

## Biology previous year questions (314)

1. Apple, pears and fig are examples of.....

Ans : False fruit (2023)

2. Which of the following is an initiation codon

Ans :AUG (2015)

3. Which of the following disorders sex linked

Ans: Thalasemis (2018)

4. Match the following (2017)

Ans : iodine - goitre  
Iron - RBC  
vitamin A - night blindness  
vitamin K - delayed blood clotting

5. Bt crops are.....

Ans :transgenic crops (2019)

Define the terms (2016)

6. ecotones

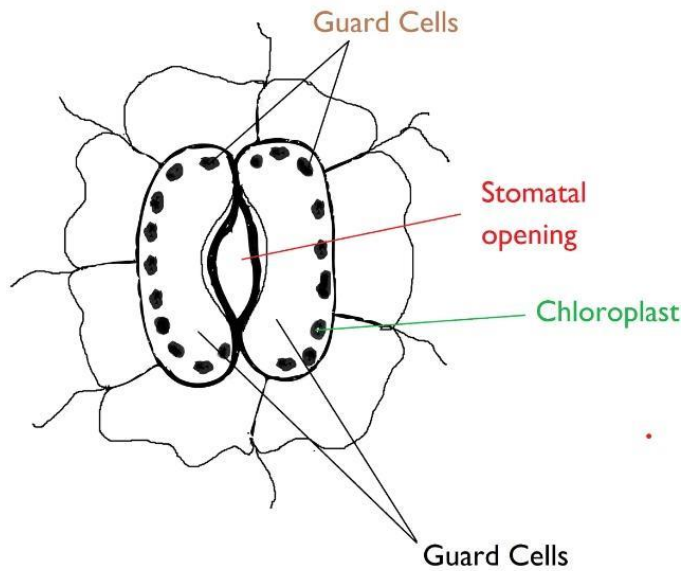
Ans : It is the transitional zone or boundary between two or more different ecological community habitats or ecosystem

7. ecological succession

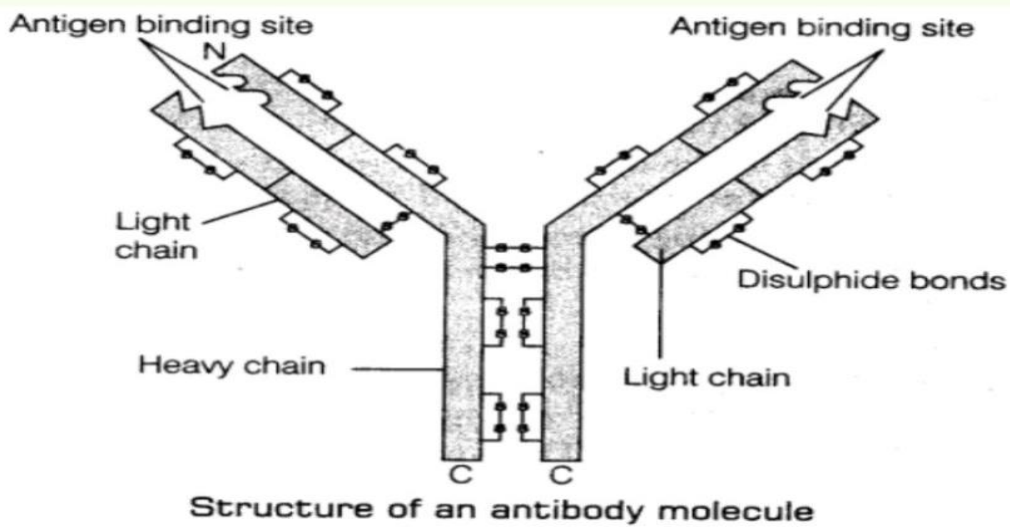
Ans : The process of change in Species composition of biological community overtime it's a fundamental concept of ecology that describe how one community to plants and animals replace another in a specific area

8. draw a neat labelled diagram of stomatal Apparatus of dicot leaf (2016)

Ans :



9. draw a neat label the diagrammatic structure of an antibody



Ans: (2018)

10. list four reasons of population explosion in India state (2022)

Ans : High birthrate  
Improve healthcare  
Increased life expectancy  
lack of family planning  
cultural and social factors  
poverty  
illiteracy  
government policies  
agricultural improvement

11. Define the surgical method of family planning in human beings (2018)

Ans : The surgical methods of family planning in human beings are:

\*For Men: Vasectomy\*: A minor surgical procedure where the vas deferens (the tubes that carry sperm) are cut, tied, or blocked to prevent sperm from reaching the semen.

\*For Women: Tubal tubectomy \* : A surgical procedure where the fallopian tubes are cut, tied, or blocked to prevent eggs from reaching the uterus.

12. Give difference between DNA and RNA (2014)

Ans

DNA	RNA
1. It has two strands of nucleotides.	1. It has only one strand of nucleotides.
2. Most of the DNA is present in the nucleus and very little in chloroplast and mitochondria.	2. Most of the RNA is present in cytoplasm and little in the nucleus.
3. Deoxyribose sugar is present ( $C_5H_{10}O_4$ ).	3. Ribose sugar is present ( $C_5H_{10}O_5$ ).
4. Pyrimidines are Thymine and Cytosine.	4. Pyrimidines are Uracil and Cytosine.

13. Write about gene cloning (2016)

Ans :

\*Step 1: Isolation of DNA\*

- Extract DNA from an organism's cells using enzymes and chemicals.
- Purify the DNA using various techniques like centrifugation and precipitation.

\*Step 2: Cutting DNA with Restriction Enzymes\*

- Use restriction enzymes to cut the DNA at specific recognition sites.
- This creates smaller DNA fragments with sticky ends.

\*Step 3: Preparation of Vector DNA\*

- Choose a suitable vector (like a plasmid or virus) to carry the gene of interest.
- Cut the vector DNA with the same restriction enzyme used in Step 2.

\*Step 4: Ligation\*

- Mix the cut DNA fragments with the cut vector DNA.
- Use DNA ligase enzyme to join the fragments to the vector DNA.

\*Step 5: Transformation\*

- Introduce the recombinant vector DNA into host cells (like bacteria).
- Use heat shock or electroporation to facilitate uptake.

**\*Step 6: Selection\***

- Use antibiotics or other selection agents to identify cells that have taken up the recombinant vector.
- Only cells with the vector will survive.

**\*Step 7: Screening\***

- Use techniques like PCR, restriction digestion, or DNA sequencing to confirm the presence of the gene of interest.

**\*Step 8: Amplification\***

- Grow the host cells in large quantities to amplify the recombinant DNA.

**\*Step 9: Purification\***

- Extract and purify the recombinant DNA from the host cells

**14. Describe Kerb cycle (2023)**

Ans :the Krebs cycle (also known as the citric acid cycle or tricarboxylic acid cycle)

**\*Step 1: Acetyl-CoA Enters the Cycle\***

- Acetyl-CoA, a molecule produced from the breakdown of carbohydrates, fats, and proteins, enters the Krebs cycle.

**\*Step 2: Citrate Formation\***

- Acetyl-CoA combines with oxaloacetate to form citrate, the first compound in the cycle.

**\*Step 3: Isomerization\***

- Citrate is converted into isocitrate through an isomerization reaction.

**\*Step 4: Oxidation and Decarboxylation\***

- Isocitrate is oxidized and decarboxylated to form alpha-ketoglutarate, releasing CO<sub>2</sub> and NADH.

**\*Step 5: Oxidation and Decarboxylation**

- Alpha-ketoglutarate is oxidized and decarboxylated to form succinyl-CoA, releasing CO<sub>2</sub> and NADH.

**\*Step 6: Succinyl-CoA Conversion\***

- Succinyl-CoA is converted into succinate through a series of reactions.

**\*Step 7: Oxidation\***

- Succinate is oxidized to form fumarate, releasing FADH<sub>2</sub>.

**\*Step 8: Hydration\***

- Fumarate is hydrated to form malate.

**\*Step 9: Oxidation\***

- Malate is oxidized to form oxaloacetate, releasing NADH.

**\*Step 10: Cycle Complete!\***

- Oxaloacetate can now combine with another acetyl-CoA molecule to start the cycle again.

the Krebs cycle:

- Produces ATP, NADH, and FADH<sub>2</sub> as energy-rich molecules
- Releases CO<sub>2</sub> as a waste product
- Occurs in the mitochondria
- Is a crucial step in cellular respiration

15. Describe types of immunity

Ans: (2020)

\*1. Innate Immunity\*

- Present from birth
- Non-specific defense against pathogens
- Physical barriers (skin, mucous membranes)
- Cellular responses (phagocytosis, inflammation)
- Protein responses (complement system, interferons)

\*2. Adaptive Immunity\*

- Develops after exposure to pathogens
- Specific defense against pathogens
- Two types:
  - \*Humoral Immunity\* (B cells, antibodies)
  - \*Cell-Mediated Immunity\* (T cells, cellular response)

\*3. Active Immunity\*

- Results from direct exposure to pathogens
- Develops over time
- Provides long-term protection

\*4. Passive Immunity\*

- Results from external sources (mother's milk, vaccines)
- Provides temporary protection

\*5. Natural Immunity\*

- Present from birth (innate) or acquired through exposure (active)

\*6. Artificial Immunity\*

- Acquired through medical interventions (vaccines, immunoglobulins)