

Shiksha Classes, Bhandara

Biology

Organisms And Population

- (1.) The scientific study of interactions of living beings with their surroundings is called
- (a.) Biology (b.) Ecology
(c.) Cladistics (d.) Phylogenetic study
- (2.) Study of an individual organism or a particular species is called
- (a.) Autecology (b.) Synecology
(c.) Ecology (d.) Both (a) and (b)
- (3.) A division of ecology that deals with anthropogenic environmental problems are called
- (a.) Autecology (b.) Ethology
(c.) Synecology (d.) Anthropology
- (4.) Which of the following component is not an abiotic factor of the ecosystem?
- (a.) Water (b.) Nutrients
(c.) Organisms (d.) Energy
- (5.) The study of features of *Prosopis cineraria* that allow it to grow, survive and reproduce in unfavorable climatic conditions of Thar Desert makes _____ the level of ecology.
- (a.) population (b.) organism
(c.) community (d.) biome
- (6.) Match the terms in Column-I with a correct description in Column-II.
- | Column-I | Column-II |
|-----------------|--|
| (A) Ecosystem | (1) Large region of specific climatic conditions |
| (B) Populations | (2) Group of individuals of same species |
| (C) Communities | (3) Biotic and abiotic factors |
| (D) Biomes | (4) All the populations of an area |

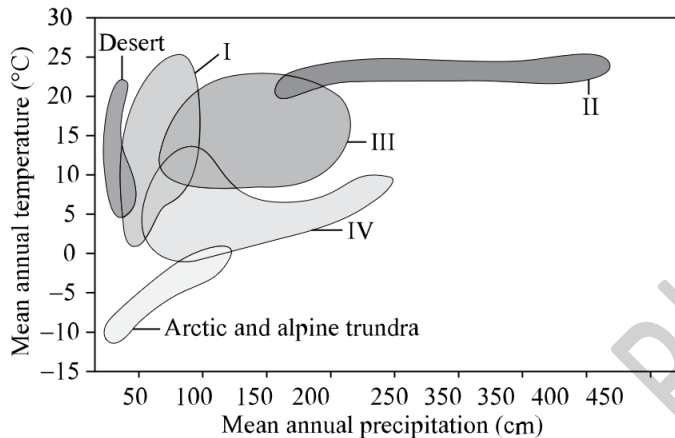
Select the correct option.

- | | A | B | C | D |
|------|---|---|---|---|
| (a.) | 1 | 4 | 2 | 3 |
| (b.) | 2 | 1 | 4 | 3 |
| (c.) | 3 | 2 | 4 | 1 |
| (d.) | 4 | 1 | 3 | 2 |

- (7.) An association of individuals of different species living in the same habitat and having functional interactions is
- (a.) ecosystem (b.) population
(c.) ecological niche (d.) biotic community
- (8.) Biosphere refers to
- (a.) group of species (b.) the atmosphere, hydrosphere and lithosphere
(c.) a community and its abiotic environment (d.) group of populations
- (9.) Which of the following statement is correct about biomes?
- (a.) Biomes correspond to climatic zones based on nutrient availability. (b.) Annual variations in temperature and precipitation account for the formation of major biomes.
(c.) A biome may exhibit varied climatic conditions in different locations of the earth. (d.) Several ecosystems together make a biome.
- (10.) Temperature is the major climatic factor in determining the flora and fauna of
- (a.) tropical regions (b.) temperature regions
(c.) polar regions (d.) both (a) and (b)
- (11.) Alpine and arctic tundra biomes are characterized by
- (a.) harsh winters and little precipitation (b.) long winters and heavy precipitation
(c.) short winters and little precipitation (d.) long summers and heavy precipitation
- (12.) Which of the given statement is incorrect about permafrost?
- (a.) It is a layer of permanently frozen ground. (b.) The depth and thickness of permafrost vary.
(c.) It is found in temperature rain forests. (d.) It does not allow thick vegetation cover to develop.
- (13.) Which of the following biome is correctly matched with its description?
- (a.) Temperate rain forests: savanna (b.) Taiga: boreal forests
(c.) Temperate deciduous forests: broadleaf trees (d.) Tropical grassland: chaparral
- (14.) Which of the following is not an adaptation of desert plants to survive in arid regions?
- (a.) Reduced leaves (b.) Green stem
(c.) Absence of leaves (d.) C₃ photosynthesis

- (15.) Which of the following biomes obtain the maximum and minimum mean annual precipitation?
- (a.) Tropical forest and grassland respectively
 (b.) Tropical forest and coniferous forest respectively
 (c.) Temperate forest and tundra respectively
 (d.) Tropical forest and desert respectively

- (16.) The image represents the distribution of biomes with respect to annual temperature and precipitation. Which of the given options correctly label them?

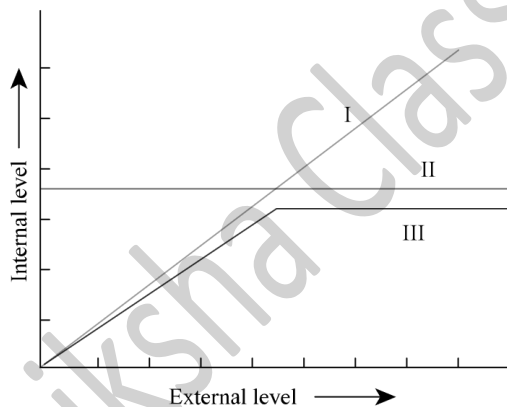


- (a.) I : Taiga
 (b.) II : Temperate forest
 (c.) III : Tropical forest
 (d.) IV : Coniferous forest
- (17.) Which of the following is not a major biome of India?
- (a.) Tropical rain forest
 (b.) Deciduous forest
 (c.) Thar Desert
 (d.) Prairie
- (18.) Which of the following regions on Earth receive the greatest amount of solar radiation?
- (a.) Temperate
 (b.) Polar
 (c.) Tropical
 (d.) Arctic
- (19.) The seasonal variations in temperature on the earth are due to
- (a.) a tilt of the earth on its axis
 (b.) relative humidity
 (c.) amount of solar radiation intercepted by the earth
 (d.) both (a) and (c)
- (20.) Temperature is the most important abiotic factor that influences the life forms because of its effects on
- (a.) sensitivity of organisms
 (b.) metabolism
 (c.) size of organisms
 (d.) reproduction

- (21.) Which of the following statement correctly describes the effect of temperature on the distribution range of living beings?
- (a.) Snowy owl remains active over a narrow range of temperatures. (b.) Mammals can tolerate a wide range of temperatures.
- (c.) Amphibians have a limited range of distribution. (d.) Reptiles gain heat from their surroundings and have a wide range of distribution.
- (22.) Match the terms in Column-I with a correct description in Column-II.
- | | |
|-------------------|--|
| Column-I | Column-II |
| (A) Stenothermal | (1) Thrive under a wide range of temperature |
| (B) Eurythermal | (2) Absorb heat from surroundings |
| (C) Homeotherms | (3) Use of metabolic energy to maintain body temperature |
| (D) Poikilotherms | (4) Tolerate narrow range of temperature |
- Select the correct option.
- | | A | B | C | D |
|------|---|---|---|---|
| (a.) | 4 | 3 | 2 | 1 |
| (b.) | 4 | 1 | 2 | 3 |
| (c.) | 3 | 2 | 4 | 1 |
| (d.) | 4 | 1 | 3 | 2 |
- (23.) Despite being poikilotherms, fishes and aquatic invertebrates exhibit more or less constant body temperature within a particular season. Which of the given statement correctly describes the reason?
- (a.) They obtain energy from warm water. (b.) They spend metabolic energy to produce heat.
- (c.) Aquatic habitats maintain stable seasonal water temperatures. (d.) They exhibit aerobic respiration.
- (24.) Which of the given organisms/groups of organisms is incorrectly matched with respect to their temperature tolerance and ability to maintain the body temperature?
- (a.) Lizards: Eurythermal (b.) Mammals: Eurythermal
- (c.) Snake: Stenothermal (d.) Birds: Eurythermal
- (25.) Which of the following abiotic factor is most limiting for land organisms?
- (a.) Sunlight (b.) CO₂
- (c.) Water (d.) Oxygen

- (26.) Which of the following adaptive feature did not contribute to the transition of plants from aquatic to land habitats?
- (a.) Sunken stomata (b.) Extensive root system
(c.) Flagellated sperms (d.) The thick cuticle on aboveground plant parts
- (27.) Mosses are typically few centimeters tall while the flowering plants grow tall up to several meters. Which of the given adaptation allows plants to grow tall?
- (a.) Pollen grains (b.) Vascular tissues
(c.) Stomata (d.) Root system
- (28.) Which of the following structures/process allowed reptiles to complete their life cycle on land and to become the first land organisms?
- (a.) Bony endoskeleton (b.) Amniotic eggs
(c.) Oviparity (d.) Internal fertilisation
- (29.) Which of the following group of organisms are not amniotes?
- (a.) Reptiles (b.) Birds
(c.) Mammals (d.) Amphibians
- (30.) Freshwater organisms live in a while the surroundings of the marine organisms are .
- (a.) hypertonic, hypotonic (b.) hypotonic, isotonic
(c.) hypotonic, hypertonic (d.) hypertonic, isotonic
- (31.) Which of the given statement is incorrect about the effect of life in the biosphere?
- (a.) Understory plants are adapted to low sunlight conditions. (b.) Plants require sunlight to meet the requirement of photoperiod.
(c.) Photoperiod affects reproduction, foraging and migration in animals. (d.) Sunlight and temperature are independent abiotic factors.
- (32.) Which of the given organisms support the life in hydrothermal vents?
- (a.) Photoheterophic bacteria (b.) Chemoheterotrophic bacteria
(c.) Chemoautotrophic bacteria (d.) Photoautotrophic bacteria
- (33.) Visible light is the part of the electromagnetic radiation emitted by Sun. Which of the following part of the spectrum is correctly matched with its wavelength range?
- (a.) 740–4000 nm: UV-B (b.) 400–700 nm: Infrared
(c.) 280–315 nm: Visible light (d.) 315–380 nm: UV-A
- (34.) Which of the pigments imparts a red colour to red algae?
- (a.) Chlorophyll b (b.) Chlorophyll a
(c.) Phycocyanin (d.) Phycoerythrin

- (35.) Which of the following light penetrates deepest in the oceans?
- (a.) Red light (b.) Green light
(c.) Blue light (d.) Yellow light
- (36.) Which of the given statement is correct about the distribution range of various groups of algae?
- (a.) Green algae are found on ocean floors. (b.) Brown algae inhabit the shallow coastal regions.
(c.) Red algae are found deepest in the ocean. (d.) Red algae are found only in marine water.
- (37.) Which of the given factor/s largely determine the texture of soil of a particular geographical region?
- (a.) Parent material (b.) Process of soil formation
(c.) Human activity (d.) Both (a) and (b)
- (38.) The ability of living beings to maintain constant internal body conditions is called
- (a.) osmoregulation (b.) homeostasis
(c.) negative feedback inhibition (d.) positive feedback inhibition
- (39.) The given image represents the response of organisms to external conditions. Label I, II and III and select the correct match.



- (a.) I : Regulators (b.) II : Conformers
(c.) III : Partial regulators (d.) I : Partial regulators
- (40.) Which of the following sets of organisms are regulators?
- (a.) Plants and mammals (b.) Mammals and birds
(c.) Plants and birds (d.) Reptiles and birds
- (41.) The ability of mammals to thrive under significantly diverse and harsh climatic conditions of Antarctica or in the Sahara Desert is largely attributed to
- (a.) osmoregulation (b.) small body size
(c.) thermoregulation (d.) both (b) and (c)

- (42.) The ability to maintain the body temperature within certain limits irrespective of the temperature conditions of surroundings is called
- (a.) osmoregulation (b.) thermoregulation
(c.) feedback inhibition (d.) positive feedback inhibition
- (43.) Which of the following statement about thermoregulation in humans is incorrect?
- (a.) Profound sweating in summers generates a cooling effect. (b.) Shivering during winters lower down the body temperature.
(c.) Thermoregulation balances the gain and loss of heat from the body. (d.) Humans use metabolic heat to maintain body temperature.
- (44.) Most of the marine invertebrates do not face the problem of osmoregulation since
- (a.) their body fluid is isotonic to the seawater. (b.) their body fluid is hypotonic to the seawater.
(c.) their body fluid is hypertonic to the seawater. (d.) their body fluid is either hypo or hypertonic to the seawater.
- (45.) Osmoconformers have the same solute concentration of their body fluid as that of the surroundings. Which of the following group of organisms cannot be an osmoconformer?
- (a.) Squids (b.) Sea stars
(c.) Cephalopods (d.) Freshwater animals
- (46.) Small organisms maintain surface area to volume ratio than the organisms with large body size.
- (a.) larger (b.) smaller
(c.) equal (d.) either smaller or equal
- (47.) Which of the following is an adaptation to maintain the body temperature in polar regions?
- (a.) Larger surface area to volume ratio (b.) Smaller surface area to volume ratio
(c.) Small body size (d.) Larger surface area
- (48.) The animals such as shrews and hummingbirds have not evolved the mechanisms of thermoregulation because
- (a.) they are found in warm regions (b.) they are found in polar regions
(c.) thermoregulation is energetically expensive (d.) they lack sweat glands
- (49.) Which of the following pair of strategies are employed by some organisms to escape the temporary stressful conditions?
- (a.) Migration and osmoregulation (b.) Migration and suspension
(c.) Suspension and thermoregulation (d.) Suspension and feedback mechanisms

- (50.) Which of the following national parks of India is home to migratory birds from Siberia and other cold northern regions?
- (a.) Keoladeo National Park (Bharatpur) (b.) Keoladeo National Park (Nagpur)
(c.) Kanha National Park (MP) (d.) Periyar National Park (Kerala)

Shiksha Classes, Bhandara

ANSWER

(1.)	b	(2.)	a	(3.)	c	(4.)	c	(5.)	b
(6.)	c	(7.)	d	(8.)	b	(9.)	b	(10.)	c
(11.)	a	(12.)	c	(13.)	c	(14.)	d	(15.)	d
(16.)	d	(17.)	d	(18.)	c	(19.)	d	(20.)	b
(21.)	b	(22.)	d	(23.)	c	(24.)	a	(25.)	c
(26.)	c	(27.)	b	(28.)	b	(29.)	d	(30.)	c
(31.)	d	(32.)	c	(33.)	d	(34.)	d	(35.)	c
(36.)	c	(37.)	d	(38.)	b	(39.)	c	(40.)	b
(41.)	c	(42.)	b	(43.)	b	(44.)	a	(45.)	d
(46.)	a	(47.)	b	(48.)	c	(49.)	b	(50.)	a

Shiksha Classes, Bhandara

EXPLANATION

- (1.) (b) Organism interact with their environment for resources. The study of biotic and abiotic components of nature and their interactions is called ecology.
- (2.) (a) Autecology is a division of ecology that includes the study of history, adaptation, the behaviour of a species or an organism and its interaction with other biotic and abiotic factors of the system.
- (3.) (c) Synecology is the study of the environmental problems that are caused by human beings. It includes the study of activities of humans that adversely affect the natural balance of an ecosystem.
- (4.) (c) Abiotic components include physical and chemical factors such as available energy, water, nutrients, soil type, climatic conditions, etc. Organisms make the biotic factor of the system.
- (5.) (b) At the organism level, ecologists study how a particular organism becomes adapted to survive, grow and reproduce under the challenging conditions of its environment.
- (6.) (c) Assemblage of interacting biotic and abiotic factors of an area makes an ecosystem. A group of individuals of the same species present in a geographical area is known as population. All the populations of different species present together in a region make a community. A large area of a terrestrial region characterised by the presence of species climate, soil and biotic factors irrespective of its location on the earth is called biome.
- (7.) (d) The biotic community consists of populations of various types of organisms that inhabit a particular geographical area and interact with one another.
- (8.) (b) Biosphere refers to all the parts of Earth where life forms are present. It includes the atmosphere, hydrosphere and lithosphere that are inhabited by living beings.
- (9.) (b) Many interacting landscapes form a biome. Climatic conditions, plant and animal types of a biome are similar regardless of its geographical location on the earth. Biomes represent the climatic zones of Earth that differ from each other mainly with respect to temperature and precipitation. Seasonal variations in temperature and precipitation on Earth have resulted in the presence of several biomes.
- (10.) (c) At poles, extremes of temperatures do not allow many plant and animal species to survive. Temperature is a major determinant of life forms present on Earth. For temperate and tropical regions, precipitation is an overriding climatic factor.
- (11.) (a) Tundra biomes are the cold plains present in extreme northern latitudes and have long harsh winters, extremely short summers and little precipitation.
- (12.) (c) Tundra biomes have a permanently frozen layer of ground called permafrost. It does not allow the growth of plant species in these biomes. #EXPLANATION# Chapter Test
- (13.) (c) Chaparral is a biome of the temperate region dominated by evergreen shrubs and small trees while savannah is a tropical grassland. Temperate rain forests are dominated by large conifers. Temperature deciduous forests are located in the regions of higher precipitation and organic matter rich soil to support the broadleaf trees that drop their leaves seasonally.
- (14.) (d) Desert plants have reduced leaves, modified leaves or no leaves to reduce the loss of water by transpiration. These plants have a thick fleshy stem that serves in photosynthesis and also stores water. CAM photosynthesis is more prevalent in succulents of deserts. In CAM photosynthesis, plants keep the stomata closed in the hot dry day time to reduce water loss.
- (15.) (d) Tropical forest and desert obtain maximum and minimum mean annual precipitation respectively. Temperate and coniferous forests are found in regions of moderate precipitation.
- (16.) (d) Tropical forests
(II) are characterized by a maximum mean annual temperature and precipitation among all the biomes. Temperate

(III) and coniferous forests

(IV) are located in the regions of intermediate precipitation. Grasslands

(I) receive the annual rainfall sufficient to support the growth of grasses.

(17.) (d) Prairie is the temperate grassland of North America. Tropical rain forest, deciduous forest, Thar Desert and seacoast are the four major biomes of India.

(18.) (c) Tropical regions present near the equator on Earth obtain the greatest amount of solar radiation while the polar regions receive the least of it.

(19.) (d) The amount of solar radiation intercepted varies from tropics to the poles and create seasonal variations in temperature. The tilt of Earth on its axis also affects the solar radiations obtained by different regions on the earth and add more seasonal variations. Tropical regions are warmest and obtain maximum rainfall while the poles are coldest one.

(20.) (b) Metabolism is one of the vital processes exhibited by life forms. The chemical reactions of metabolism are catalyzed by enzymes. Enzymes are proteins and work under the range of optimum temperatures only.

(21.) (b) Mammals and birds are the warm-blooded animals and maintain constant body temperatures. Therefore, they can tolerate a wide range of temperature conditions, unlike amphibians and reptiles which are cold-blooded.

(22.) (d) On the basis of their ability to tolerate the various temperature conditions, organisms are grouped as stenothermal and eurythermal. Stenothermal can tolerate a narrow range of temperatures while eurythermal are found over a wide range of temperature conditions. Homeotherms are the organisms that use metabolic energy to maintain constant body temperature while poikilotherms absorb heat from their surroundings.

(23.) (c) Water temperature of a given aquatic habitat within a particular season is relatively stable than the land habitats. This allows the aquatic animals to maintain constant body temperature within a given season.

(24.) (a) Lizards and snakes depend on the environment to maintain the body temperature and therefore, are stenothermal. They are restricted to the regions of a particular temperature range only. On the other hand, mammals and birds maintain constant body temperature irrespective of the temperature of surroundings. They are eurythermal organisms and are found in the habitats of a wide range of temperature conditions.

(25.) (c) Oxygen and carbon dioxide are present in the air while sunlight is easily available for land habitats. Water is the most regulatory factor for terrestrial organisms on land habitats.

(26.) (c) The presence of flagellated male gametes is a characteristic feature of aquatic plants such as algae which allow them to swim in the water towards the egg. Land plants have developed thick cuticles and sunken stomata to prevent water loss through transpiration. A well-developed root system absorbs water and minerals from the soil.

(27.) (b) Mosses lack vascular system while flowering plants have vascular tissues xylem and phloem to transport water, minerals and food from one plant part to the other.

(28.) (b) Amniotic eggs are the egg with extraembryonic membranes. Amnion is one of the extraembryonic membranes and forms a fluid-filled sac around the embryo. It prevents the desiccation of embryos of land animals.

(29.) (d) Reptiles, birds and mammals are amniotes while amphibians do not lay amniotic eggs. Amphibians lay eggs in water to prevent the desiccation of embryo.

(30.) (c) The salt concentration of inland water is less than 5 ppt while that of seas and oceans ranges from 30–100 ppt. Therefore, freshwater organisms live in hypotonic surroundings while marine organisms live in a hypertonic medium.

(31.) (d) Sun is the source for both light and temperature. The availability of sunlight and temperature are linked. Light becomes one of the major limiting factors for plants since they require sunlight to perform photosynthesis. The small herbs and shrubs in forests are adapted to

perform photosynthesis at a low light intensity. Plants also need sunlight for flowering while the timing of foraging, reproduction, and migration of animals is affected by photoperiod.

(32.) (c) The organisms that use inorganic compounds as raw materials to synthesize organic compounds and use the energy of inorganic compounds are called chemoautotrophs. It includes bacteria found in hydrothermal vents. The organic matter produced by these bacteria serves as a source of energy for other heterotrophic organisms present in hydrothermal vents.

(33.) (d) The part of the electromagnetic spectrum of sunlight that is visible to us makes visible light and have the wavelength ranging from 400–700 nm. The part of the spectrum with a wavelength range from 315 to 380 nm makes UV-A and the one with wavelengths from 280 to 315 nm make UV-B. Near-infrared radiations have a wavelength ranging from 740–4000 nm.

(34.) (d) Red algae have red pigment phycoerythrin, blue pigment phycocyanin, chlorophylls a and d and carotenoids. The abundance of phycoerythrin makes them appear red in colour.

(35.) (c) The light of the shorter wavelengths is able to penetrate deep in the water as compared to the light of the longer wavelengths. Among the given options, the blue light has the shortest wavelength (400–450 nm) and therefore is able to penetrate the deepest in oceans.

(36.) (c) The chlorophyll a is the major pigment of photosynthesis in green algae which has an absorption peak in the red region of visible light. This limits the green algae in shallow coastal regions since the red light has a longer wavelength and cannot penetrate deep in water. Brown and red algae are found deep in oceans. Red algae are mostly found in tropical marine waters but can also inhabit freshwaters. Red algae absorb the light of shortest wavelengths due to the presence of phycoerythrin pigment and therefore, are found in the deepest waters of the ocean.

(37.) (d) Soil texture is determined by the parent material, the process of soil formation, climatic condition, etc. Mechanical weathering is regulated by climatic factors of a region while chemical weathering depends on the activities of organisms present in the soil. The parent material serves as raw material for soil formation.

(38.) (b) Living beings maintain the constant internal body conditions with respect to several variables such as blood pressure, blood sugar levels, blood pH, body temperature, osmotic concentration of body fluids, etc. This ability of living beings to maintain the internal body conditions within a narrow range is called homeostasis.

(39.) (c) Regulators

(II) are the organisms that maintain the homeostasis by physiological means while conformers

(I) cannot maintain the constant internal environment. The internal body conditions of partial regulators change with the surroundings initially. After a certain level of change, they maintain constant body conditions.

(40.) (b) Mammals and birds can maintain constant internal body conditions irrespective of the changes in the surrounding environment. Plants and reptiles are largely conformers.

(41.) (c) Mammals can regulate the constant body temperature irrespective of the temperature of surroundings. They use the metabolic energy for thermoregulation and therefore, inhabit the regions with a wide range of temperature conditions.

(42.) (b) Certain organisms such as mammals, birds and some lower vertebrate and invertebrate species can maintain body temperature within a narrow range. Humans maintain a constant body temperature of 37 degrees celsius. This ability is called thermoregulation.

(43.) (b) Humans are thermoregulators and maintain constant body temperature around 37 degrees celsius. During summer, evaporation of sweat from the skin surface generates a cooling effect. During winters, shivering generates heat to raise the body temperature.

(44.) (a) Most of the marine invertebrates are osmoconformers as the solute concentration of their body fluid is the same as that of the surrounding water. Therefore, they do not face the problem of excessive water gain or water loss.

- (45.) (d) Freshwater animals cannot maintain the solute concentration equal to that of the surrounding freshwater. The solute concentration of freshwater is too low to support the vital functions.
- (46.) (a) Organisms with smaller body size has a larger surface area compared to their volume and therefore, have a larger surface area to volume ratio as compared to the organisms with large body size.
- (47.) (b) Animals with large body size has a lesser surface area exposed to the surroundings compared to the larger surface area of smaller organisms exposed to the surroundings for heat exchange. The smaller surface area and large body size impart smaller surface area to volume ratio to the organisms with a big body size.
- (48.) (c) Thermoregulation is energetically expensive for the animals such as shrews and hummingbirds which have a small body size and therefore, the larger surface area exposed to the environment for heat exchange. These organisms rapidly lose heat and expenditure of a large amount of energy is required to balance the heat loss. Therefore, thermoregulation is not energetically favourable for them.
- (49.) (b) Some organisms escape the short term or localized stress conditions by migrating to the favourable regions or by the suspension of metabolic activities temporarily.
- (50.) (a) Migratory birds from Siberia and other cold Northern regions migrate to Keoladeo National Park (Bharatpur) of Rajasthan to escape the harsh winters of their native places.

BECOME AN ACE IN JEE & NEET



SHIKSHA CLASSES
Believe & Achieve

JEE | NEET | Previsa (8-10)

📞 8625055707 | 8623085707 🌐 shikshaclasses.co.in

M-19, MHADA Colony, Khat Road, Bhandara



Learn with Jaiswal sir