

CBSE Test Paper 05
Ch-13 Organisms and Populations

1. Choose the correct sequence:
 - a. species -->population -->community -->biome
 - b. species -->community -->population -->biome
 - c. biome -->species -->population -->community
 - d. population -->species -->community -->biome
2. Mediterranean orchid *Ophrys sensu lato* pollination by
 - a. Brood parasitism
 - b. Sexual deceit and co-evolution
 - c. Co-evolution, sexual deceit and pseudo-copulation
 - d. Pseudocopulation only
3. If vital index is >100 then the population will
 - a. decrease showing negative growth
 - b. remain static showing zero growth
 - c. decrease showing positive growth
 - d. increase showing positive growth
4. Two different species cannot share:
 - a. metapopulation
 - b. same ecosystem
 - c. same community
 - d. same ecological niche

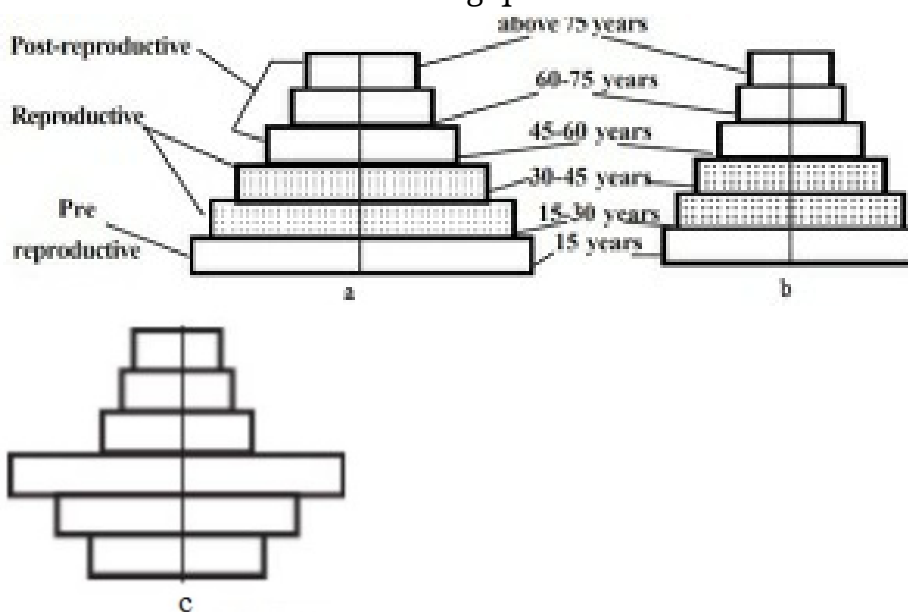
5. Match the following:

column I	Column II
(i) Migrate	(a) hibernation and aestivation
(ii) Suspend	(b) sweat it out
(iii) Regulate	(c) inability to maintain a constant internal environment
(iv) Conform	(d) people going from Rajasthan to Kashmir during summer

- a. i-d,ii-a,iii-b,iv-c
- b. i-d,ii-b,iii-c,iv-a
- c. i-d,ii-c,iii-a,iv-b

d. i-a,ii-d,iii-b,iv-c

6. List the various abiotic environmental factors.
7. Name the type of interaction seen between whale and the barnacles growing on its back?
8. In a pond there were 200 frogs. 40 more were born in a year. Calculate the birth rate of the population.
9. An orchid plant is growing on the branch of mango tree. How do you describe this interactions?
10. Name important defence mechanisms in plants against herbivory?
11. Give two examples of mutualism in living organisms.
12. Mention any two significant roles predation plays in nature.
13. Study the 3 representative figures of age pyramid relating to human population given below and answer the following question:



- i. Mention the names given to the 3 kinds of age profiles (a), (b) and (c).
 - ii. Which one of them is ideal for a population and why?
 - iii. How do such age profile studies help policymakers get concerned about our growing population and prepare for future planning?
14. Explain what is meant by environmental resistance and its relationship to population growth.
 15. Write a short note on : Behavioural adaptations in animals.

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Answer

1. a. species -->population -->community -->biome, **Explanation:** A number of species living in a particular area makes the population. Different population of a ecosystem forms community and communities in a geographical area are called biome.
2. c. Co-evolution, sexual deceit and pseudo-copulation, **Explanation:** Mediterranean orchid Ophrys ensures pollination by co-evolution, sexual deceit and pseudo-copulation. One petal of flower bears an uncanny resemblance to female of bee in size, colour and markings.
3. a. decrease showing negative growth, **Explanation:** Vital index is the ratio of births to deaths within a population during given time. If vital index is greater than hundred then the population will decreasing showing negative growth.
4. d. same ecological niche, **Explanation:** An ecological niche is the role and position a species has in its environment and how it meets its needs of food and shelter, how it survive and reproduce. Two different species cannot share same ecological niche as their requirement is different from each other.
5. a. i-d,ii-a,iii-b,iv-c, **Explanation:** People going from Rajasthan to Kashmir during summer is a kind of migration. During hibernation and aestivation organism suspends life processes to minimum levels. To regulate the body temperature sweating occurs and inability to maintain consistent internal environment is called conformation.

6. **Atmospheric factors :** Light, wind, water, temperature.

Edaphic factors - Soil texture, pH, minerals.

7. Barnacle is a type of arthropod related to crabs and lobsters, belonging to subphylum Crustaceae.

Interaction seen between whale and barnacles growing on its back is known as

Commensalism

8. Birth rate = $\frac{40}{200} = 0.2$ offspring per year.
9. An orchid growing on the branch of a mango tree is an epiphyte. Epiphytes are plants growing on other plants which however, do not derive nutrition from them.

Therefore, the relationship between a mango tree and an orchid is an example of commensalisms, where one species gets benefited while the other remains unaffected.

In the above interaction, the orchid is benefited as it gets support while the mango tree remains unaffected.

10. Leaves modified into thorns, development of spiny margins on the leaves. Many plants produce and store chemicals that make the herbivore sick e.g calotropis produces highly poisonous cardiac glycosides. Some other chemical substances like nicotine, quinine, opium etc. are produced by plants and provide defence against grazing animals.
11. **Mutualism** is a relationship between organisms from two different species in which both of the organisms benefit from the relationship. Both organisms use each other for a variety of reasons, which could include getting nutrients, protection, and other functions. Both animals in the relationship are called symbionts.

Examples of Mutualism:

- The oxpecker is a bird that has a mutualistic relationship with a rhino or a zebra. The oxpecker will eat parasites off of the larger animal, which provides food for the bird and fewer parasites for the larger animal. The oxpecker will also make a shrill noise when there is danger.
- The bees has a mutualistic relationship with flowers. The bees are able to get nectar from the flowers, and this is used to make food for the bees. But, while the bees are moving from flower to flower, they are carrying pollen from the flowers on their bodies. So, they are helping to pollinate the flowers at the same time.

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12. - Predation helps to check the ecological balance in nature.
- Predation helps in maintaining species diversity as in absence of predator there will be more interspecific competition
13. i. a. Expanding
b. Stable
c. Declining
ii. The stable pyramid is ideal for a population.
Because:
The number of individuals in the pre-reproductive period is almost equal to those in the reproductive period. As a result, the number of individuals in the reproductive period will be the same in future.
iii. The shape of the pyramids reflects the growth status of the population any aspect of ecological processes is evaluated in terms of a change in the population size.
14. Environmental resistance is the term used to describe all the forces of the environment that act to limit population growth. Organisms will run out of food or have their sunlight blocked temperatures will plunge or rain will cease greater number of predators will discover the population the wastes produced by the organisms will begin to be toxic to the population.
15. **Behavioural adaptations in Animals:** Behavioural adaptation enables an animal to shift to a less stressful environmental condition during times of stress. The best example of this is shown by migratory Siberian cranes. During winters they migrate to India, where it is comparatively comfortable to them. During winter Indian lakes are full of water and sufficient prey. Once winter is over Siberian cranes return to their native land.