Coaching Classes

Theory (2-Mark)

1) Duck billed platypus is a connecting link.

(Jul-23)

Ans. Some plants and animals show some morphological characters by which they can be related to two different groups; hence, they are called connecting links.

1) Duck billed platypus lays eggs like reptiles but shows similarity with mammals due to the presence of mammary glands and hairs.

Therefore, Duck billed platypus is a connecting link between reptiles and mammals

2) Write any two objections that were raised against Darwin's Theory of Natural Selection. (Jul-23)

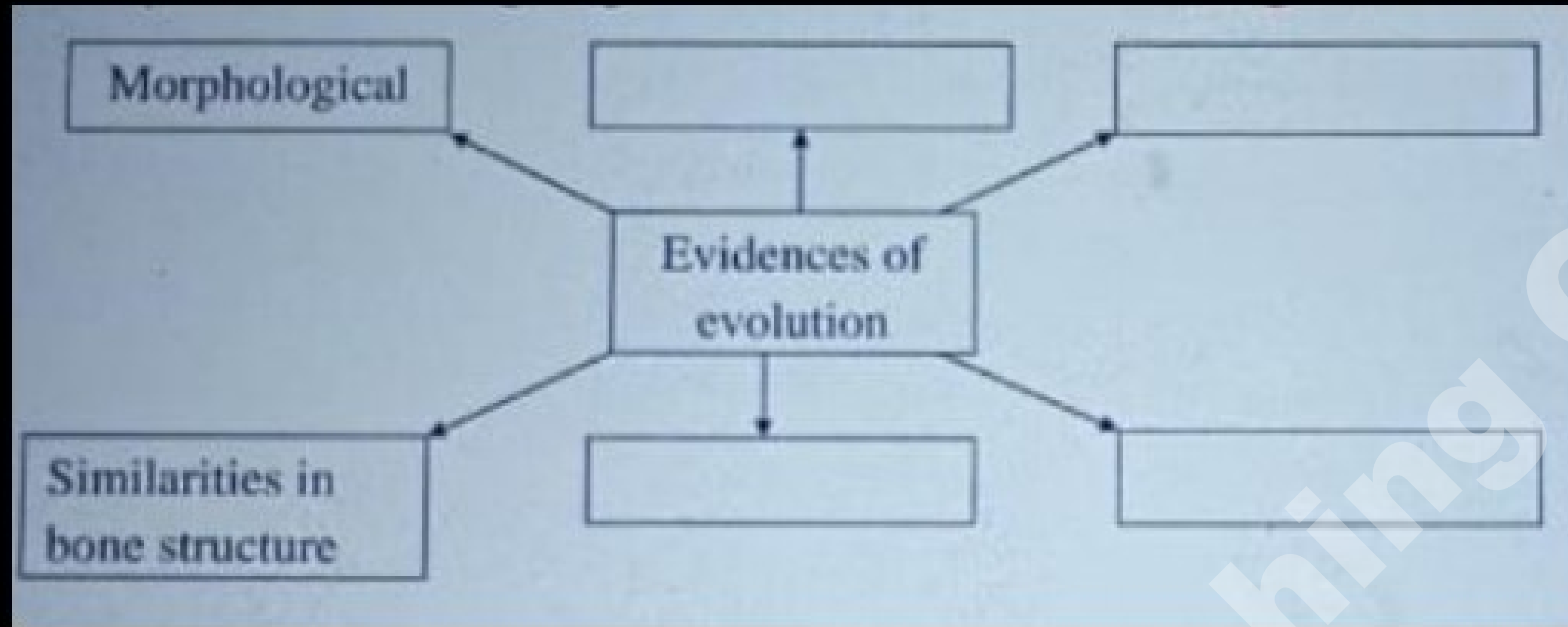
Ans: Following objection were raised against Darwin's Theory of Natural Selection:

1) Natural selection is not the only factor responsible for evolution.

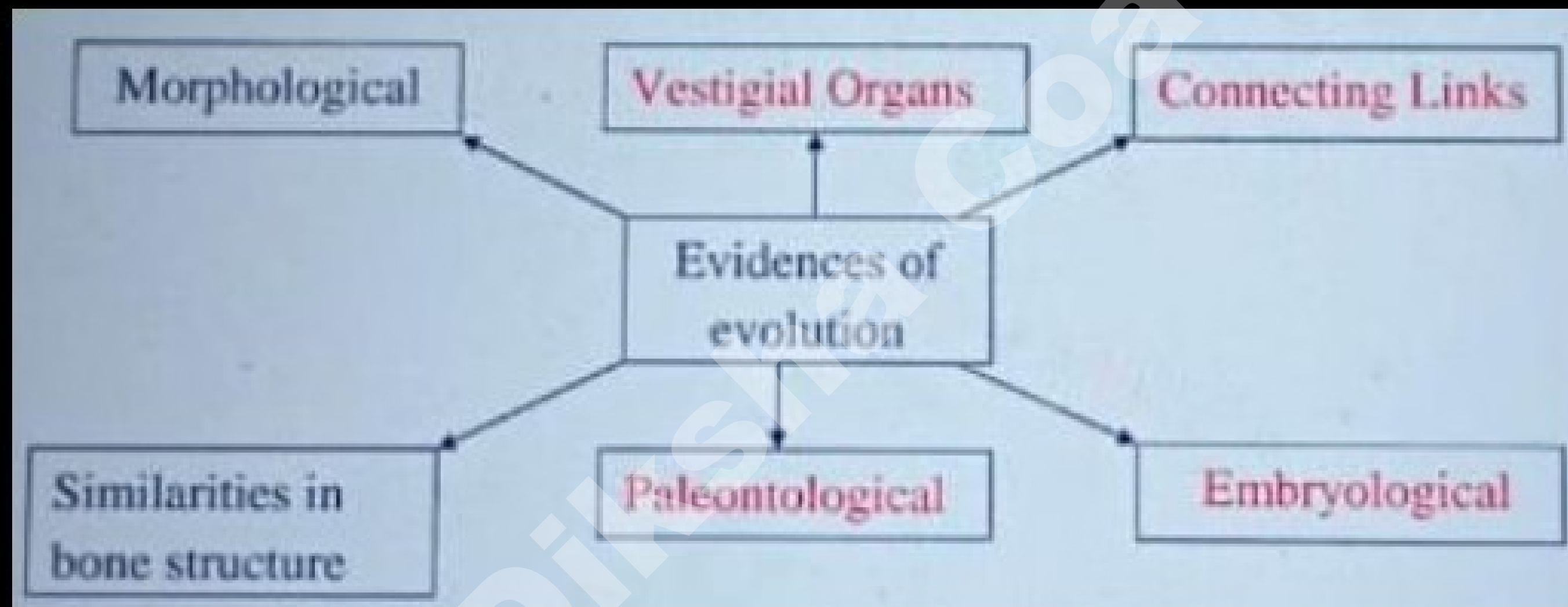
2) Darwin did not mention any explanation about useful and useless modifications

3) Complete the following diagram:

(Mar-19, Mar-22, Aug-22)

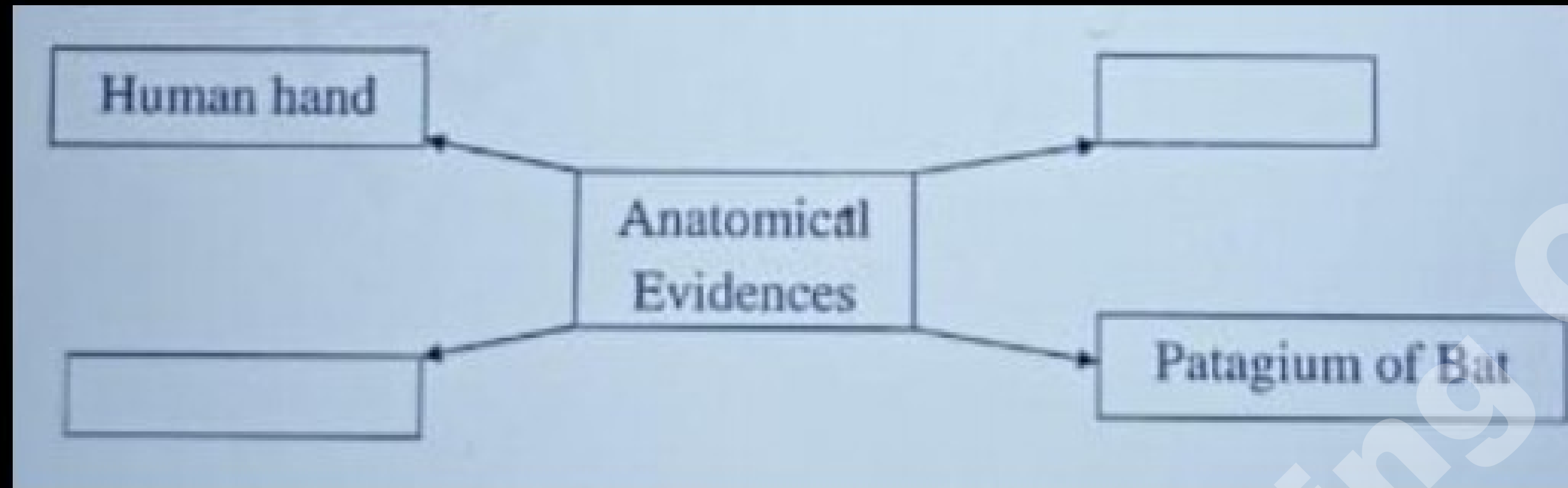


Ans

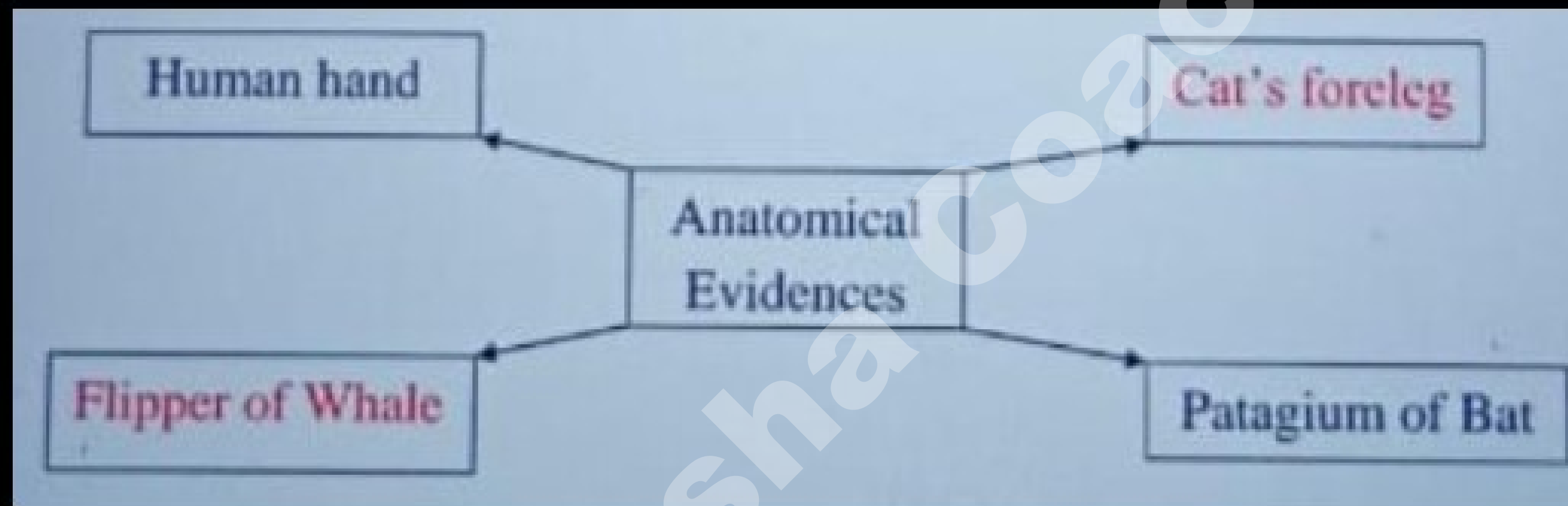


4) Complete the following diagram:

(Oct-21)



Ans



5) Define vestigial organs Write any two names of vestigial organs in human body. (Dec-20, Jul-19)

Ans

1) Degenerated or underdeveloped useless organs of organisms are called as vestigial organs

2) Ear muscles and appendix are vestigial organs in human body

Theory (3-Mark)

(Jul-24, Mar-24)

- 1) (a) What are vestigial organs
- (b) Write two names of some vestigial organs in human body
- (c) Write the names of those animals in whom same organs are used? Give two examples

Ans

- (a) Degenerated or underdeveloped useless organs of organisms are called as vestigial organs
- (b) Ear muscles and appendix are vestigial organs in human body
- (c) Ear muscles are useful and functional in monkeys and appendix is useful and fully functional organ in ruminants

2) Darwin's theory of natural selection. (Mar-23. Dec-20)

Ans. Darwin's theory of natural selection

1) Darwin published the theory of natural selection which preaches "The survival of the fittest"

2) "The survival of the fittest" means the organism, which are fit for survival they evolves while the organisms which are not fit for survival they perish.

3) Under limited resources, organisms compete with each other in a life-threatening manner for their survival

4) Darwin's theory of natural selection was widely accepted for long duration

5) However, some objections were raised against the theory, such as

i) Natural selection is not the only factor responsible for evolution

ii) Darwin did not mention any explanation about useful and useless modifications

3) Explain the concept of connecting links with two examples.

(Aug-22)

Ans

1) Some plants and animals show some morphological characters by which they can be related to two different groups, hence they are called as connecting links

2) For example, In *Peripatus* characters like segmented body thin cuticle and parapodia-like organs are present. Similarly, these animals show tracheal respiration and open circulatory system similar to arthropods. This indicates that *Peripatus* connecting link between annelida and arthropoda

3) Similarly duck billed platypus lays eggs like reptiles but shows relationship with mammals too due to presence of mammary glands and hairs

4) Write the objections raised against Darwin theory of natural selection (Mar-22)

IMP

Ans Some of the main objections raised against Darwin's theory of natural selection are as follows:

- 1) Natural selection is not the only factor responsible for evolution
- 2) In his theory Darwin did not explain the inheritance of useful and useless modifications
- 3) No explanation regarding slow and abrupt changes was provided in this theory

Diksha Coaching Classes

5) What do you mean by fossils Write the importance of fossils.

(Oct-21)

Write the name of method to find the age of fossils

Ans

i) Fossils are remnants of living organisms of their impressions which are preserved deep down in the earth's surface

ii) Importance of fossils

(a) Study of fossils helps the researcher to understand the characteristics of the organism that existed in the past.

(b) Fossils play an important role in tracing evolutionary relationships

(c) They can help in finding the connecting links between different organisms

(d) Also, the depth at which fossils are found tells us their age and the period in which they existed

iii) Carbon dating is the method to find the age of fossils

6) Explain the importance of Anatomical evidences with examples (Mar 21, Jul-19)

Ans:

- i) There are similarities in the structure and anatomy of different animal groups
- ii) e.g. human hand, forelimb of bull, patagium of bat and flipper of whale are all similar in their internal anatomy
- iii) There is similarity in the bones and joints of all these specimens
- iv) External morphology does not show any similarity. Use of each of the organ is also different in different animals. Structurally they may not be related
- v) However, the similarities in the anatomy is evidence that they may have a common ancestor
- vi) In this way the anatomical evidence throws light on the process of evolution

7) Answer the following questions:

(Mar-19)

a. What do you mean by central dogma?

b. What is transcription?

What is meant by triplet codon?

Ans

a) Synthesis of proteins by DNA through the RNA is called central dogma

b) The process of mRNA synthesis as per sequence of nucleotides on DNA is called as transcription

c) The code for each amino acid consisting of three nucleotides, is called triplet codon

Chp: 2 Life Processes in Living Organisms Part-1

Diksha Coaching Classes

MCQ (1-Mark)

1) We get..... kcal energy ~~pes~~^{per} gram of proteins (Jul-24)

(A) 4 (B) 3

(C) 2 (D) 1

Ans (A) 4

2) We getof energy from one gram of lipid. (Jul-23)

(A) 9 cal (B) 4 kcal

(C) 4 cal (D) 9Kcal

Ans (D) 9 kcal

3) Bones contain..... amino acids. (Mar-22)

(A) Melanin (B) Haemoglobin

(C) Ossein (D) Insulin

Ans: (C) Ossein

4) All chromosomes are arranged parallel to equatorial plane of cell in.....
phase of mitosis (Oct-21)

(A) Prophase (B) Metaphase

(C) Anaphase (D) Telophase

Ans: (B) Metaphase

5) In mitotic division, nuclear membrane completely disappears in..... phase.
(Dec-20)

- | | |
|---------------|--------------|
| (A) Telophase | (B) Prophase |
| (C) Metaphase | (D) Anaphase |

Ans (C) Metaphase

6) The spindle fibres starts appearing from.....stage of karyokinesis. (Mar-20)

- | | |
|--------------|---------------|
| (A) Prophase | (B) Metaphase |
| (C) Anaphase | (D) Telophase |

Ans (B) Metaphase

7) Somatic and stem cells undergo..... type of division. (Mar-19)

- (A) meiosis (B) mitosis
(C) budding (D) cloning

Ans (B) mitosis

Diksha Coaching Classes

Theory (1-Mark)

1) Write co-relation:

(Mar-24)

Skin: Melanin :: Pancreas

Ans: Skin: Melanin :: Pancreas: Insulin

2) Write the co-relation:

(Jul-23)

Ovary: Estrogen :: Testes:

Ans: Ovary: Estrogen :: Testes: Testosterone

3) Find the odd man out:

(Aug-22)

Actin, Ossein, Myosin, Aldosterone

Ans: Aldosterone

4) State True or False:

(Mar-22)

Oxidation of proteins is carried out in aerobic respiration.

Ans: False

5) Separate the odd component.

(Oct-21)

Progesterone, Estrogen, Melanin, Testosterone

Ans Odd component: Melanin

6) Which molecules are necessary for the formation of plasma membrane?
(Dec-20)

Ans: Phospholipid molecules are necessary for the formation of plasma membrane.

7) Write main types of vitamins.

(Jul-19)

Ans. Main six types of vitamins are A, B, C, D, E and K.

8) Name water soluble vitamins.

(Jul-19)

Ans: B and C are water-soluble vitamins.

9) Name fat soluble vitamins.

(Jul-19)

Ans A, D, E and K are fat-soluble vitamins

Diksha Coaching Classes

Theory (2-Mark)

1) Give scientific reasons: Fibers are one of the important nutrients. (Jul-24)

Ans:

- 1) Fibers cannot be digested by humans, yet they are essential nutrients.
- 2) Fibers are important as they promote the movement of materials through the digestive system and thus aid in the digestion of foodstuffs.
- 3) They also help in the egestion of undigested substances from the body.
- 4) Hence, fibers are one of the important nutrients.

2) Give scientific reasons: We feel tired after exercise. (Mar-20, Dec-20, Mar-24)

Ans:

- 1) While performing exercises, there may be shortage of oxygen for the cells.
- 2) Therefore, our muscles and other tissues perform anaerobic respiration in such condition.
- 3) In this process lactic acid is formed.
- 4) Molecules of ATP produced in oxidation of food are also much less.
- 5) Thus, there is less energy in the body and accumulation of lactic acid too. Due to all these things, we feel tired while performing exercises.

3) Draw a neat labelled diagram of mitochondria and tri-carboxylic acid cycle.
(July-23)

Ans

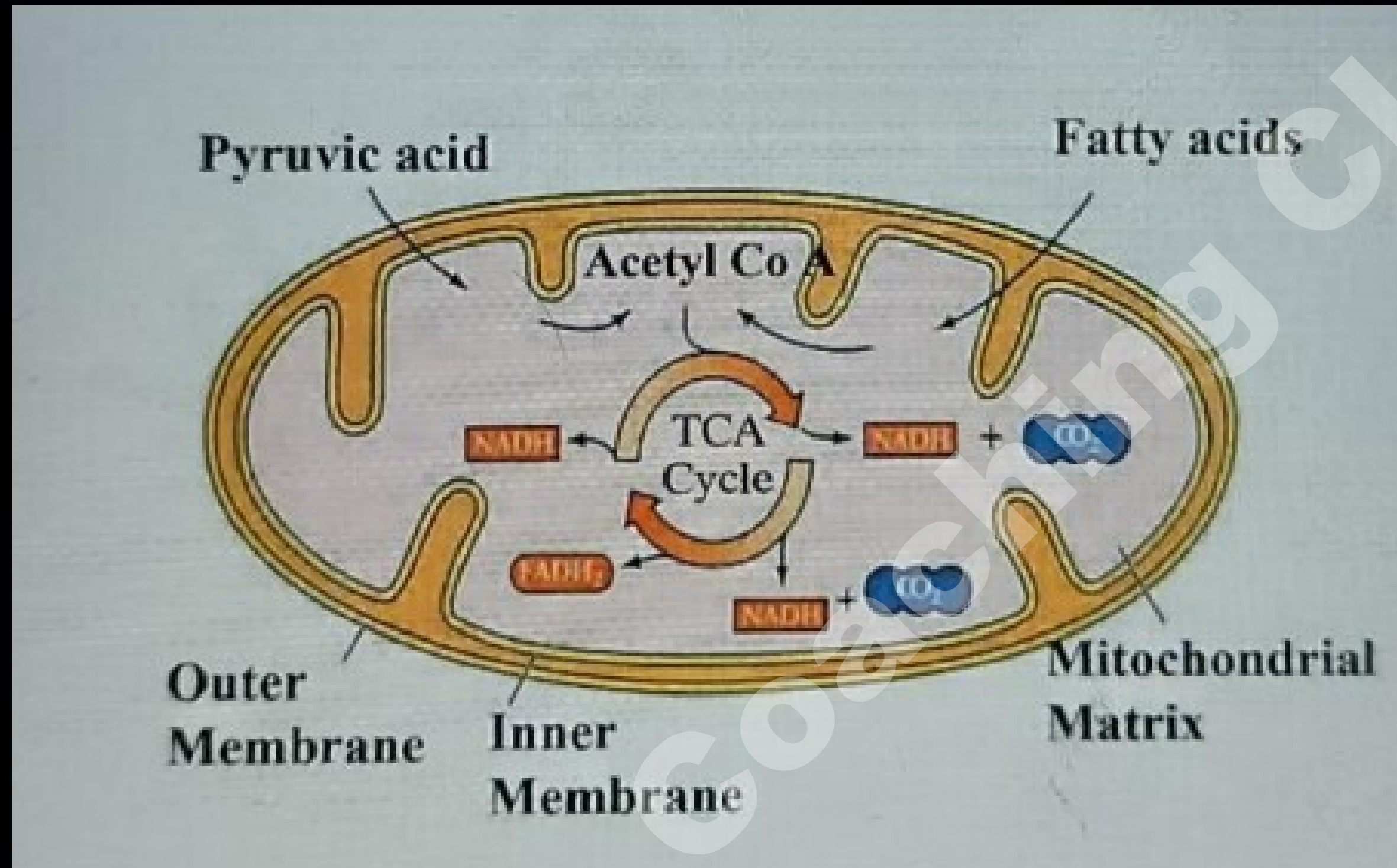


Fig: Mitochondria and Tri-Carboxylic acid cycle

4) Give scientific reasons:

(Mar 23)

Sometimes higher plants and animals too perform anaerobic respiration



Ans:

- 1) Some higher plants, animals and aerobic microorganisms also perform anaerobic respiration instead of aerobic respiration if there is depletion in oxygen level in the surrounding.
- 2) For example. Seeds perform anaerobic respiration if the soil is submerged under water during germination.
- 3) Similarly, our muscle cells also perform anaerobic respiration while performing the exercise.
- 4) Due to this, less amount of energy is produced in our body and lactic acid accumulates due to which we feel tired.

5) Give scientific reasons: Water is an essential nutrient.

(Aug-22)

Ans:

- 1) Our body consists of about 65-70% water. Cells and blood plasma contain 70% and 90% water respectively.
- 2) Water acts as a universal solvent as it provides a medium for many metabolic
- 3) It also helps in the transportation of dissolved nutrients to various parts of the body.
- 4) When there is a little loss of water from the body, the functioning of the cell and thereby the whole body gets disturbed.

Hence, water is an essential nutrient.

6) Give scientific reasons:

(Oct-21, Mar-22)

Cell division is one of the very important properties of cells and living organisms

Ans: Cell division is one of the very important properties of cells and living organisms because,

(i) It is the means of asexual reproduction in unicellular organisms.

(ii) The zygote which is formed of single cell transforms into an adult composed of millions of cells formed by successive divisions.

(iii) It is the basis of repair for old and worn out tissues. —

(iv) It forms the basis of evolution to various life forms

7) What are vitamins? Write two types of vitamins.

(Mar-22)

Ans

i) Vitamins are a group of heterogeneous compounds of which, each is essential for proper operation of various processes in the body.

ii) Types of vitamins:

1) Fat-soluble: A, D, E, K

2) Water-soluble B, C

8) Distinguish between Aerobic respiration and Anaerobic respiration. (Dec-20)

Aerobic respiration	Anaerobic respiration
1) Oxygen is required for aerobic respiration	1) Oxygen is not required for anaerobic respiration
2) It takes place in nucleus as well as in cytoplasm.	2) It occurs only in cytoplasm.
3) Glucose is completely oxidized in aerobic respiration.	3) Glucose is incompletely oxidized in anaerobic respiration.
4) 38 Molecules of ATP are formed	4) 2 Molecules of ATP are formed

9) Match the columns:

(Jul-19)

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

Ans:

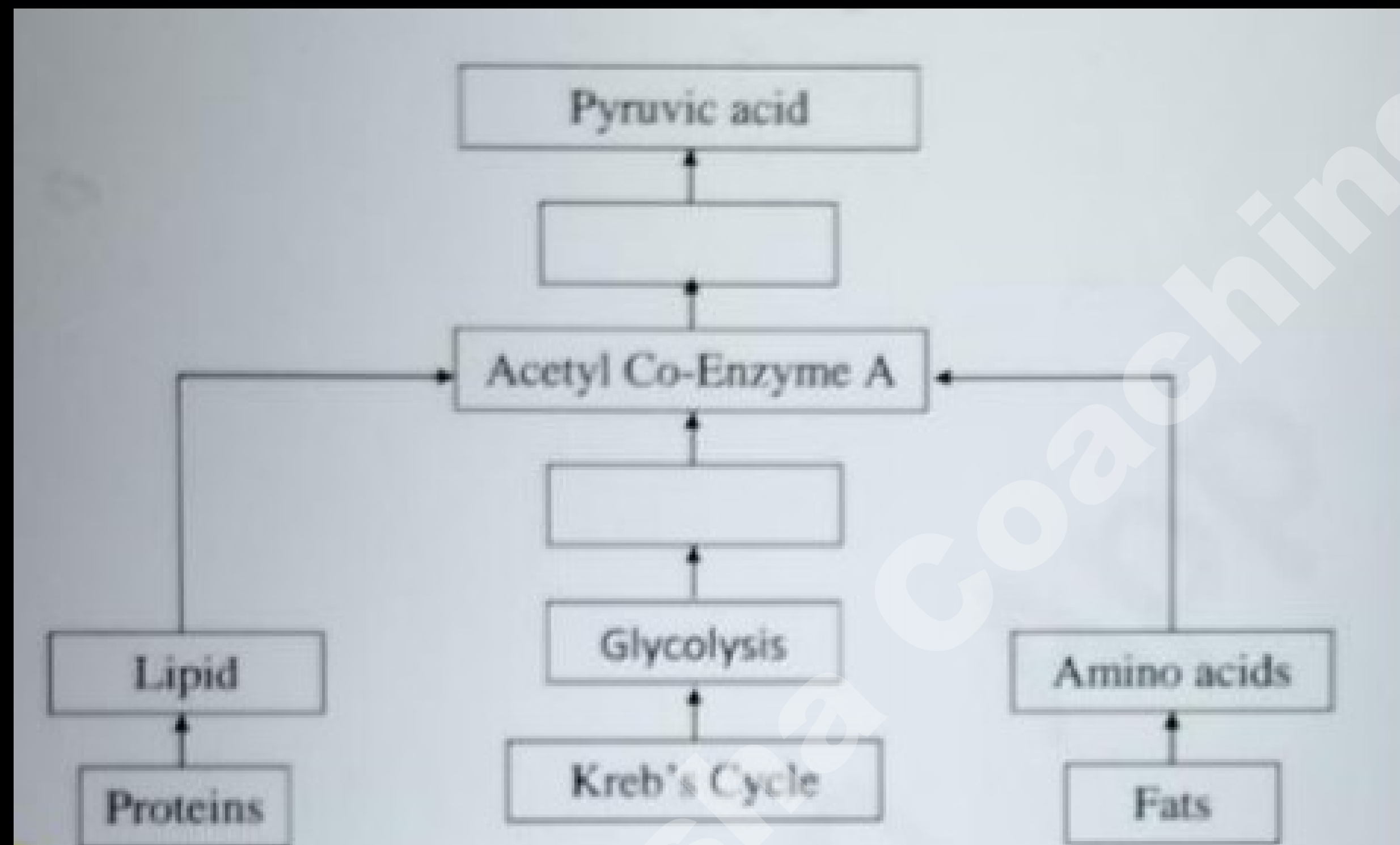
'A'	'B'
a) Haemoglobin	2) Blood
b) Ossein	3) Bones

Theory (3-Mark)

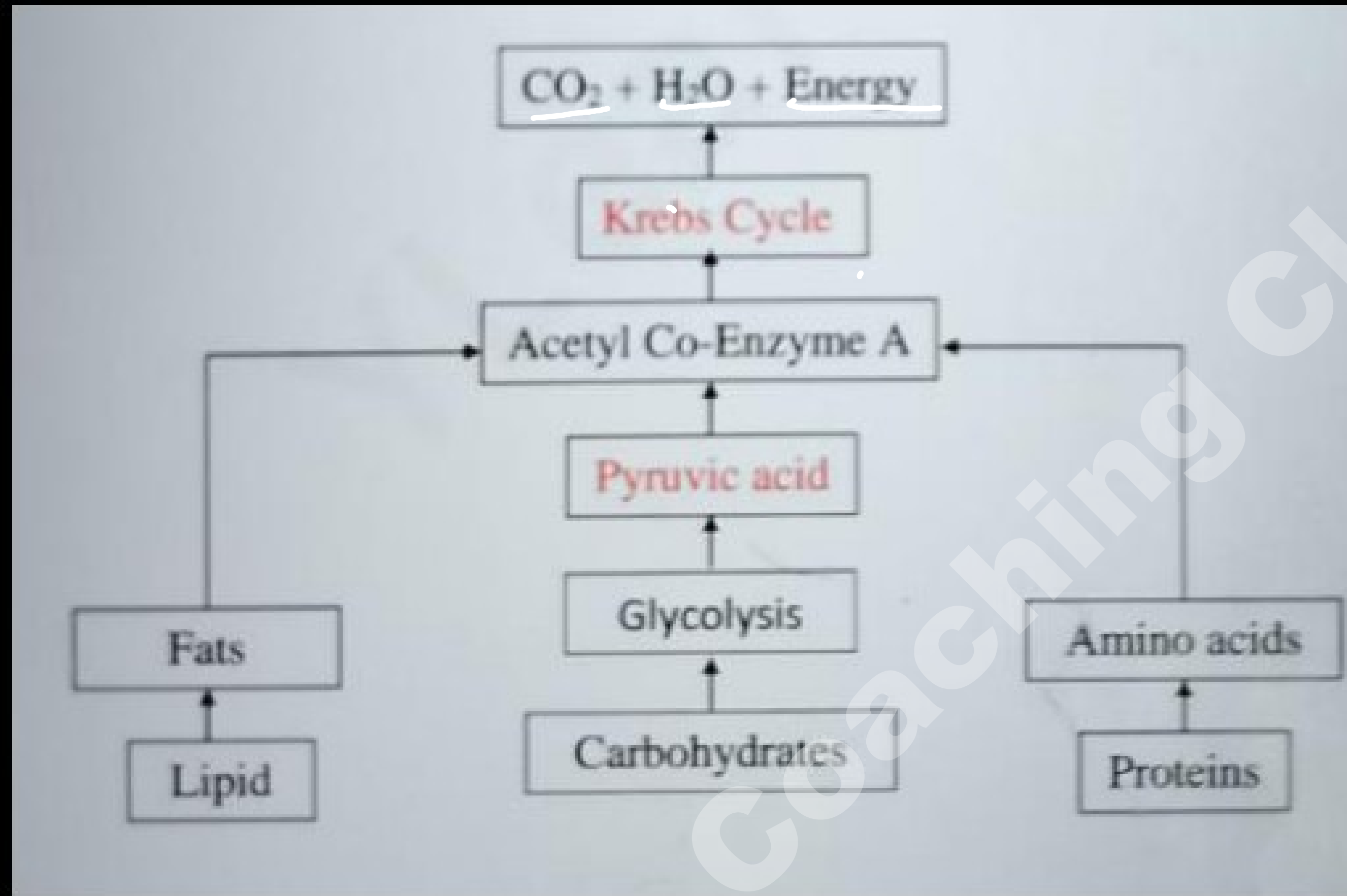
1) How energy is formed from oxidation of carbohydrates, fats and proteins?

Correct the diagram given below:

(Jul-24)



Ans:



2) (a) What are vitamins?

(Mar-24)

(b) Classify them according to their solubility.

(c) Give one example of each type as per above classification.

Ans:

(a) Vitamins are a group of heterogeneous compounds of which, each is essential for proper operation of various processes in the body.

(b) According to their solubility, vitamins are classified as fat-soluble and water-soluble.

(c) Fat-soluble vitamins: A

Water-soluble vitamins: B

3) Complete the following chart:

(Mar-23)

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

Ans:

Sr. No.	Proteins	Name of the Organs
1.	Melanin, Keratin	<u>Skin</u>
2.	<u>Insulin, Trypsin</u>	Pancreas
3.	Haemoglobin, antibodies	<u>Blood</u>

4)

(Aug-22)

- (1) Write two sources of lipids.
- (2) How much energy is obtained from lipids ?
- (3) What is produced after digestion of lipids?

Ans:

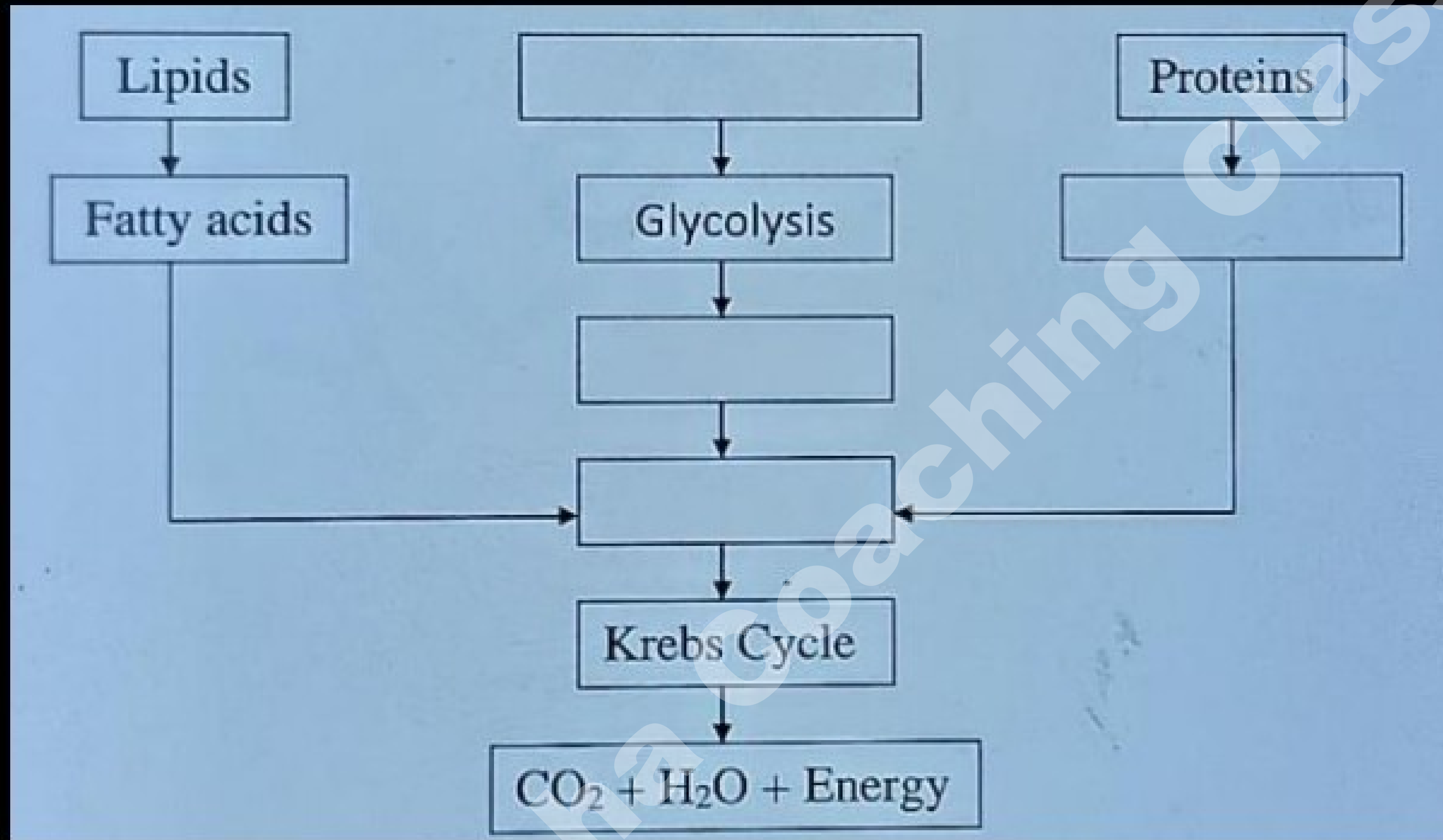
- (1) Milk, butter, cheese, oil, ghee, meat, nuts are various sources of lipids.
- (2) 9 Kcal of energy is obtained from per gram of lipids.
- (3) Fatty acids and alcohol are produced after digestion of lipids.

5) Differentiate between mitosis and meiosis. (Any 3 points).

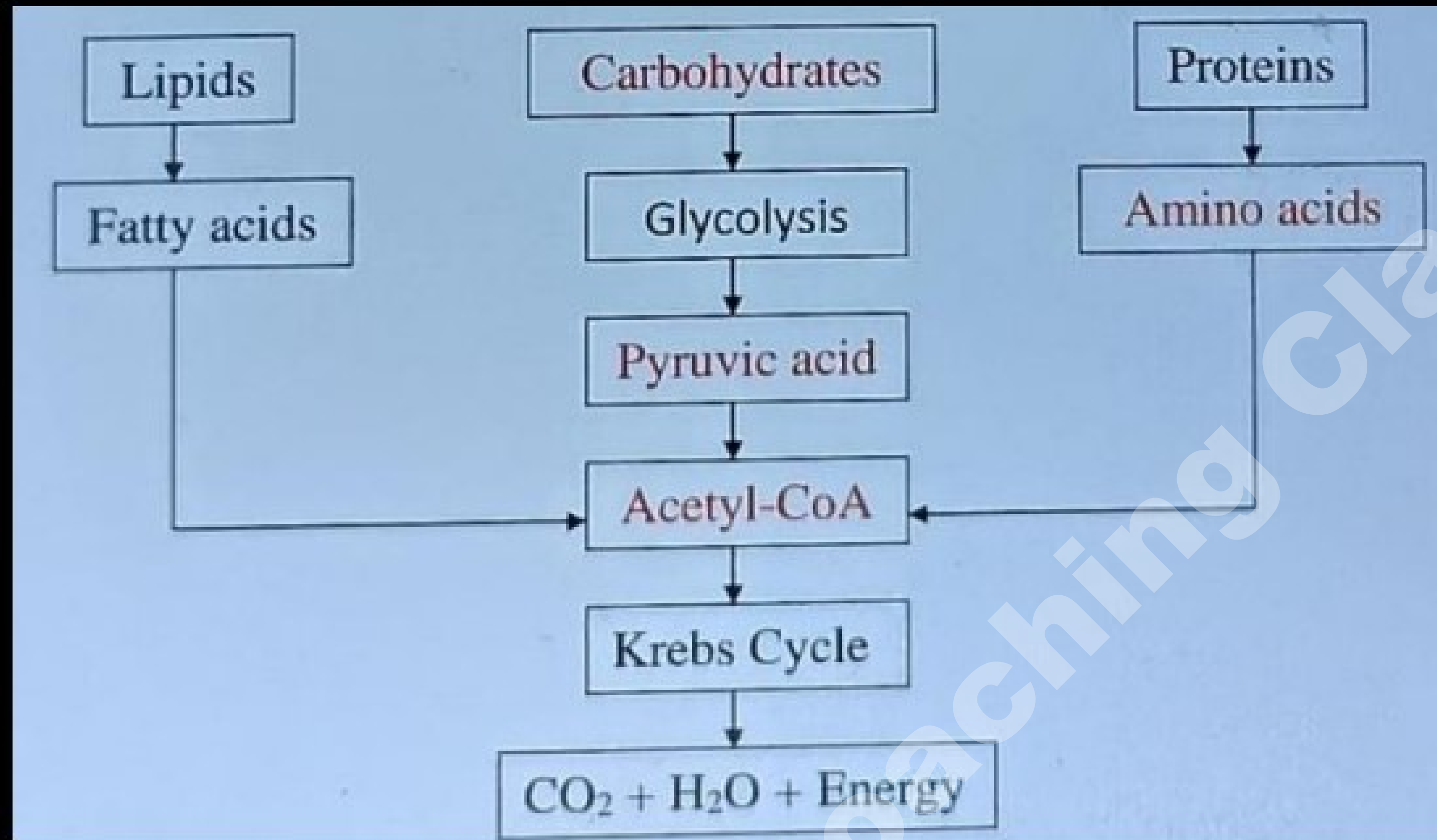
(Oct-21)

Mitosis	Meiosis
1) In mitosis, the chromosome number does not change. Diploid cells remains diploid, without change.	1) In meiosis, the chromosome number is reduced to half. The diploid cells become haploid.
2) One cell gives rise to <u>two daughter cells</u> in mitosis.	2) One cell gives rise to four daughter cells in meiosis.
3) Mitosis takes place in <u>somatic cells</u> .	3) Meiosis takes place in <u>germ cells</u> .

6) Complete the following chart and state which process of energy production it represent: (Mar-19)



Ans:



The chart shows the process of energy production through aerobic respiration using carbohydrates, proteins and fats.

Chp: 3 Life Processes in Living Organisms Part-2

Diksha Coaching Classes

MCQ (1-Mark)

1) Regeneration occurs in

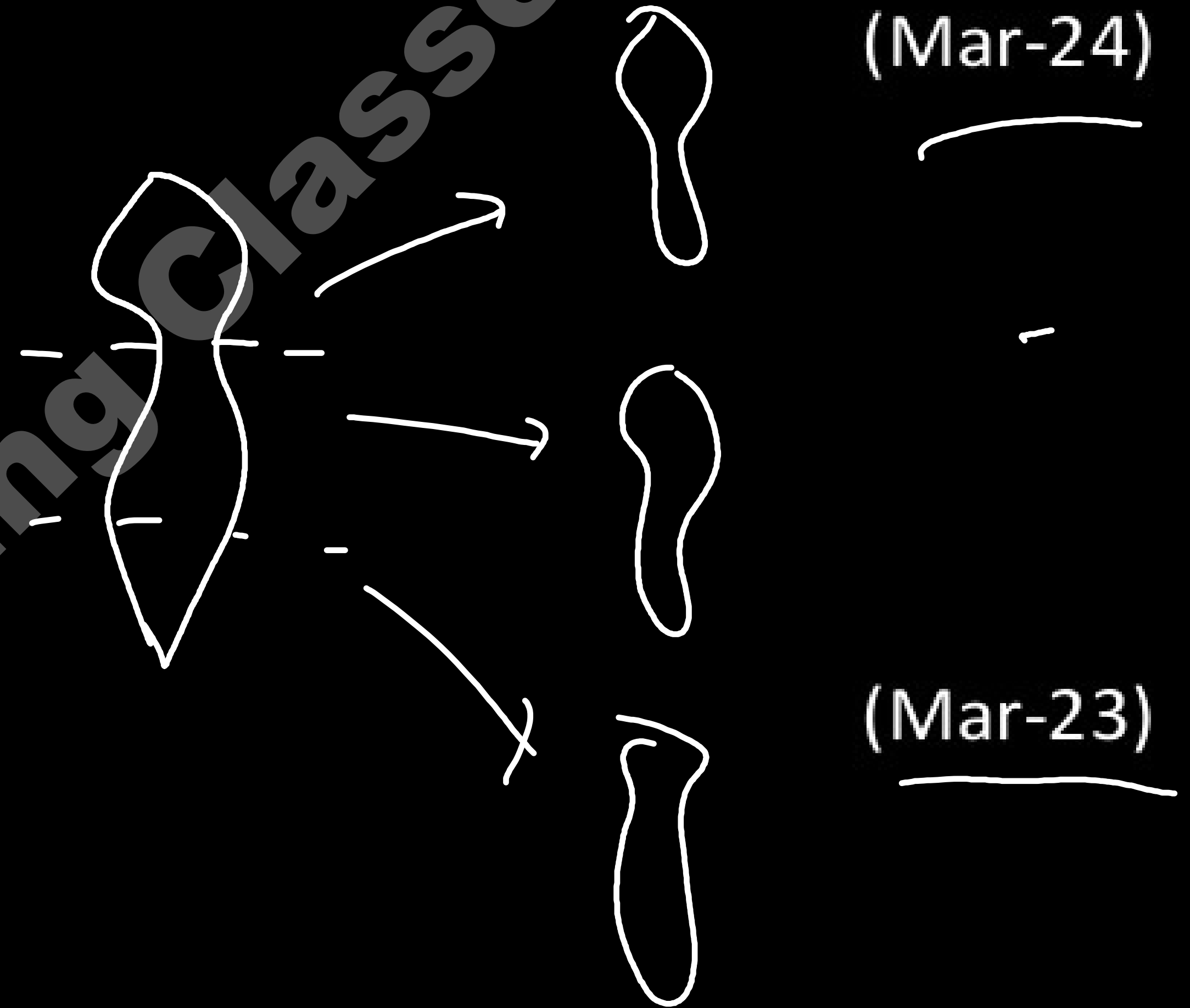
- (A) amoeba (B) paramecium
(C) euglena (D) planaria

Ans: (D) planaria

2) Type of sexual reproduction is.....

- (A) Fragmentation (B) Regeneration
(C) Gamete formation (D) Budding

Ans: (C) Gamete formation



3) Glycolysis and..... are two steps of anaerobic respiration. (Aug-22)

(A) Kreb's cycle (B) Electron transfer chain reaction

(C) Fermentation (D) Reduction

Ans: (C) Fermentation

4) In human, sperm production occurs in the organ. (Dec-20)

(A) Seminal vesicle (B) Testes

(C) Prostate gland (D) Cowper's gland

Ans: ~~(B)~~ Testes

5) Body breaks up into several fragments and each fragment starts to live as a new individual. This is type of reproduction. (Mar-20)

- (A) Budding (B) Fragmentation
(C) Regeneration (D) Binary fission

Ans: (B) Fragmentation

6) The length of a sperm is about..... micrometers. (Jul-19)

- (A) 400 (B) 5
(C) 60 (D) 600

Ans. (C) 60

Theory (1-Mark)

1) State, true or false.

(Mar-24)

Production of various useful aquatic organisms with the help of water is called blue revolution.

Ans: True

2) Match the pair.

(Mar 24)

A

B

(1) Male

(A) 44+XX

☒ (B) 44+XY

(C) 44+YY

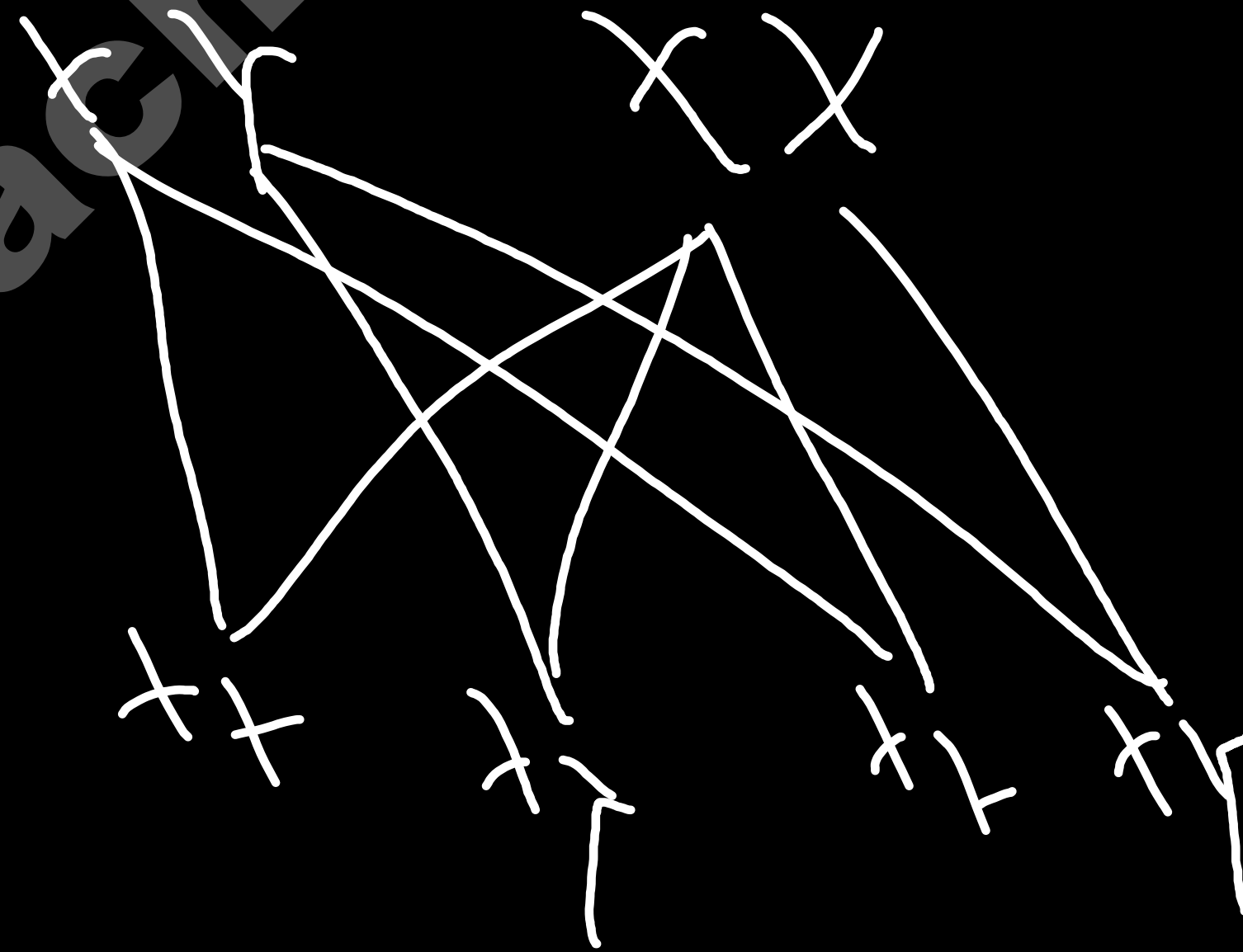
Ans

Column 'A'

Column 'B'

(1) Male

(B) 44+XY



3) Find the correct co-relation:

(Dec-20)

Spirogyra: Fragmentation :: Planaria:

Ans: Spirogyra : Fragmentation :: Planaria: Regeneration

4) Write function of testes.

(Mar-20)

Ans: Testes are responsible for making testosterone, the primary male sex hormone, and for producing sperm

5) Write the correct co-relation:

(Jul-19)

Transverse Binary Fission: Paramecium:: Longitudinal Binary Fission

Ans. Transverse Binary Fission: Paramecium:: Longitudinal Binary Fission:
Euglena

6) In our country, there seems to be lack of awareness regarding reproductive health. Why?

(Jul-19)

Ans, In our country, there seems to be lack of awareness regarding reproductive health due to various reasons like social customs, traditions, illiteracy, shyness, etc.

7) Write the symptoms of disease gonorrhea.

(Jul-19)

Ans Painful and burning sensation during urination, oozing of pus through penis and vagina, inflammation of urinary tract, anus, throat, eyes, etc. are symptoms of gonorrhea.

8) What precautions will you take to maintain reproductive health? (Jul-19)

Ans Precautions which should be taken in order to maintain good reproductive health are:

1. Eat a balanced and nutritional diet
2. Maintain personal hygiene
3. Take adequate physical exercise
4. Avoid taking any drugs

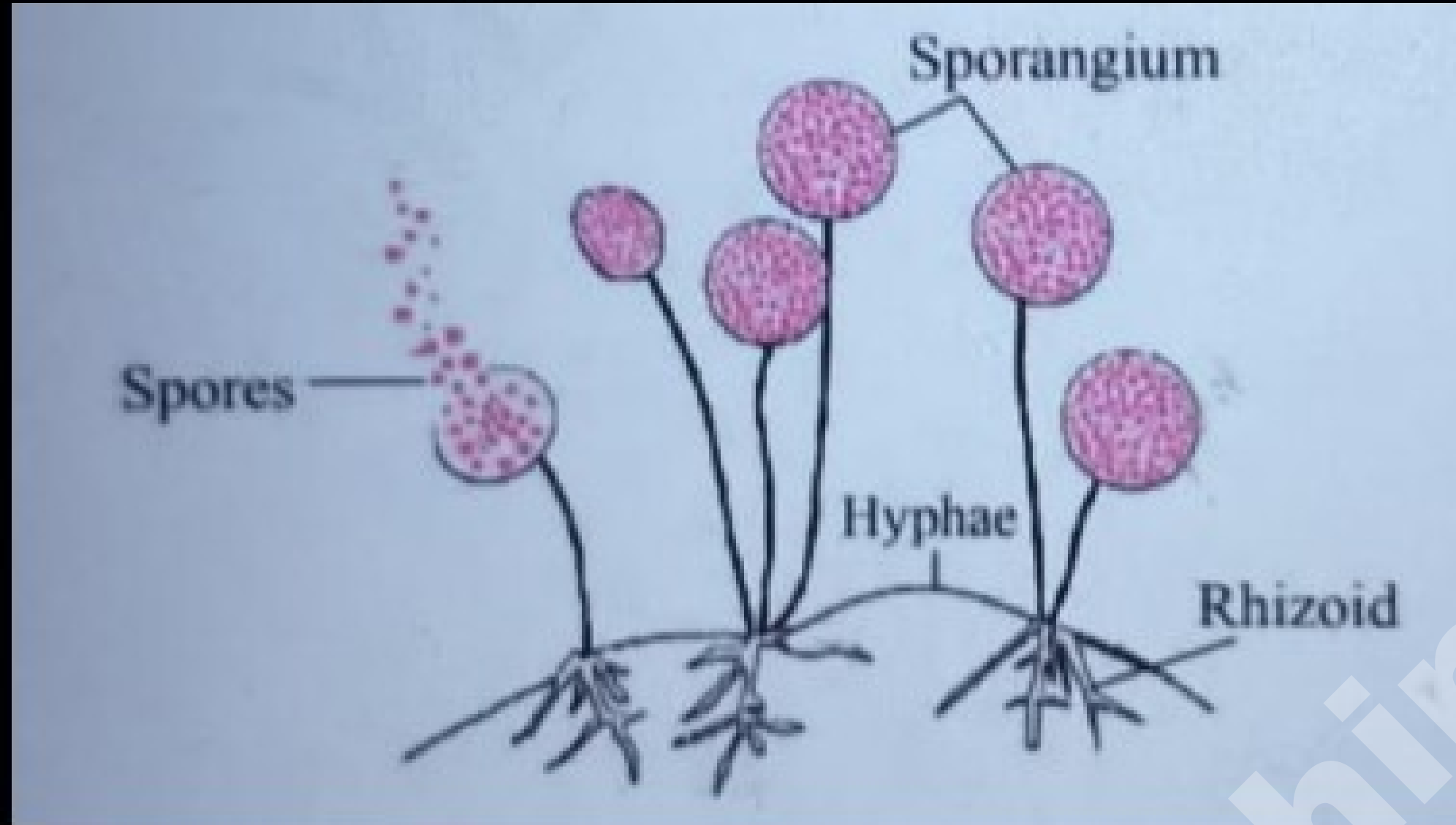
9) Pranay and Preeti are twins in your class. They belong to..... twins type.
(Mar-19)

Ans: Pranav and Preeti are twins in your class. They belong to zygotic twins type.

10) Prepare a slogan for campaign against female foeticide. (Mar-19)

Ans: Avoid female foeticide, save girl child.

11) In the following figure, explain how new fungal colonies of mucor are formed. (Mar-19)



- 1) Fungi like Mucor have filamentous body.
- 2) They have sporangia
- 3) Once the spores are formed, sporangia burst and spores are released.
- 4) Spores germinate in moist and warm place and new fungal colonies are formed.

12) Identify and state the type of reproduction represented in the above figure.
(Mar-19)

Ans: It is a spore formation which is a type of asexual reproduction.

Diksha Coaching Classes

Theory Mark (2-Mark)

1) Distinguish between Sexual reproduction and Asexual reproduction.

(Jul-24, Mar-22)

✓ Imp

Ans:

Sexual reproduction	Asexual reproduction
1. It is usually bi-parental	1. It is uniparental.
2. Gametes are formed.	2. Gametes are not formed
3. Fertilization takes place.	3. No fertilization occurs.
4. It involves both meiosis and mitosis	4. It involves only <u>mitosis</u> .

2) Flower is structural unit of sexual reproduction in plants. (Mar-23)

Ans

1) In flowers, androecium is male whorl and its members are called stamens. The gynoecium is a female whorl and its members are called carpels.

2) The male reproductive part i.e. anther is responsible for the production of male gametes (pollen grains) and the female reproductive part i.e. ovary is responsible for the production of female gametes (ovules),

3) Fertilization takes place by the union of male and female gametes present in flowers.

4) Therefore, flower is a structural unit of sexual reproduction in plants.

3) Which precautions should be followed to maintain the reproductive health?
(Aug-22)

Ans: Following precautions should be taken in order to maintain good reproductive health

- 1) Eat a balanced and nutritional diet.
- 2) Maintain personal hygiene.
- 3) Take adequate physical exercise
- 4) Avoid taking any drugs.

Ans

Diksha Coaching Classes

4) Explain the term: Modern technology of reproduction IVF. (Dec-20)

Ans: In Vitro Fertilization (IVF):

- i) IVF technique is used for having the child in case of those childless couples who have problems like less sperm count, obstacles in oviduct, etc.
- ii) In this technique, fertilization is brought about in the test-tube and the embryo formed is implanted in uterus of woman at appropriate time

5) Give scientific reasons, Indians should follow family planning for controlling the population. (Mar-20)

i) Indians should follow family planning for controlling the population because the country does not have enough resources that would be able to fulfill the need of such huge population in long run.

ii) India has the only 2.4% of the total area of the world but has 17% of the total population of the world.

iii) Indian population is increasing day by day. Due to this the available being consumed at faster rate.

iv) Rapid population growth leads to the overuse of land, thereby endangering the welfare of future generations.

Due to all these reasons, Indians should follow the method of family planning

6) Despite of various diagnostic tests, a couple could not have a child. In this situation, which remedies will you suggest? (Jul-19)

Ans. Despite of various diagnostic tests, a couple could not have a child, then they have to resort to anyone of the following measure

(1) IVF (In Vitro Fertilization). It is the technique used when a couple has a problem of either low sperm count or obstruction in the fallopian ducts. The embryo is formed in the test tube by carrying out fertilization outside the mother's body. Later the embryo is implanted into the mother's uterus.

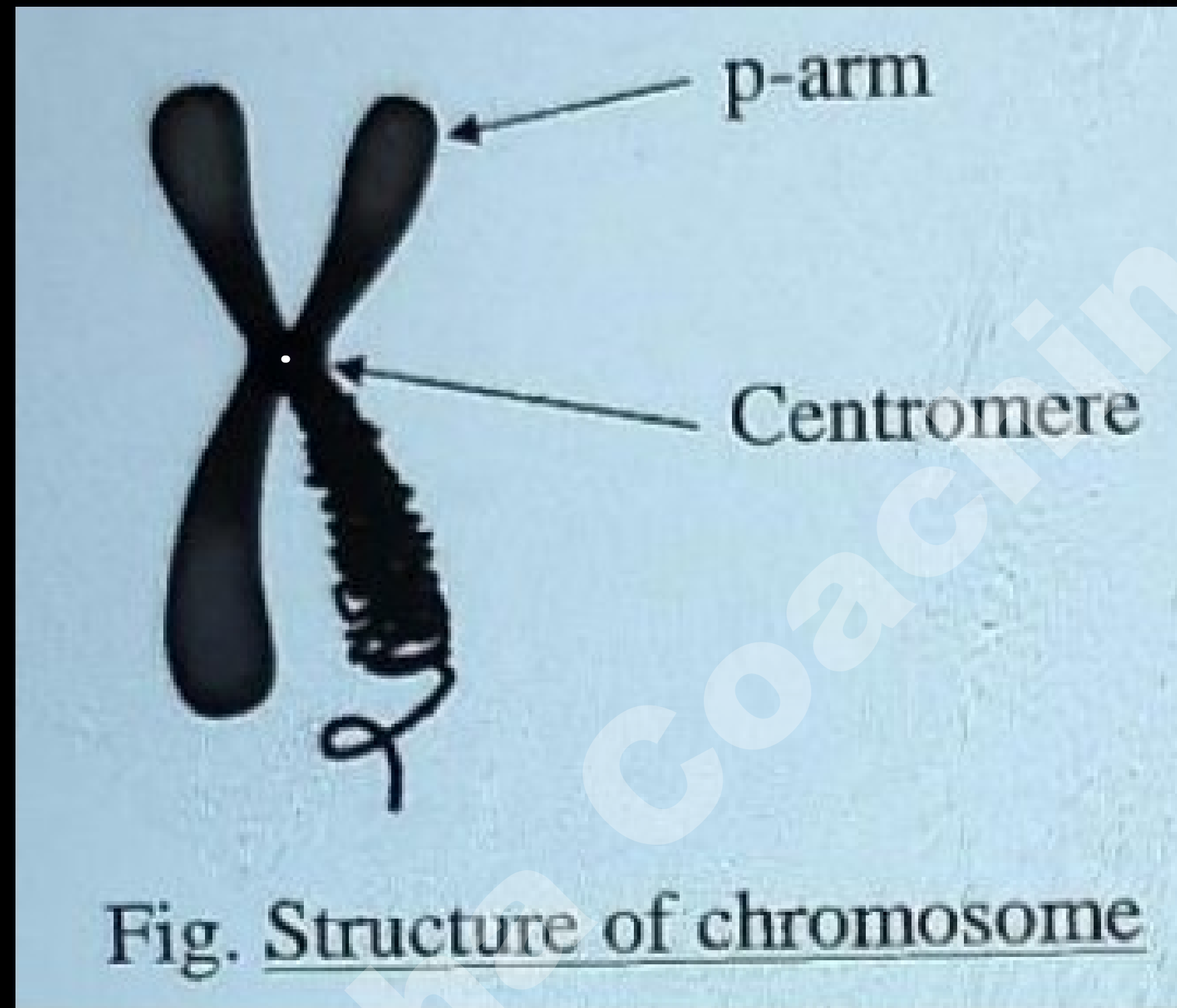
(2) Surrogacy Women who have problem regarding the implantation of the embryo in her uterus, then another woman's help is taken. This woman is called surrogate mother. The implantation of embryo is done in her uterus.

(3) Sperm bank or semen bank: If man is having problem regarding the sperm production. then donor's sperms are taken from the sperm bank. In sperm bank the sperms are collected and stored without revealing the identity of the donor

7) Draw a neat diagram of the structure of chromosome and label the parts:
(Mar-19)

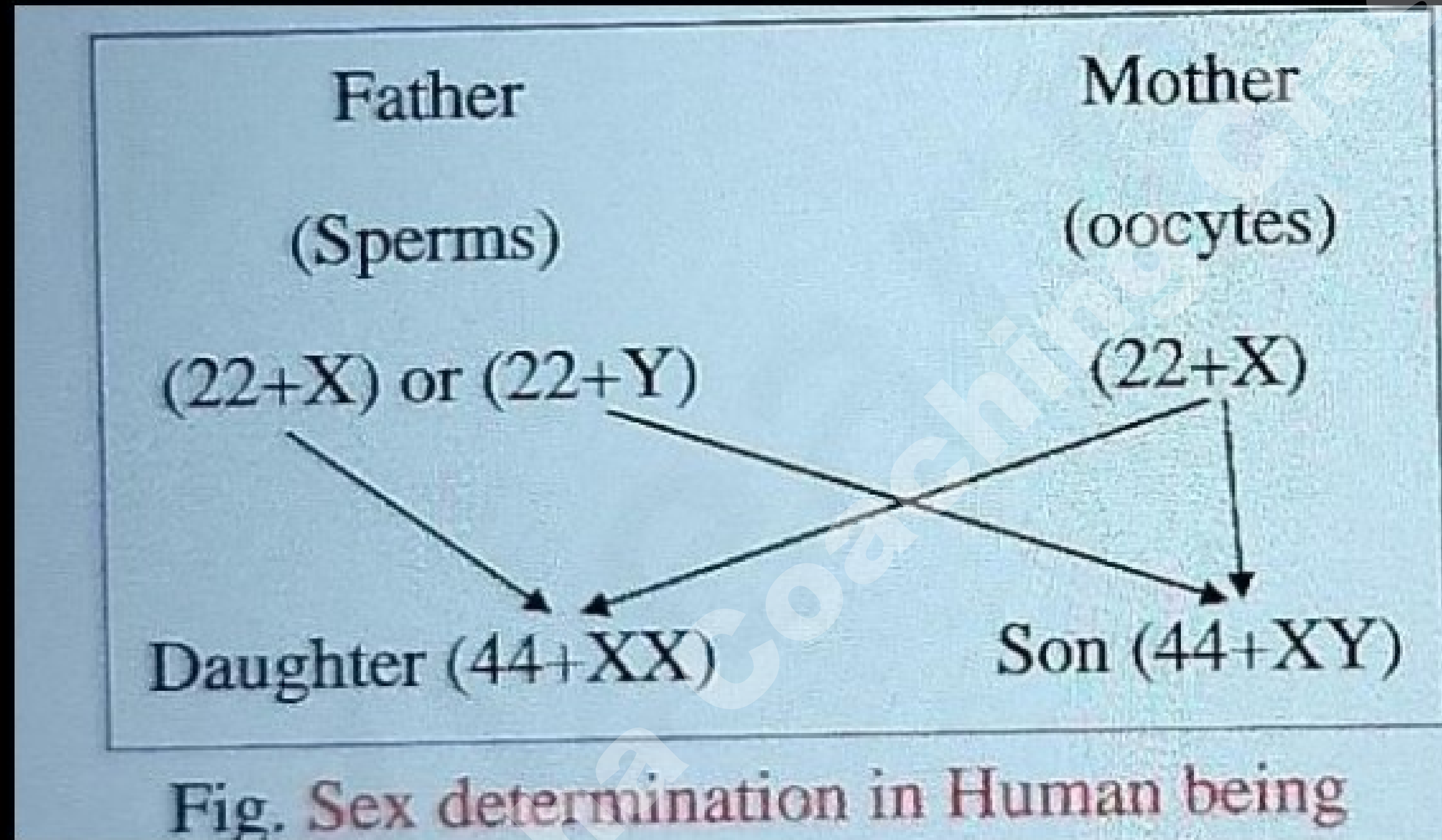
(A) Centromere (B) p-arm.

Ans:



8) Gender of child is determined by the male partner of couple." Draw a diagram explaining the above statement (Mar-19)

Ans:



1. It is clearly seen from the diagram that there are two types of sperms produced by males. One sperm has a X chromosome while the other has a Y chromosome, apart from autosomes
2. The mother on the other hand has all X bearing oocytes. Thus the sperm that fertilizes the oocyte decides the sex of the child.
3. If X bearing sperm fertilizes the oocyte, daughter is born and when Y bearing sperm fertilizes the oocyte, son is born.
4. Thus father or male partner is responsible for the determination of the sex

Theory (3-Mark)

1) Complete the given chart:

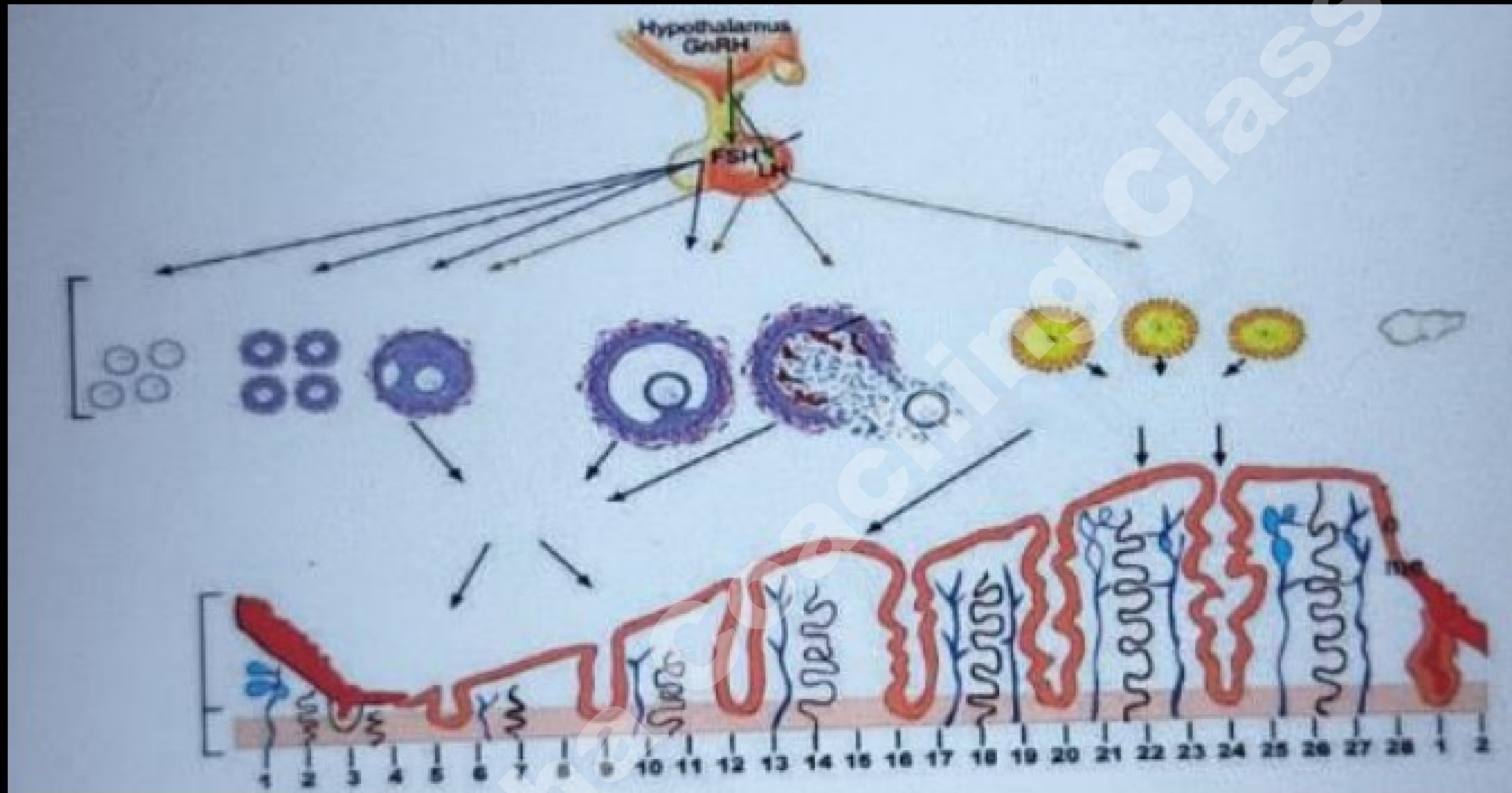
(July-23)

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

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

2) Observe the following figure and answer the question:

(Dec-20)



IMR

(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.

Ans:

(a) Menstrual Cycle is shown in the given diagram. It repeats after every 28-30 days.

(b) Following Hormones are involves in Menstrual Cycle:

1) Follicle Stimulating Hormone (FSH)

2) Luteinizing Hormone (LH)

3) Estrogen

4) Progesterone

↳ Hormone

3) Explain the following concepts in short:

(Mar-20)

Ans:

(a) Surrogacy

(b) In Vitro Fertilization (IVF)

(c) Sperm Bank

Ans

(a) Surrogacy:

1. Some women have problems in implantation of embryo in uterus. Such women can take the help of the modern remedial technique called as surrogacy.

2 In this technique, oocyte is collected from the ovary of the woman having problem in implantation in uterus. That oocyte is fertilized in test-tube with the help of sperms collected from her husband.

3. The embryo formed from such fertilization is implanted in the uterus of some other woman having normal uterus.

4. Such a woman, in whose uterus the embryo is implanted, is called as surrogate mother.

(b) In Vitro Fertilization (IVF):

1. In this technique, fertilization is brought about in the test-tube and the embryo formed is implanted in uterus of woman at appropriate time.
2. IVF technique is used for having the child in case of those childless couples who have problems like less sperm count, obstacles in oviduct, etc.

(c) Sperm Bank:

1. There are various problems in sperm production, in case of many men. So as to have the children in case of such couples, new concept of sperm bank has been introduced.
2. This concept is similar to blood bank. Semen ejaculated by the desired men is collected after their thorough physical and medical check-up and stored in the sperm bank.
3. As per the wish of needful couple, oocyte of woman of the concerned couple is fertilized by IVF technique using the semen from sperm bank.
- 4 Resultant embryo is implanted in the uterus of same woman. Name of the semen donor is strictly kept secret as per the law.

Theory (5 Mark)

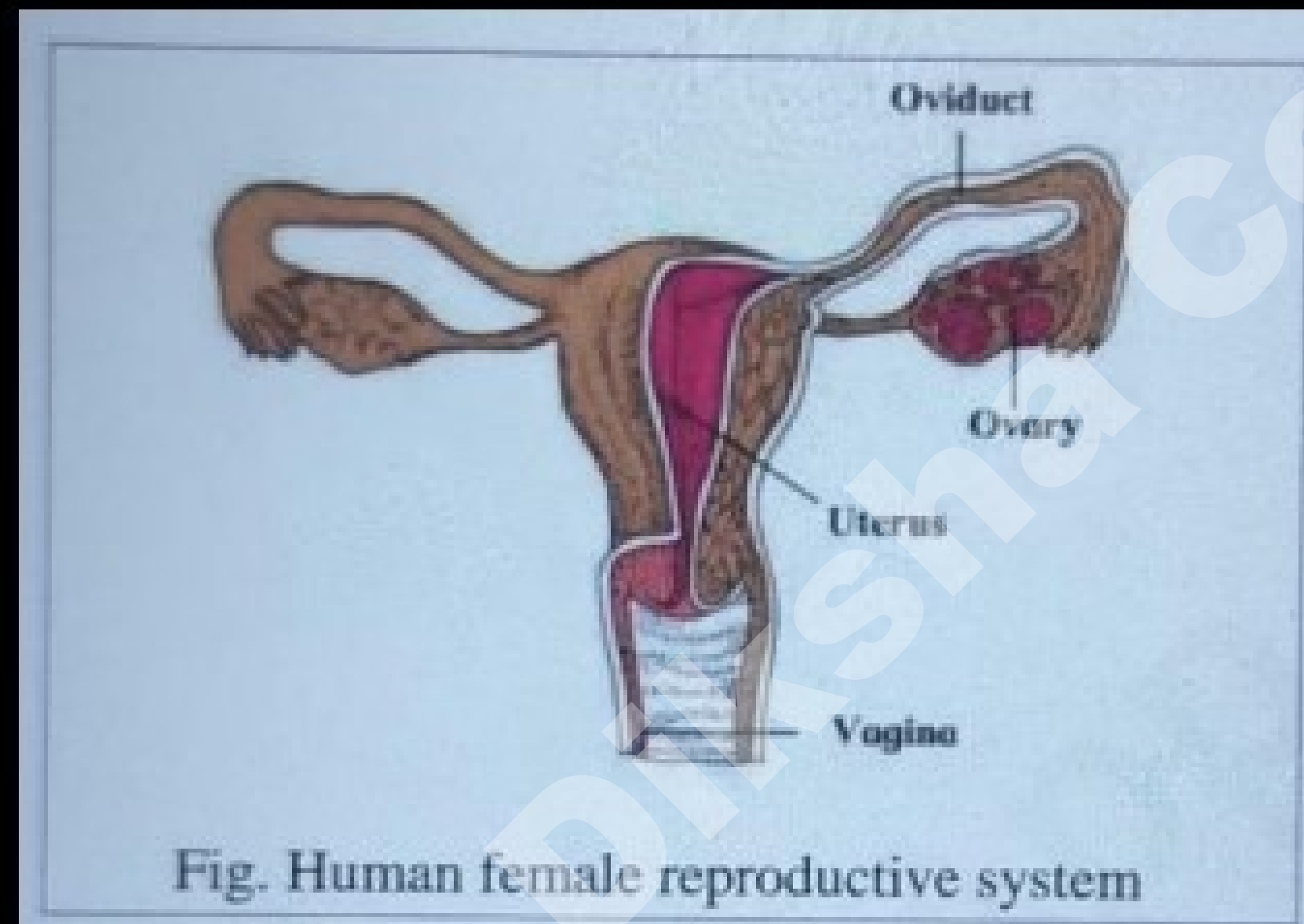
(Jul-23)

1)

- (a) Draw well labelled diagram of female reproductive system.
- (b) Which type of hormones are secreted in female reproductive system?
- (c) When does menopause period stop?
- (d) How many ovaries are there in female foetus at the time of birth?

Ans

(a)



- (b) Estrogen and Progesterone are secreted in female reproductive system.
- (C) Menopause period stops at the age of about 45-50 years.
- (d) 2 ovaries are there in female foetus at the time of birth.

Diksha Coaching Classes

2) Answer the following questions based on human male reproductive system:
(Mar-24)

- (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.

Ans:

- (a) Sperms are formed in testes.
- (b) Length of a sperm is about 60 micrometers.
- (c) vas deferens transports sperm cells from the epididymis to urethra before ejaculation.
- (d) Sperms are formed by meiosis type of cell division.
- (e) Prostate gland and penis are unpaired organs of male reproductive system

3) Answer the following questions in complete sentence based on female reproductive system: (Jul-23)

(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?

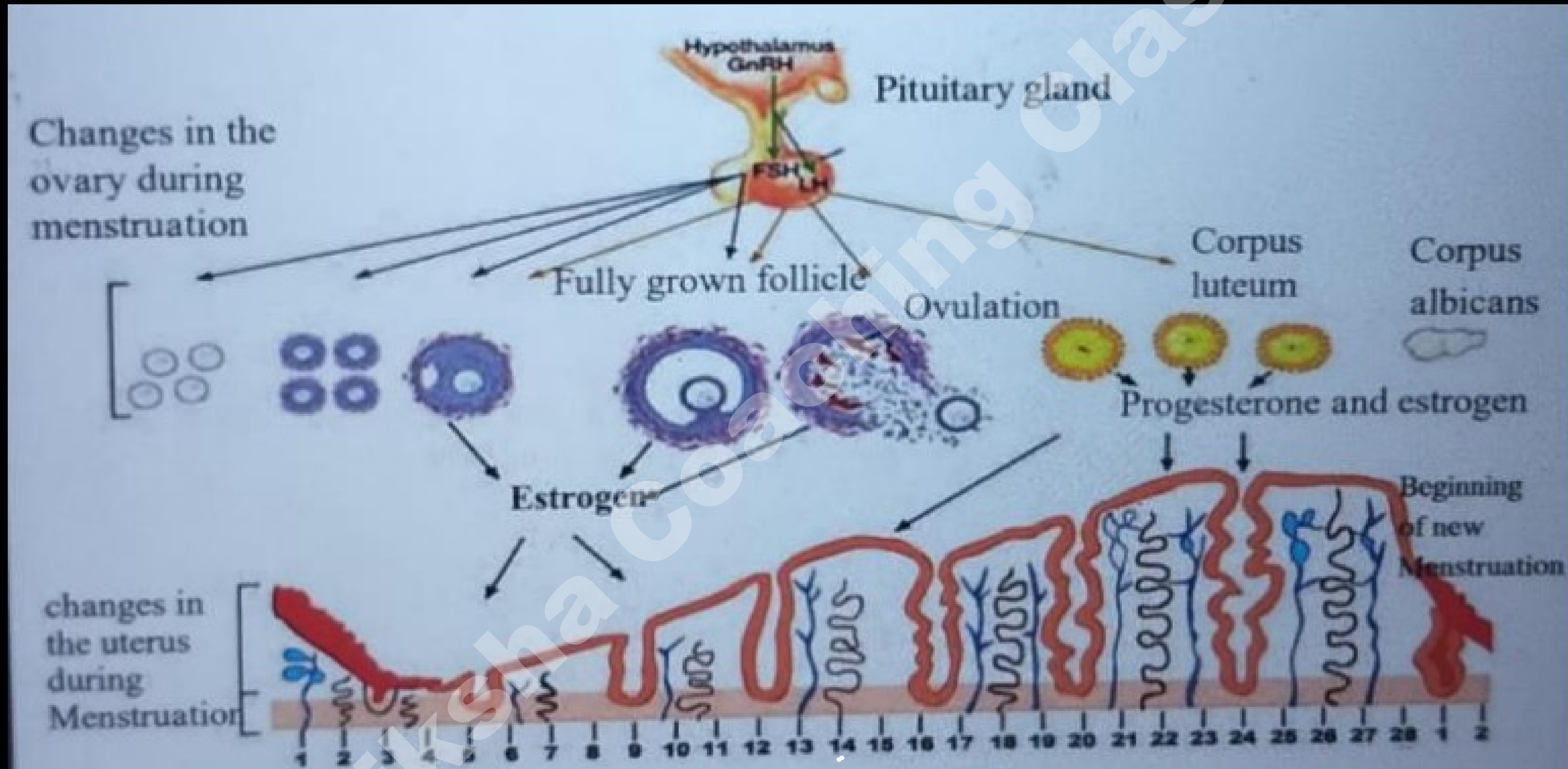
Ans:

(a) 2-4 million immature oocytes are present at the time of birth in the ovary of female foetus.

(b) Bursting of mature ovarian follicle under the influence of luteinizing hormone to release the oocyte is called ovulation.

(c) The natural cessation of menstruation in female that occurs between the age of 45-50 years is known as menopause.

4) Answer the following questions by observing the diagram of menstrual cycle.
(Mar-23)



- (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?

Ans

- (a) 1 to 5 days is the period of menstruation.
- (b) Ovulation occurs on the 14th or 15th day.
- (c) The ovary and uterus change during the menstrual cycle.
- (d) In the menstrual cycle, days 5 to 14 are the period of regeneration of endometrium.
- (e) The period of secretions of glands in endometrium is 15 to 28 days.

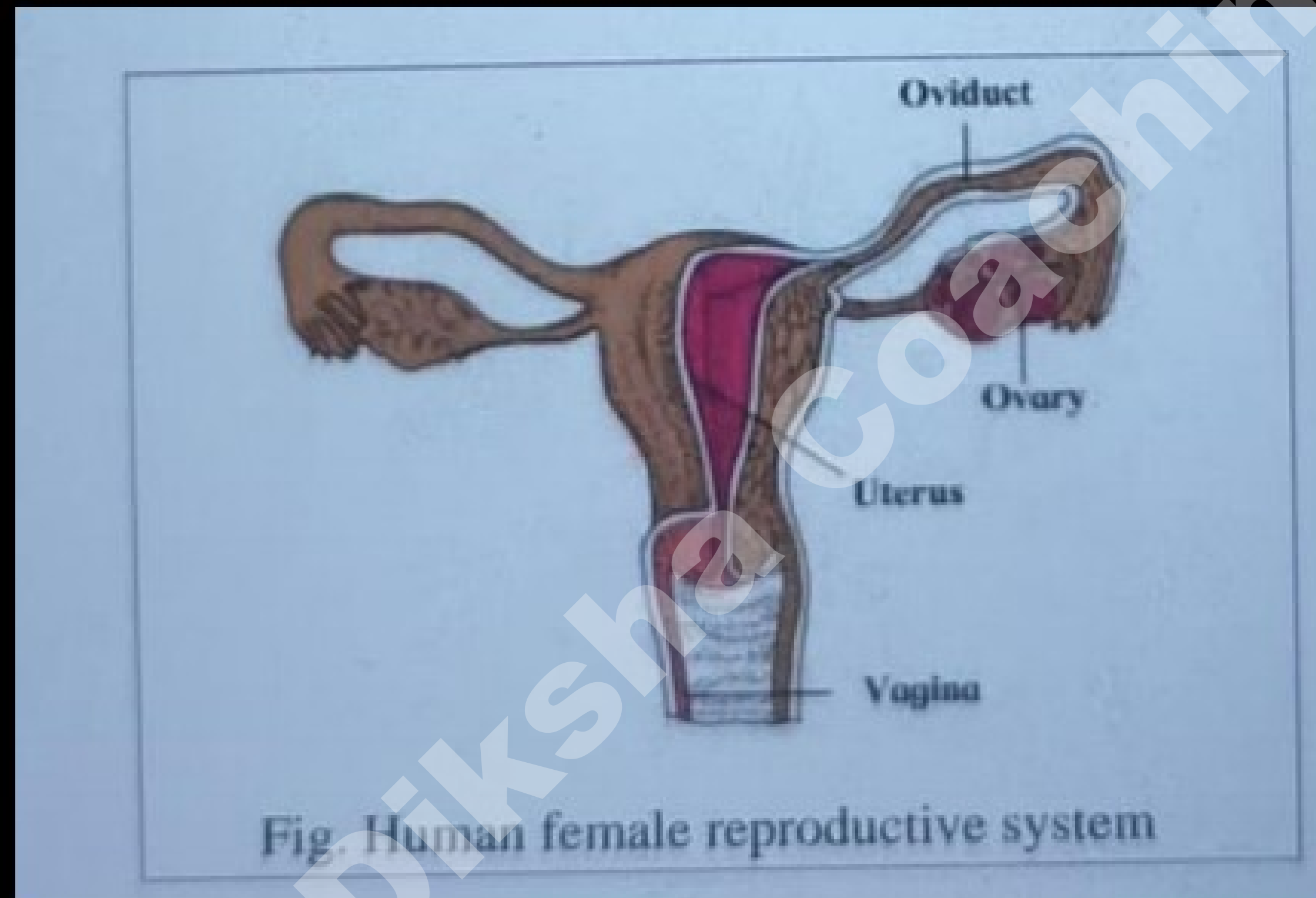
5) Draw a neat and labelled diagram of female reproductive system and give the function of:
(Aug-22)

(a) Oviduct ✓

(b) Ovary ✓

(c) Uterus ✓

Ans:



- (a) Oviduct: or fallopian tubes is the place through which eggs travel from ovary,
meet sperms and fertilization takes place.
- (b) Ovary: The ovary produces the female gamete or egg and the female
hormone oestrogen
- (c) Uterus: The uterus accommodates the growing foetus till it
completes growth.

6)

(Mar-22)

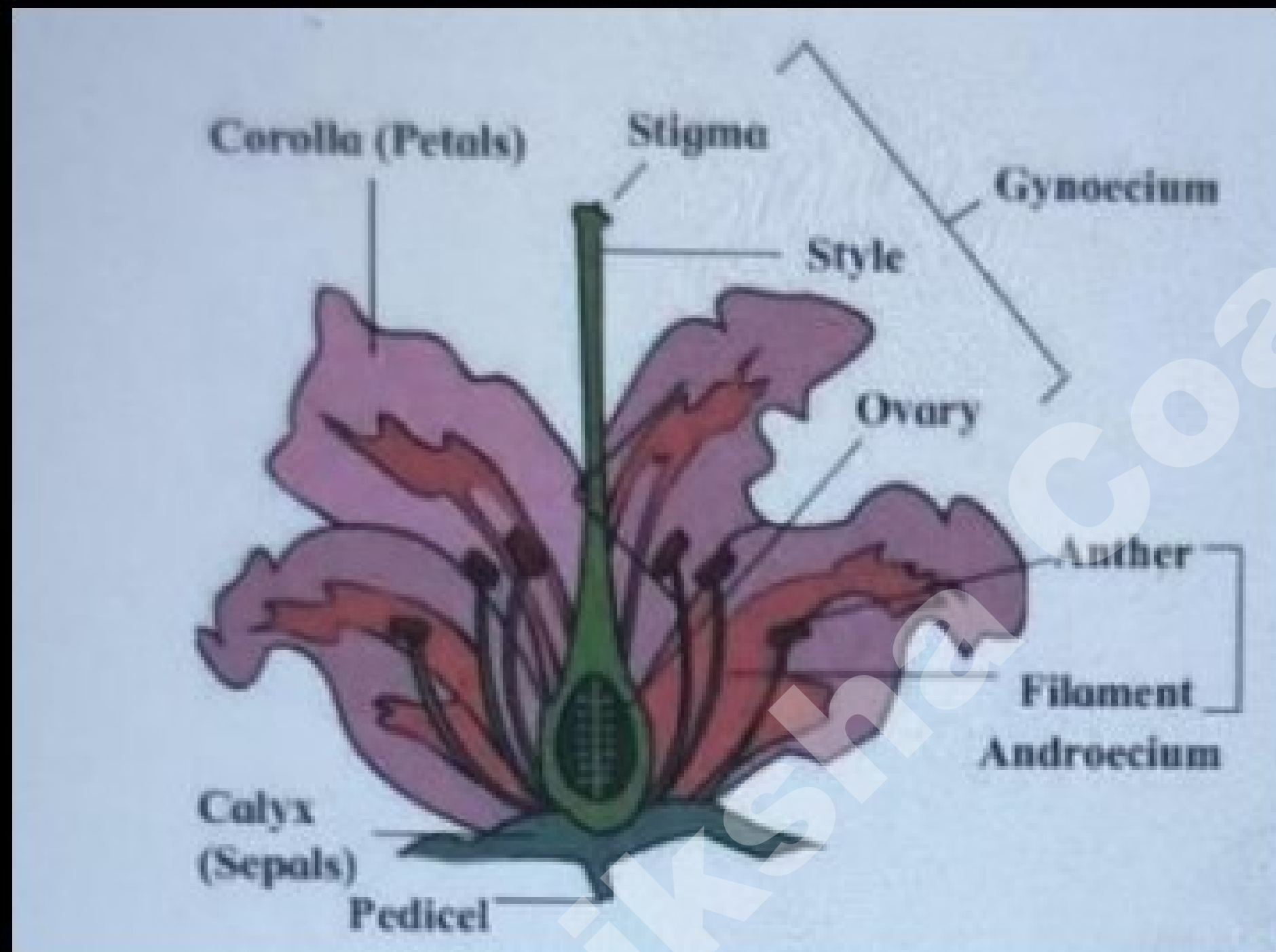
(a) Sketch and label the essential and accessory whorls of flower.

(b) What is pollination?

(c) Give any two examples of agents of pollination.

Ans

(a)



(b) Pollination:

- 1) Pollination is the act of transferring pollen grains from the male anther of a flower to the female stigma.
- 2) Pollination occurs with the help of abiotic agents (wind, water) and biotic agents (insects and other animals).
- 3) Stigma becomes sticky during pollination.
- 4) Pollens germinate when they fall upon such sticky stigma.

(c) The agents of pollination are wind, water, and animals.

Chp: 4 Environmental Management

Diksha Coaching Classes

MCQ (1-Mark)

1) One of the rare species is.....

(Jul-24)

(A) Lesser florican

(B) Red panda

(C) Tiger

(D) Shekru

Ans (B) Red panda

2) The apex consumer is.....

(Mar-23)

(A) Eagle

(B) Frog

(C) Snake

(D) Grasshopper

Ans (A) Eagle

3) Giant squirrel is an example of..... threatened species. (Mar-22)

- (A) Endangered
- (B) Rare
- (C) Vulnerable
- (D) Indeterminate

Ans: (D) Indeterminate

4) Genetic changes occur due to..... pollution. (Dec-20)

- (A) Radioactive
- (B) Air
- (C) Water
- (D) Soil

Ans: (A) Radioactive

5) Which sanctuary of Assam is underthreat due to dams and indiscriminate use of water? (Dec-20)

- (A) Tadoba (B) Kaziranga
(C) Manas (D) Sundarban

Ans (C) Manas

6) In a food chain autotrophic plants are present at thelevel. (Mar-19)

- (A) Tertiary nutrition (B) Secondary nutrition
(C) Producer (D) Apex

Ans: (C) Producer

Theory (1-Mark)

(Jul-24)

1) Match the correct pair.

Column A

(1) Biotic components

Column B

(a) Soil

(b) Plant

(c) Sunlight

Ans:

Column A

(1) Biotic components

Column B

(b) Plant

2) Match the correct pair:

(Mar-23)

Column A

Column B

(1) Forest Conservation Act

(A) 1986

(B) 1980

(C) 1970

Ans

Column A

Column B

(1) Forest Conservation Act

B) 1980

3) Complete the correlation:

(Mar-22)

Westem ghat: Asiatic lion:: Sunderban sanctuary:

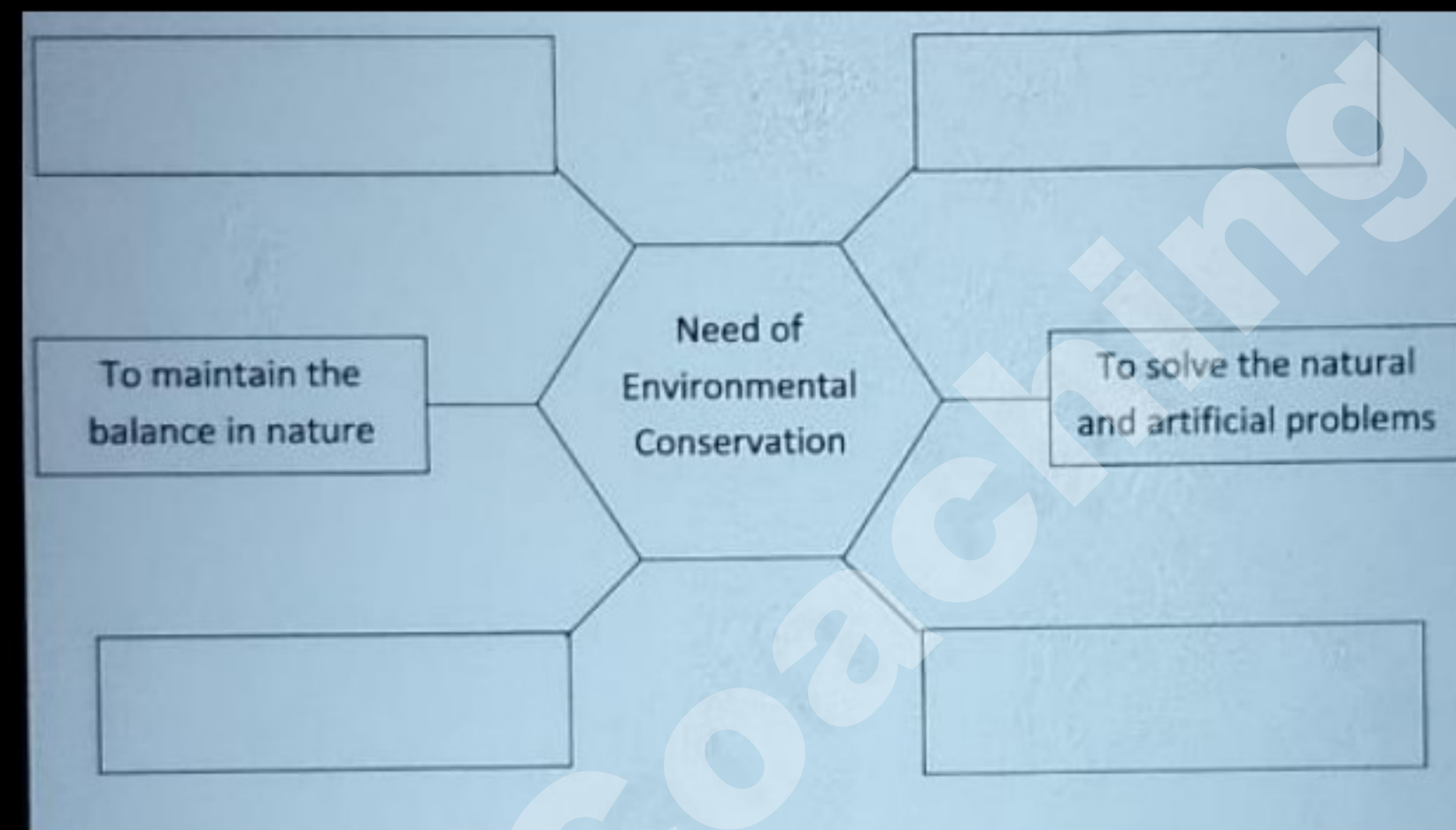
Ans

Westem ghat: Asiatic lion::Sunderban sanctuary: Tiger

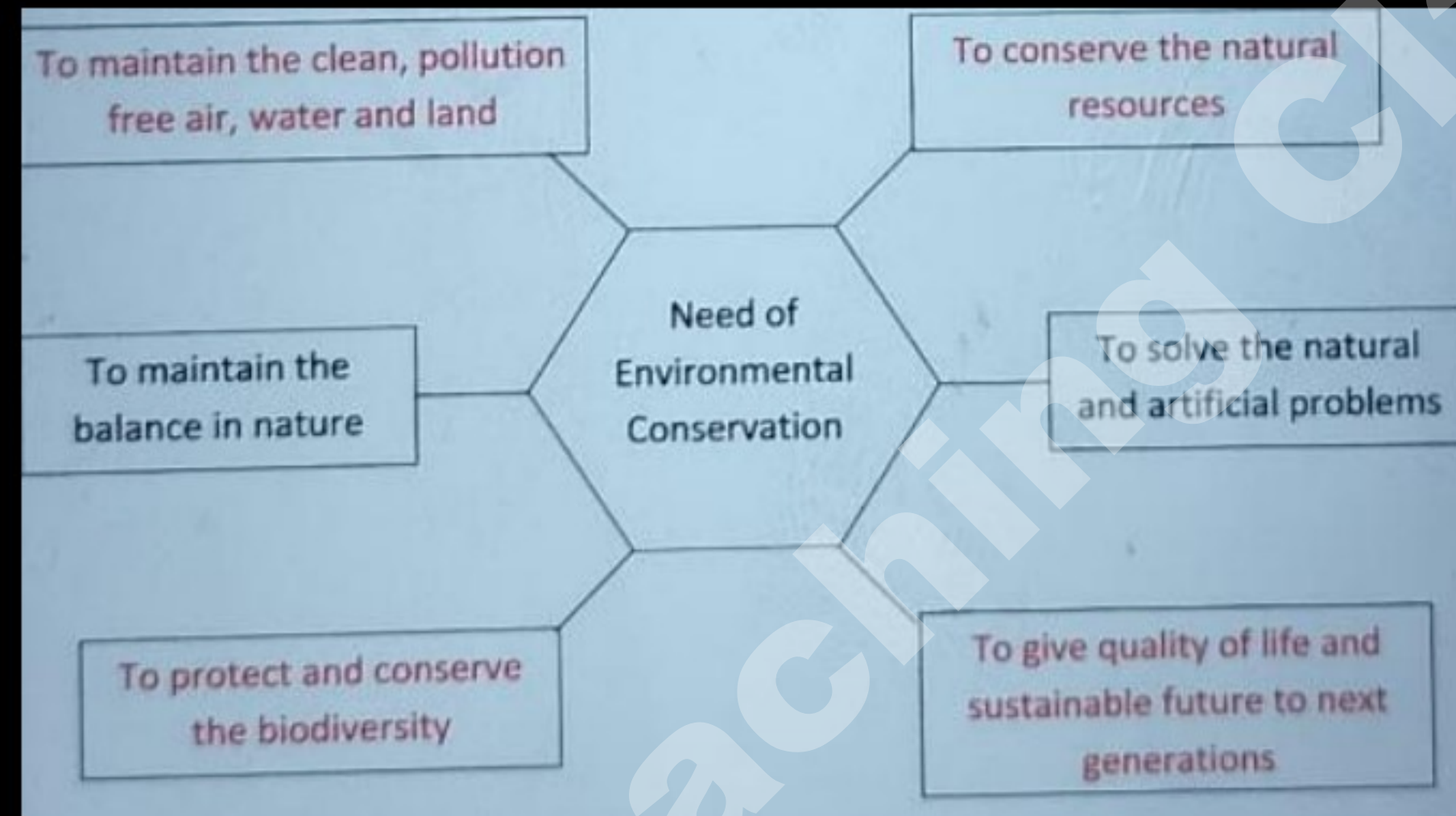
Theory (2-Mark)

1) Complete the following flowchart:

(Jul-24)



Ans:



2) Write four adverse effects of radiations on human body. (Mar-24)

Ans: Following are the adverse effects of radiations on human body:

- 1) Cancerous ulceration occurs due to higher radiations of X-rays
- 2) Tissues in the body are destroyed.
- 3) Genetic changes occur
- 4) Vision is adversely affected

3) Humans have a crucial role in maintaining environmental balance. (Jul-23)

Ans

1) Human life is an integral part of nature and human survival is closely linked with the environment.

2) Due to the rapid increase in human population and industrialization, humans have over utilized natural resources, leading to the degradation of the environment.

3) The environment influences the life of human beings and also human beings modify their environment as humans are the apex predators in the food chain.

4) Humans are capable of conserving and improving the quality of nature and thus, have a major role in maintaining environmental balance.

4) Write a short note on Environmental Conservation. (Mar-23)

Ans:

- 1) Environmental conservation is a broad term which refers to the actions we take in order to protect our planet and conserve its natural resources.
- 2) Environmental conservation implies to the conservation of forests, water resources, mineral resources, etc.
- 3) We are very well aware of the fact that the human life on earth is supported by the various components of the environment. There is a direct relationship between environment and life on earth. Any kind of harm or disruption to the environment will directly and indirectly affect the life of organisms on this earth.
- 4) We need to understand that natural resources should be used in a sustainable manner and not to fulfill our greeds.

5) What is environment? Write two types of environment. (Aug-22)

Ans: Physical, chemical and biological factors affecting the living organisms in any possible way is collectively called as environment. In short, environment is the condition in surrounding.

Types of environment:

1) Natural environment

2) Artificial environment

6) What do we learn from the story of Jadav Molai Payeng? (Mar-22)

Ans

- i) Mr. Molai single handedly transformed a barren land into a forest.
- ii) It was due to his positive attitude, affection towards nature, and hard work, that he could achieve success in planting trees, in over 1360 acres of land.
- (iii) From the story of Jadav Molai Payeng, we learn that we all need to make Earth a better place to live for us as well as for the coming generations.
- (iv) From his story, it is clear that if a large crowd causes harm to the environment, even a single person, if determined can establish a forest and benefit the environment in great ways.
- (v) Also, if one person can make such an impact, many people coming together in unity to take efforts for environment conservation can bring about a revolution.

7) Describe any two animals of threatened species.

(Oct-21)

Ans: Animals of threatened species:

i) Lion tailed monkey: Lion tailed monkeys are found in The Western Ghats of India. Their tail resembles a lion's tail which is where the name lion-tailed monkey comes from. Their population is decreasing due to fragmentation of habitat.

ii) Red Panda: Red Pandas are mainly found in Himalaya region. Their population is decreasing because of habitat loss and degradation, human interference and poaching.

8) Write a short note on Sacred groves.

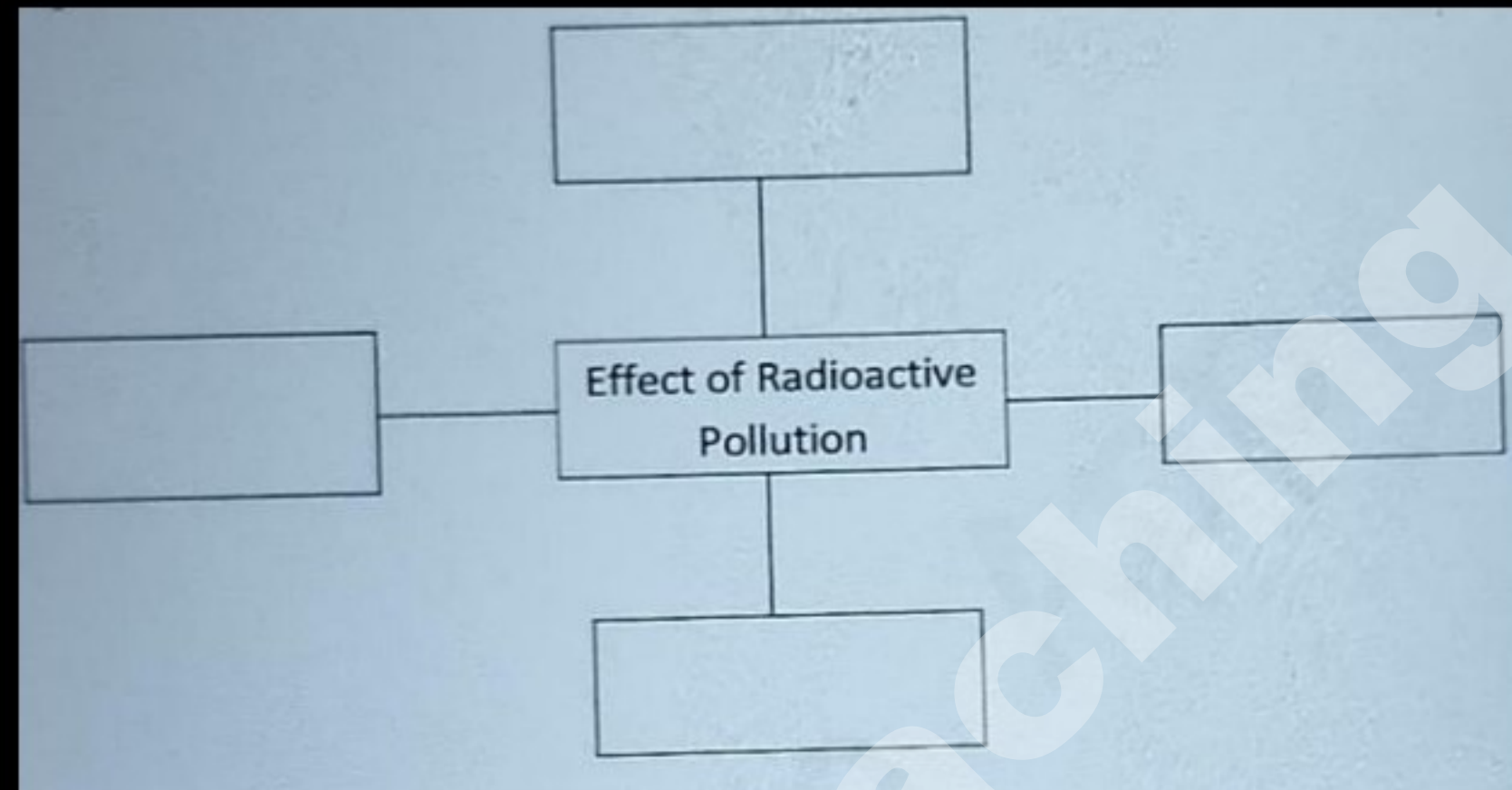
(Dec-20)

Ans:

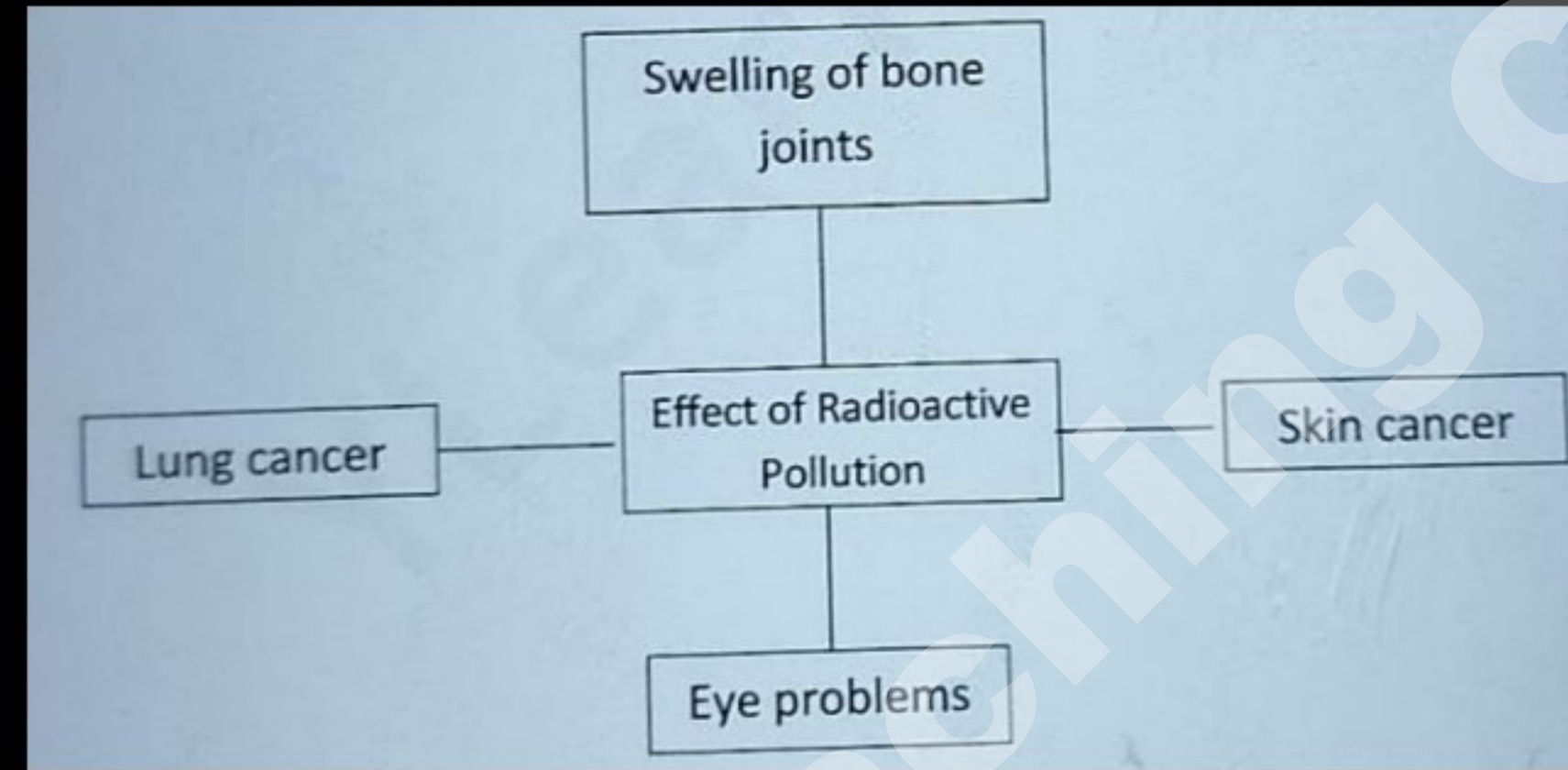
- i) Sacred grove is the green patch of the forest which is conserved by local people in the name of God.
- ii) It does not belong to forest department.
- iii) It is conserved as there is a faith that God reside in the sacred grove. Hence in local language, they are known as Deorai.
- iv) Due to this reason, people do not fell the trees. Also hunting of any wild life is not done here.
- v) More than 1300 sacred groves have been reported in India.
- vi) Role of sacred grove is tremendous in conserving the biodiversity

9) Complete the following chart:

(Mar-20)



Ans



10) Identify the following symbols and state their significance. (Mar-19)



Ans: (1) Save water

Significance:

Water is essential for life. Therefore save water and use it efficiently

(2) Use bicycles

Significance:

It is good because bicycle will save petrol and it will reduce pollution.

Theory (3-Mark)

1) What is the meaning of the following symbols? Write your role accordingly. (Jul-24)



Ans:(1) Symbol meaning: Waste Management

Role: I will encourage people to use waste bins instead of littering.

(2) Symbol meaning: Green Energy

Role: I will promote the adoption and usage of green energy sources, such as solar and wind power, to reduce the environmental impact of fossil fuels.

(3) Symbol meaning:

Save fuel

Role: I will encourage the use of bicycles as a sustainable and healthy mode of transportation to reduce carbon emissions, save fossil fuels, and promote physical fitness.

2) Write a short note on The types of Biodiversity.

(Jul-23)

Ans: Three different levels of Biodiversity:

(1) Genetic Diversity:

Occurrence of diversity among the organisms of same species is genetic diversity. Example: Each human being is different from other.

(2) Species Diversity:

Diversity in the species of organisms that occur in the nature. Example: Various types of plants, animals and microbes.

(3) Ecosystem Diversity:

Ecosystem diversity refers to the various kinds of ecosystem which are found in a region. Each ecosystem will have its own characteristic plants, animals, abiotic factors, etc. Ecosystems are also of two types are natural and artificial

3) Write the factors affecting environment.

(Mar-23)

Ans

1) Environment is affected by natural factors and manmade factors

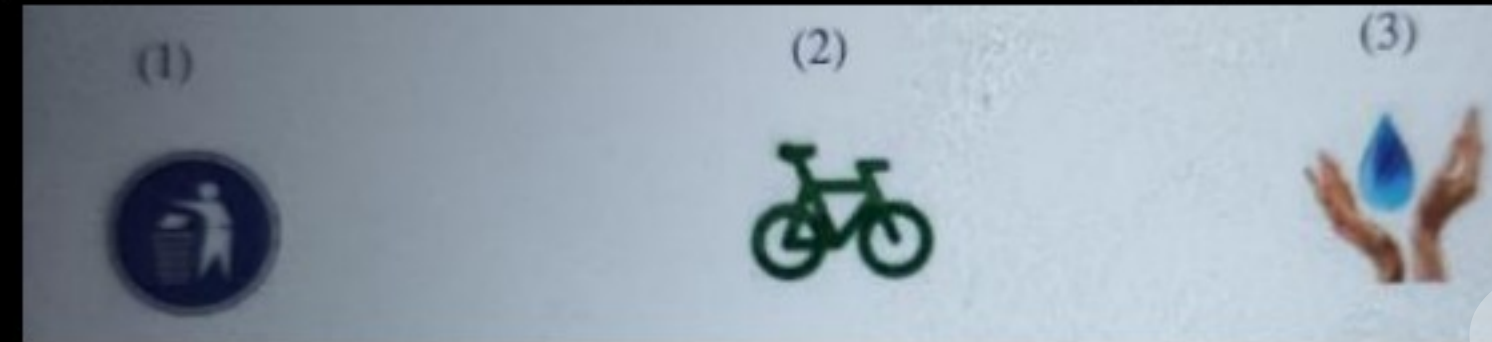
2) Natural factors which affect the environment are earthquakes, floods, fires, droughts, etc.

3) Manmade factors which affect the environment are deforestation, industrialization, use of excessive pesticides and fertilizers, unorganized garbage disposal, etc.

4) These factors cause pollution, create imbalance and ultimately affect the existence of biotic factors

4) Explain the meanings of the following symbols:

(Mar-22)



(1) This symbol tells us to keep our waste carefully.

(2) This symbol indicates save fuel.

(3) This symbol is giving the message "Save Water"

5) Explain the different levels of Biodiversity.

(Dec-20)

Ans. Three different levels of Biodiversity:

(1) Genetic Diversity: Occurrence of diversity among the organisms of same species is genetic diversity. Example: Each human being is different from other.

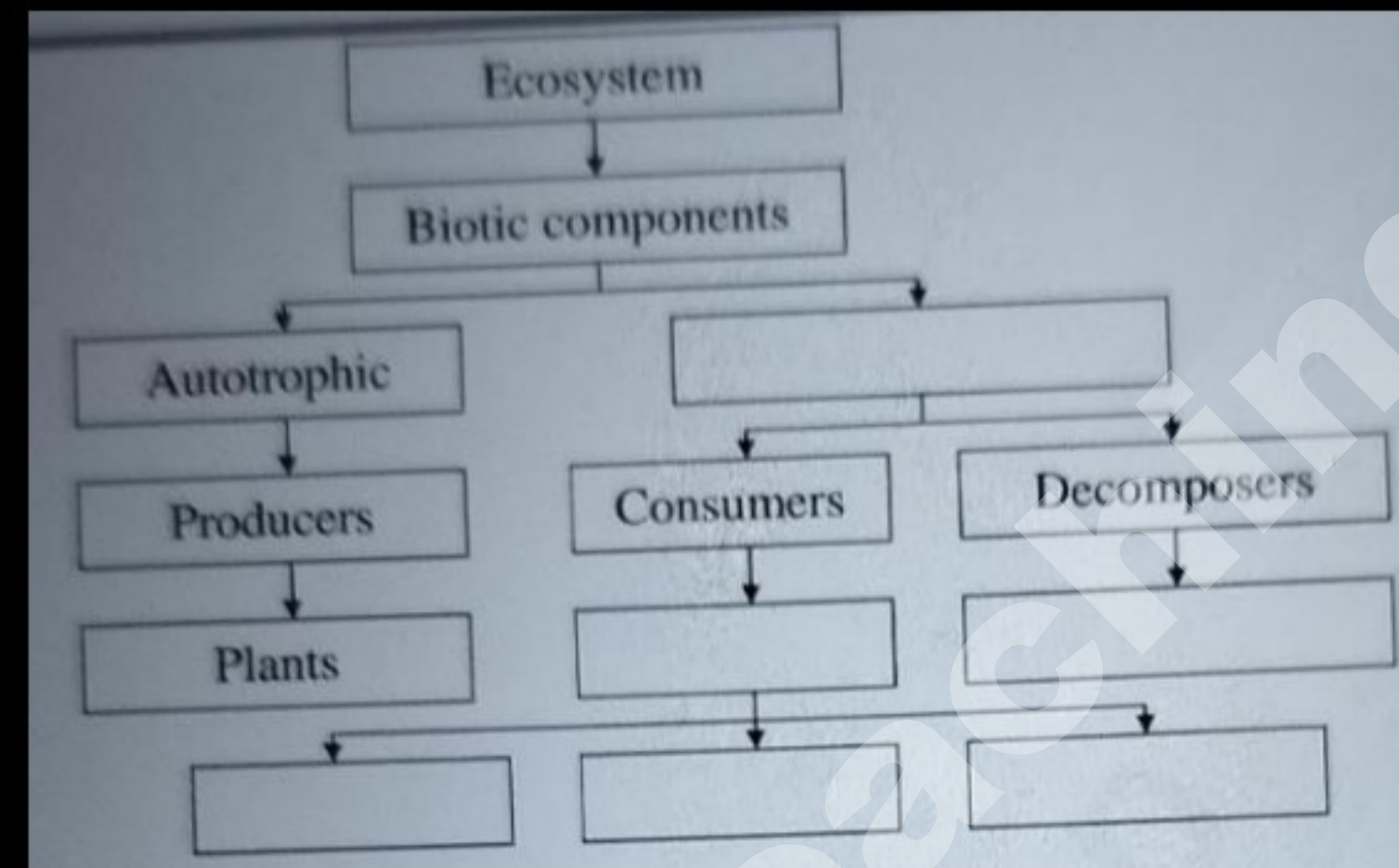
(2) Species Diversity: Diversity in the species of organisms that occur in the nature

Example: Various types of plants, animals and microbes.

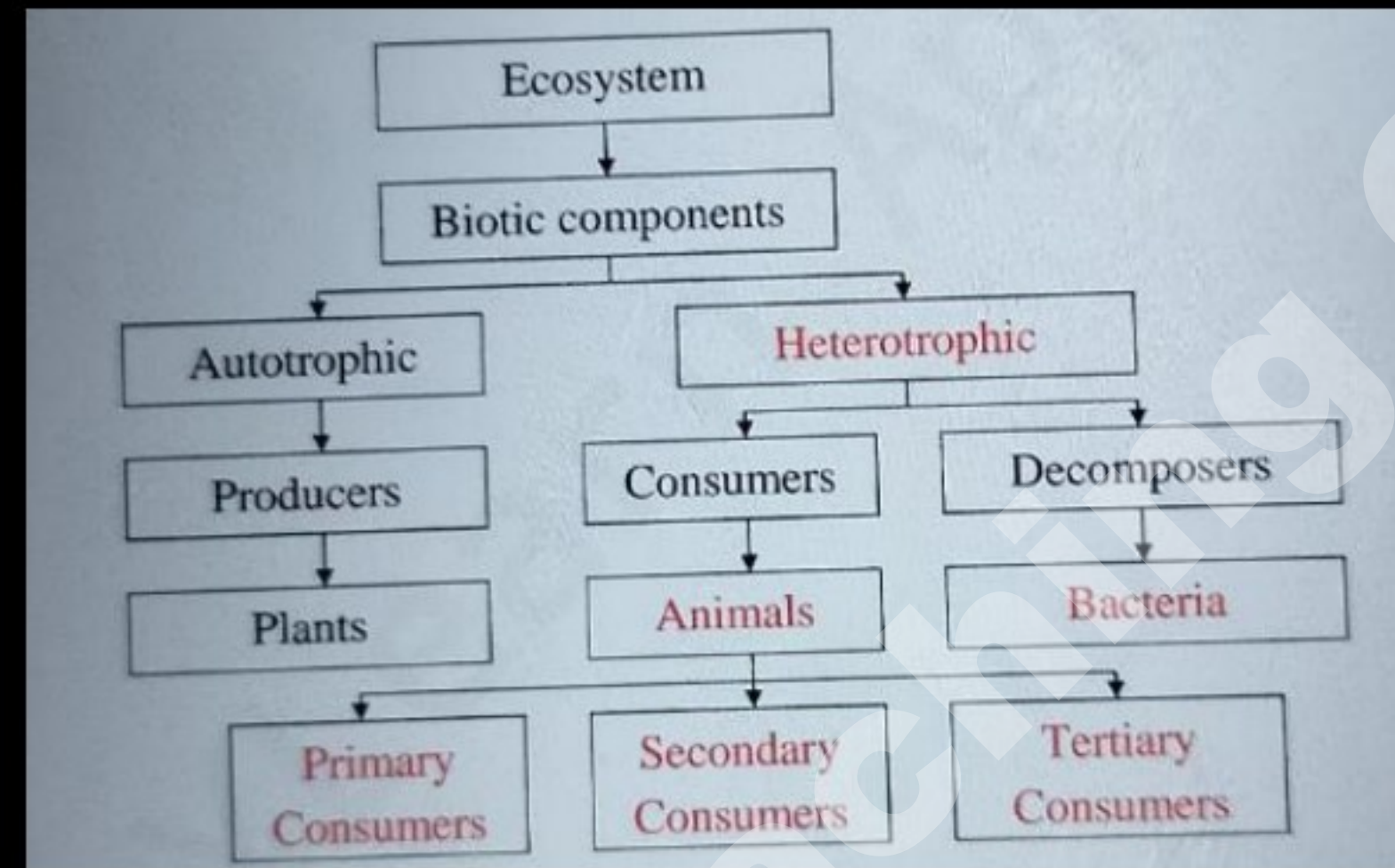
(3) Ecosystem Diversity: Many ecosystems are present in each region. Diversity of the different ecosystems. Example: Natural and artificial ecosystems.

6) Complete the flow chart:

(Jul-19)



Ans:



7) How can biodiversity be conserved.

(Mar-19)

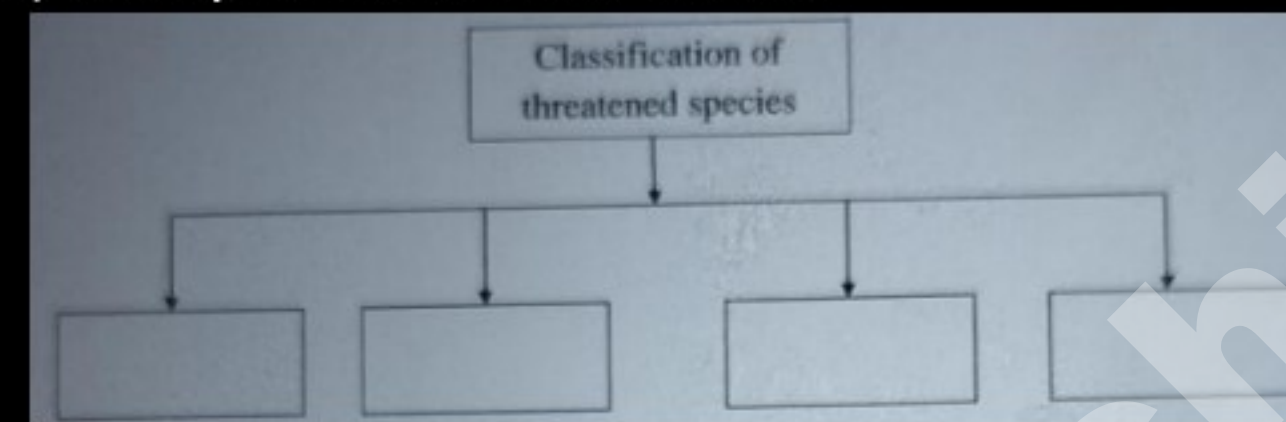
Ans: Biodiversity can be conserved by

- 1) Protecting the rare species of organisms.
- 2) Establishing national parks and sanctuaries.
- 3) Declaring some regions as "bio-reserves".
- 4) Projects for conservation of special species
- 5) Conserving all plants and animals.
- 6) Observing the rules
- 7) Maintaining record of traditional knowledge

Theory (5-Mark)

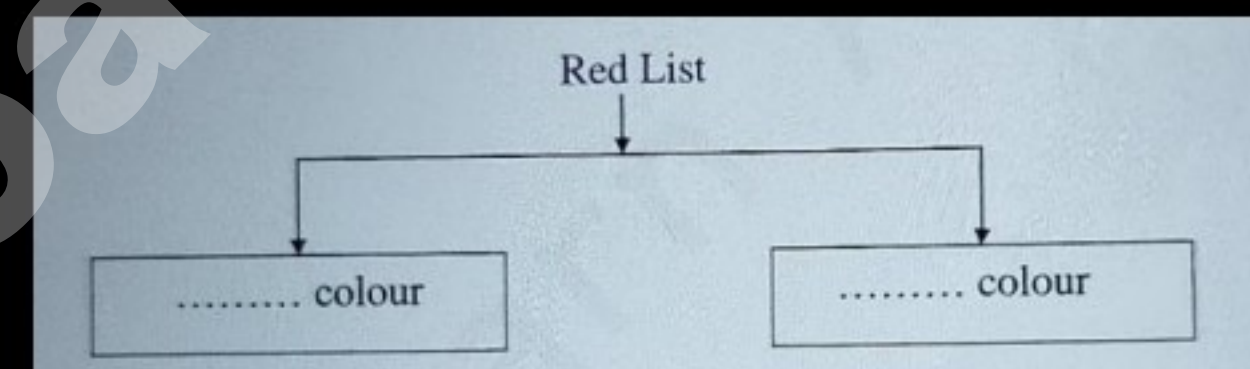
1) Answer the following questions based on environmental conservation and biodiversity: (Mar-24)

(a) Complete the flow chart:

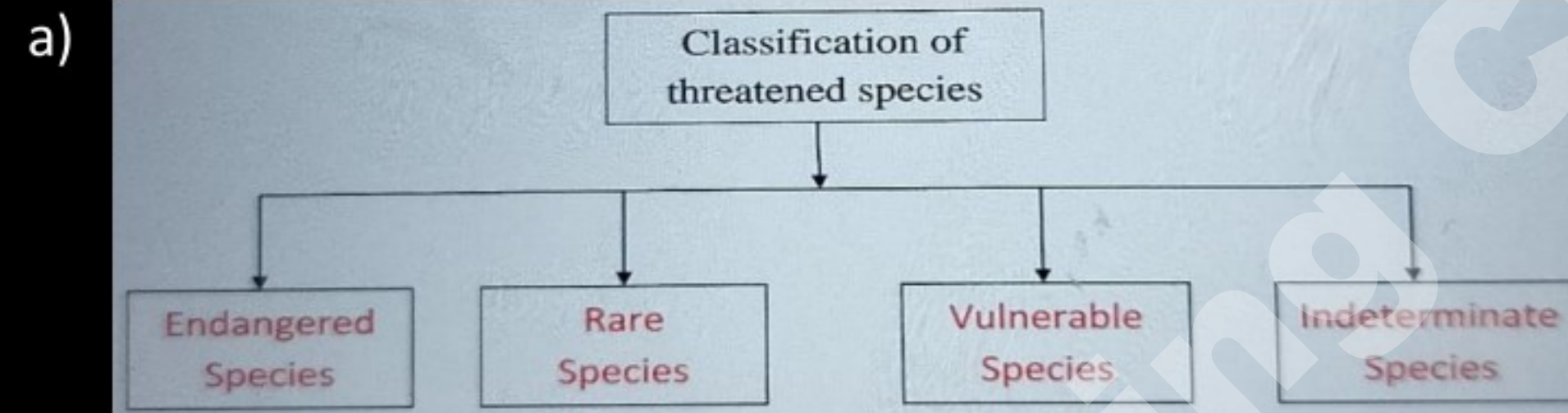


(b) How can biodiversity be conserved? Give any four points.

(c) Complete the flow chart



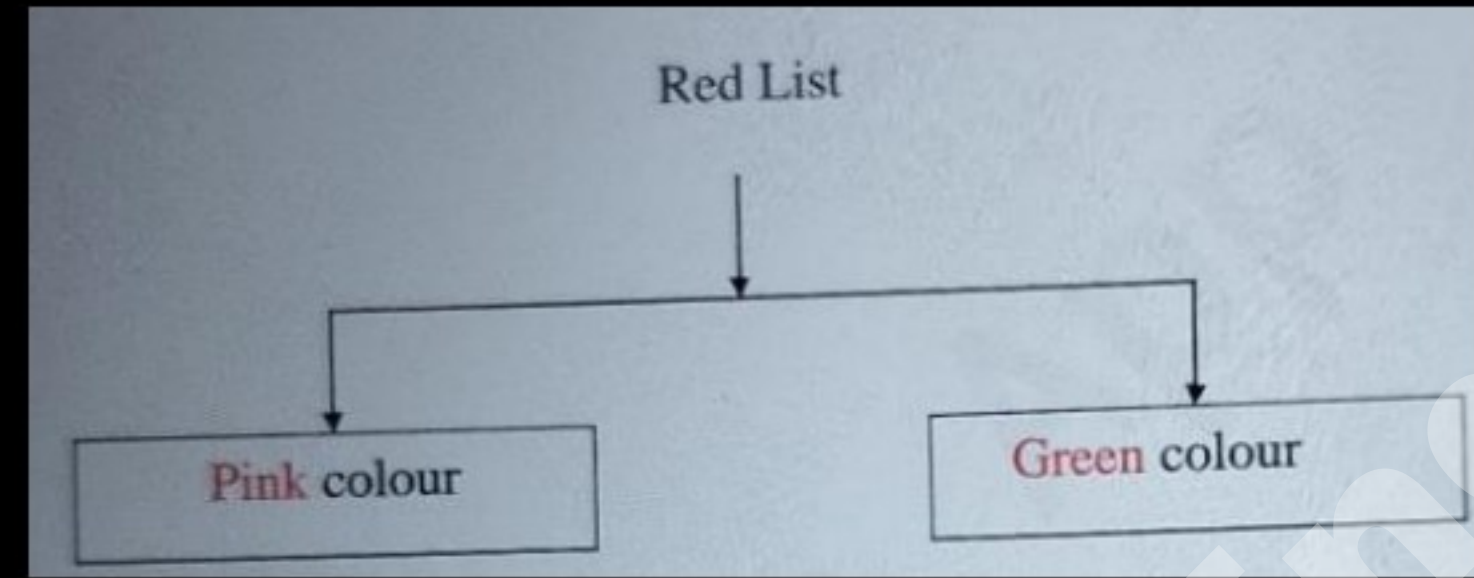
Ans



(b) Biodiversity can be conserved by

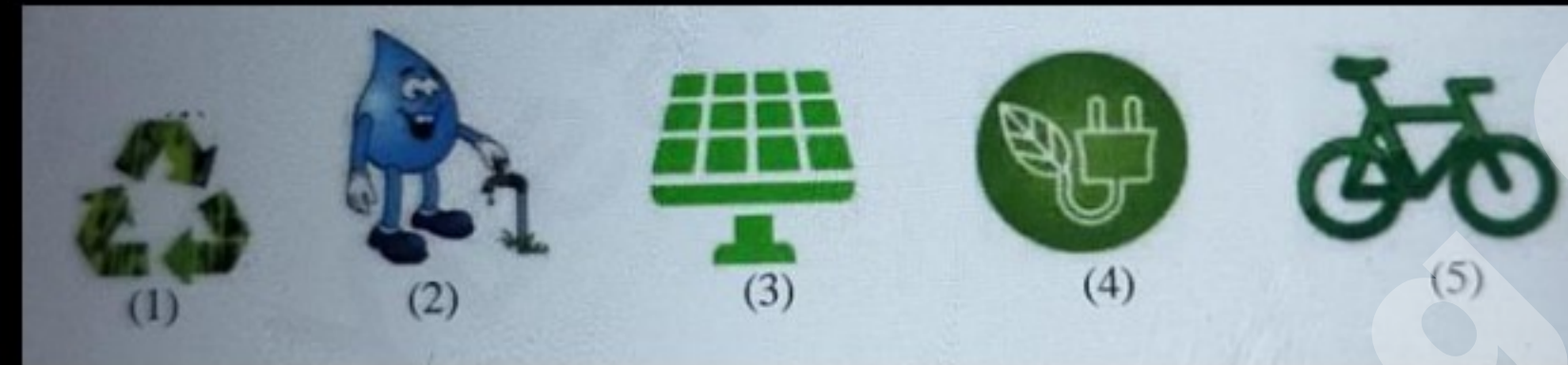
- 1) Protecting the rare species of organisms.
- 2) Establishing national parks and sanctuaries.
- 3) Declaring some regions as 'bio-reserves'
- 4) Projects for conservation of special species.
- 5) Conserving all plants and animals

c)



2) Explain the meanings of the following symbols.

(Aug-22, Jul-19)



Ans

(1) This sign is used for indicating that "this object can be reused and recycled". Recycling is the process in which a substance that has been discarded is reprocessed to make the same or a different substance. It is one of the methods to conserve our environment.

(2) This sign is used to indicate 'Save Water'. Conservation of water is essential for securing food grain production and sustaining various life-forms

(3) This sign indicates 'Solar Panel'. Solar energy can be harnessed with the help of solar cells. Solar energy will eventually reduce the dependence upon fossil fuels hence will help in the conservation of environment.

(4) This sign indicates "Green Energy". These are eco-friendly and inexhaustible source of energy.

(5) This sign indicates 'Save fuel'. Fuels are depleting in nature because of their excessive use. So, we should use renewable sources of energy and we should try to save fossil fuels.

3) What are the three endangered heritage places in India? Mention two measures you will take to protect this with reasons. (Oct-21)

Ans:

(a) The Western Ghats, Manas sanctuary and Sunderbans sanctuary are endangered heritage places in India.

(b) 1) I will take help of environmentalist to stop the mining industry and search of natural gas in The Western Ghats. Because, due to mining industry and search for natural gas, habitats of Asiatic lion and wild bison are under threat

2) I will stop the construction of more dams and indiscriminate use of water with the help of environmentalist and local authority in Manas sanctuary. Because, due to dams and indiscriminate use of water, tiger and rhino are under threat.

3) I will stop the construction of more dams, deforestation, excessive fishing and trench digging in Sunderbans sanctuary with the help of environmentalists, local people and authorities. Because, due to construction of more dams, deforestation, excessive fishing and trenching, the tiger population and the overall local environment is seriously affected

4) Attempts at various levels are performed for conserving environment Which role would you like to perform. Give two actions each (Mar-20)

- (a) Prevention
- (b) Control
- (c) Production
- (d) Awareness
- (e) Conservation

Ans: I would like to perform the role of social activist and environmentalist and will create awareness among the people to save our nature.

(a) Prevention

1. Reduce water pollution by using proper drainage system.
2. Reduce waste production to reduce methane emission. It can be achieved by recycling and reusing the used items.

(b) Control

1. The use of pesticides should be banned as it is harmful for plants
2. Use of polythene bags should be avoided, to control pollution as it is non-biodegradable.

(c) Production

1. Seeds of better quality should be distributed for better production of crops
2. Eco-friendly production process should be followed.

(d) Awareness

1. People Should be encouraged to use organic farming method.
2. People should be encouraged to grow small gardening areas.

(e) Conservation

1. Conserve water to extend our water resources for future and to protect the animals and plants that live in areas with limited water.
2. Stop the cutting of trees, and plant more trees.

Diksha Coaching Classes