

- Q.1.** Choose correct statements from the following
- Ecology is the study of interactions among organisms and between organisms and environment.
 - The hierarchy in ecology is: individuals → populations → communities → biomes → biosphere.
 - Biosphere is the largest ecological level that includes all ecosystems of Earth.
 - Population is a group of individuals of same species inhabiting a particular area.
 - Community refers to interaction of a single species with its environment.
- (1) A, B, C and D only (2) B and C only
(3) D and E Only (4) A, B and C only
- Q.2.** Choose correct one from the following wrt (with respect to) abiotic factors
- Temperature, water, light, and soil are major abiotic factors influencing organisms.
 - Temperature affects distribution of organisms more than any other factor.
 - Freshwater animals often face osmotic problems due to excess salts.
 - Soil quality influences vegetation type in a region.
 - Light availability affects photosynthesis in autotrophs.
- (1) A, B, C and D only
(2) B and C only
(3) D and E Only
(4) A, B, D and E only
- Q.3.** Select which one of the following is correct regarding response to abiotic factors
- Regulators maintain constant internal environment despite external fluctuations.
 - Conformers are unable to regulate internal conditions and depend on environment.
 - Birds and mammals are conformers as they cannot maintain homeostasis.
 - Animals lizards show behavioural responses like basking.
 - Some species migrate temporarily to avoid stressful conditions.
- (1) A and B only (2) B, C and E only
(3) C, D and E only (4) A, B, D and E only
- Q.4.** Select incorrect statement regarding adaptations
- Desert plants have thin cuticles and CAM photosynthesis.
 - Aquatic mammals like seals and whales show blubber as insulation.
 - Many tribes live in Himalayas have low amount of RBCs in their blood
 - Some animals enter diapause during unfavorable conditions.
 - Polar animals show Allen's rule: smaller extremities in cold climates.
- (1) A, B, C and D only (2) B and C only
(3) D and E Only (4) A, B, D and E only
- Q.5.** Which of the Following are population attributes
- Population has characteristics like density, birth rate, death rate, sex ratio, and age distribution.
 - These attributes apply to individuals as well as populations.
 - Natality is the number of births per unit population per unit time.
 - Mortality is the number of deaths per unit population per unit time.
 - Sex ratio is number of males per thousand females in population studies.
- (1) A, B, C and D only (2) B and C only
(3) A, C and D Only (4) A, B and E only
- Q.6.** Choose correct statement regarding population growth models
- Exponential growth occurs in unlimited resources and ideal conditions.
 - Logistic growth includes environmental resistance and carrying capacity (K).
 - The exponential growth equation is $dN/dt = rN$.
 - Logistic growth is represented by $dN/dt = rN(K-N)/K$.
 - Logistic growth curve is J-shaped.
- (1) A, B, C, D are true
(2) A, B, D, E are true
(3) A, C, D, E are true
(4) B, C, D, E are true

- Q.7.** Choose correct wrt population interactions (I)
- Predation is a +/- interaction.
 - Mutualism is a +/+ interaction where both species benefit.
 - Parasitism is a +/- interaction, parasite lives at expense of host.
 - Commensalism is +/- where one benefits, other unaffected.
 - Amensalism is +/- interaction.
- A, B, C, D are true
 - A, B, C, E are true
 - B, C, D, E are true
 - A, C, D, E are true

- Q.8.** Choose incorrect statement from the following wrt predation
- Predation maintains prey population and regulates community structure.
 - Predators help in transferring energy across trophic levels.
 - Goats and cattles do not brows on *calotropis* because it produces strychnine a poisonous glycoside
 - Pedators in nature are prudent
 - Predation always reduces biodiversity.
- A, B, C and D only
 - C and E only
 - A, C and D Only
 - A, B and E only

- Q.9.** Choose incorrect statement wrt parasitism
- Ectoparasites live on the surface of host (e.g., lice, ticks).
 - Human liver fluke is a trematode ectoparasite parasite
 - Parasites always kill the host quickly.
 - Brood parasitism is laying eggs in nests of other birds.
 - Life cycle of endoparasite is very simple because of their extreme specialisation
- A, B, C and D only
 - C and E only
 - B, C and E Only
 - A, B and E only

- Q.10.** Choose correct statement wrt mutualism
- Lichens are an example of fungus and alga living together.
 - Mycorrhizae are mutualism between fungi and plant roots.
 - Pollination in many plants involves mutualistic interaction with animals.
 - In mycorrhizae fungi and roots of higher plants show commensalism, not mutualism.
 - Fig-wasp interaction is an example of obligate mutualism.
- A, B, C, E are true
 - A, B, C, D are true
 - B and D are true only
 - A, C, D, E are true

- Q.11.** Select correct one with respect to eurythermal vs stenothermal
- Eurythermal organisms can tolerate a wide range of temperature; examples include most mammals.
 - Stenothermal organisms tolerate only a narrow range of temperature; examples include polar fishes.
 - Desert lizards are stenothermal but regulate their body temperature physiologically.
 - Birds and mammals are eurythermic because they regulate homeostasis.
 - Most aquatic animals are stenothermal due to thermal stability of water
- B, C, D, E are true
 - A, B, D, E are true
 - A, C, D, E are true
 - C and D are true only

- Q.12.** Choose correct statement from the following wrt organism-water relations
- Freshwater animals excrete dilute urine to counter osmotic gain of water.
 - Marine animals often show osmoconformation to match osmotic concentration of seawater.
 - Some bony fishes excrete concentrated urine and drink large amounts of seawater to prevent dehydration.
 - Plants in saline habitats are called halophytes and show adaptations like pneumatophores.

E. Terrestrial desert animals (like kangaroo rat) rely only on drinking water to meet requirements.

- (1) A, B, D, E are true
- (2) A and D are true only
- (3) B, C, D, E are true
- (4) A, B, C, D are true

Q.13. Which of the following appears to be true for thermal regulation and thermal adaptation

- A. Allen's rule states that in cold climates, animals have shorter extremities to minimize heat loss.
- B. Very small animals are rarely found in polar regions because they have to expend much energy to generate body heat through metabolism
- C. In polar aquatic mammals bubbler is present in muscles to reduce heat loss.
- D. Some fishes thrive in Antarctic water because they have antifreeze proteins in their blood.
- E. Thermoregulation is energetically expensive for many organism

- (1) A, C, D, E are true
- (2) A, B, C, D are true
- (3) B, C, D, E are true
- (4) A, B, D, E are true

Q.14. Select correct statement for population Age pyramids

- A. Expanding population pyramid has broad base and narrow top.
- B. Stable population pyramid has nearly uniform base and top.
- C. Declining population pyramid has narrow base, wider middle.
- D. Age pyramids represent the structure of a community.
- E. India currently has a stable population pyramid.

- (1) A, D, E are true
- (2) A, B, C, D are true
- (3) A, B, C are true
- (4) A, C, E are true

Q.15. Case study : "A population of paramecia in a lab shows rapid increase initially and later levels off due to space limitation."

Which of the following statements are related to above case study

- A. The growth curve is logistic, S-shaped.
- B. The carrying capacity is the maximum number sustainable.
- C. Initially, growth is exponential.
- D. Equation is $dN/dt = rN(K-N)/K$.
- E. The curve is J-shaped throughout.

- (1) A, B, C, D are true
- (2) A, C, D, E are true
- (3) B, C, D, E are true
- (4) A, B, D, E are true

Q.16. Select incorrect statement related to competition

- A. Competition is an interaction where both species are negatively affected (-/-).
- B. Competitive exclusion principle states two species competing for same resources can coexist indefinitely.
- C. Resource partitioning allows species to minimize competition and coexist.
- D. Competition is always interspecific, never intraspecific.
- E. Competitive release occurs when a species expands its niche (habitat, resource use, role) in the absence of a competing species.

- (1) A, B, C and D only
- (2) B and D only
- (3) B, C and E Only
- (4) A, B and E only

Q.17. Select incorrect statement regarding Cuscuta

- A. It is a facultative parasitic plant
- B. This plant lost chlorophyll during evolution
- C. It derives its nutrition partially from host plant
- D. Commonly grow on hedge plant
- E. It is plant with few number leaves.

- (1) A, B, C and D only
- (2) B and D only
- (3) B, C and E Only
- (4) A, C and E only

Q.18. A case study of adaptations is given in cactus plant “A cactus shows: thick cuticle, sunken stomata, CAM photosynthesis, and spines instead of leaves”.

Choose correct statement from the following with respect to above case study

- A. All are adaptations to reduce transpiration.
- B. CAM photosynthesis allows stomata to open during day to conserve water.
- C. Spines act as defence against herbivores.
- D. Succulent stems store water.
- E. Sunken stomata reduce transpiration rate.

- (1) A, B, C and D only
- (2) B and D only
- (3) B, C and E Only
- (4) A, C, D and E only

Q.19. Choose correct statement from the following

- A. Siberian cranes migrate to India to avoid harsh winters.
- B. Migration is a physiological strategy to overcome abiotic stress.
- C. Some insects enter diapause during unfavourable conditions.
- D. Hibernation is winter dormancy in some mammals.
- E. Aestivation occurs in hot and dry summer conditions.

- (1) A, C, D and E only
- (2) B and D only
- (3) B, C and E Only
- (4) A, C and E only

Q.20. Choose correct statement related to Fig and wasp interaction (mutualism)

- A. Fig species can be pollinated only by its partner wasp species
- B. Female wasp uses the fig fruit only as an oviposition site
- C. Developing seeds within in the fruit are used to nourish wasp larve
- D. Male wasp pollinates the fig inflorescence while searching for suitable egg laying site
- E. Neither fig nor wasp can complete its life cycle without the other.

- (1) All except A and C
- (2) All except B and D
- (3) All except C and D
- (4) All except D and E

ANSWERS - KEY

Q	1	2	3	4	5	6	7	8	9	10
Ans.	(1)	(4)	(4)	(4)	(3)	(1)	(1)	(2)	(3)	(1)
Q	11	12	13	14	15	16	17	18	19	20
Ans.	(2)	(4)	(4)	(3)	(1)	(1)	(4)	(4)	(1)	(2)