BIOLOGY

BOOKS - NEW JYOTHI BIOLOGY (TAMIL ENGLISH)

ORGANISMS AND POPULATIONS

Solutions To Ncert Exercises

1. How is diapause different from hibernation ?

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2. If a marine fish is placed in a fresh water aquarium will the fish be able to survive ? Why or why not ?

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3. Define phenotypic adaptation . Give one example

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4. Most living organisms cannot survive at temperature above $45^{\circ}C$ .How are some microbes able to live in habitats with temperature exceedin $100^{\circ}C$

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5. List the attributes that populations but not individuals posses.

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6. if a population growing exponentially doubles in size in 3 year, what is the intrinsic rate of increase (r) of the population ?

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7. Name important defense mechanisms in plants against herbivory.

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8. An orchid plant is growing on the branch of mango tree. How do you describe this interaction between the orchid and the mangeo tree ?

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9. What is the ecological pirnciple behind the biological control method of managing with pest insects ?

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10. Distinguish between the following .

a. Hibermation and Aestivation

b. Ectotherms and Endotherms

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11. Modification of responses of animals in response to enviroment within a short span of time .....

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12. List the various abiotioc envirommental factor.

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13. Give an example for

a. An endothermic animal

b. An ectothermic animal

c. an organism of benthic zone.

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14. Define population and community.

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15. Define the following terms and give an example each

a. Commensalism

b. Parasitism

C .Camouflage

D. Mutualism

e. Interspecific competition .

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16. With the help of suitable diagram describe the ligistic population growth curve

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17. Select the statement which explains best parasitism

a. One organism is benefitted

b Both the organims are benefitted

C. One organism is benefitted other is not affected

d. One organism is benefitte other is affected .

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18. List any three important characteristic of a population and explain .

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New Evaluation Types Question

1. Study the relationship of the given pair and fill up the blanks

a. Hibernation : Bears : : Aestivation : .....

b. Whide range of salinity : Euryhaline : Narrow range of salinity : .....

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2. An individual may have births and deaths but a population has (a) and (b) An individual is either a male or a female but a population has a (c) .

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3. Temperature of the earth ..... (decrease / increase) Progressively from the ..... (poles / equator) towards the ..... (poles /equator) and from ..... (plains / mountain tops) to the ..... (plains / mountain tops)

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4. Organism that can tolerate and thrive in a wide range of temperature are called ..... and organisms restricted to a narrow range of temperature are called. .....

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5. The spectral quality of solar radiation is important to life justify this statement.

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6. the vegetation in an area is determined by different characterstic and parameters of soil Comment on this statement .

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7. Briefly explain the need of constant internal environment for organisms.

What do you mean by homeostasis ?

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8. Observe the graph and differentiate the character of conformers and regulation.

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9. Small animals are rarely found in polar regions. Comments

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10. Most organism usually maintain their internal evironments in a constant condition irrespective of external factors. But if the external condition are the alternatives for the organism to cope up with such condition

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11. Organisms are adapted to live in their habitat . Briefly explain the adaptation of Kangaroo rat.

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12. What do your mean by Allen's rule ?

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13. While going to high altitude many people experience altitude sickness which include nausea , Fatigue and heart palpitation . How does your body adjust physiologically to such conditions.

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14. Some organisms like desert lizards lack the physiological abilities to cope with variations in their environment but show some behavioral

responses. Comment on.

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15. The density of a population in a given habitat during a given period to increase in population and two of them contribute to a decrease in population

1. Name the four basic process.

2. Which of these cause a decline and which cause an increase in population ?

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16. Differentiate between exponential growth and logistic growth.

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17. Fill up the blanks with suitable example .

a. Organisms breed only once in their life time ..... (oyster / Pacific salmon / brids)

b. Organism which produces a larger number of small sized offspring (Bamboo / Oyster / Mammals)

C. Organisms which produce small number of large sized offspring (Bamboo / Oyster / Mammals)

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18. Observe the figure and identify

(i) stable population

(ii) expanding population

(iii) What is the name of the remaining figure

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19. What is meant by competitive release ?

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20. Briefly explain Gause's competitive exclusion principle .

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21. According to recent studies on competition it is stated that species facing competition might evolve mechanisms that promote coexistence rather than exclusion Explain this with the example of resource partitioning

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22. Briefly explain the special adaptations evolved by parasites in accordance with their life styles.

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23. Explain the effects of parasite on the host.

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24. Comment of Brood parasitism

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25. Given below are some of the common examples of spcies interaction Catagorise them into predation commensalism mutualism parasitism or competition.

a. Egret foraging close to grazing cattle

B.Fig flowers polinated by wasp

c. Cuckoo laying egg in crow's nest

d. Phytophagous insects feeding on a plant.

e Clown fishes living among sea anemone.

f. Abingdon tortoise in Galapagos islands became extinct withim a decade after goats were intorduced on the island.

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26. 

(i) and (ii) show a kind of ecological interaction

a. Identify the type of interactions.

b. List out some adaptations for these interactions

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27. Differantiate between commensalism and symbiosis.

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Question Fromedumate

1. Obserive the anatamical diagrams of Nerium and Nymphaea leaf. Compare the anatamical features and justify their habitat.

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2. Xerophytic adaptations of plants vary according to the dry condition of soil and nature of temperature. General characters of different types of xerophytes are given below.

Character : Fleshy leaf like parts deep tap roots short life span reduced and spiny leaves

a. Arrange the character in respective columns of the given table.

b. C_4 plants are anatamically and physiologically adapted xeropthytes. Justify

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3. Figure shows the main parts of hydrological cycle .Write down from the figure.

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4. Observe the given figure of Rhizophora and answer the following

a. Mention the habital of the plant .

b. Write two ecological adaptations of this plant .

c. Why conservatin of plants like Rhizophara becomes inevitable in the present situation ?

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5. Presence of keystone species and link species of plants are essential for the existence of diversity of organisms .Justify the following statements based on this.

a. Fig tree is a keystone species of plant community.

b. Mycorrhizal fungi in soil as a link species.

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6. Given below is the bar diagram showing the age structure of three countries. Aswer the following question by analysing the diagrams.

Hint : Population strength of community is determined by the age group.

a. which country has the highest populatin ?

b Which country has declining population

One of countries has stable population justify.

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7. Figure given below shows a kind of ecological interaction

a. Identify the type interaction

b. What is the nature of interaction ? Justify your answer.

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8. Given graph shows the growth of perromia plant.

a. What kind of growth form is this

b. Why does the graph show a sudden decline ?

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Questin From Previous Hse

1. a. Military person are used to wear uniform green colour with marks of leaves and twigs .some brids and butterflies are showing markings and scars same as that of the surroundings.

b. Concealing form and coluration enable some organsim to aviod its natural predation .Explain the behavioural strategies of such organisms.

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2. fill up the blanks in the given levels of organisation

genes $\rightarrow$ cells ..... $\rightarrow$ Biosphere $\rightarrow$ ..... $\rightarrow$ community $\rightarrow$ Ecosystem $\rightarrow$ ..... $\rightarrow$ Biosphere

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3. Relate the given statements in the levels of organisation

a. A herd of elephants is a population

a An elephant is .....

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4. Your younger brother tries to plant an orchid in a flowering pot. How will you make your brother aware of the association of orchid with other plants ?

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5. Basheer a prawasi Malayalee has planted a mango plant near his residence in Saudi Arabia . He found slowty that it shows adjustments to the changed envirorument. What will yout call the phenomenon ?

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6. Choose the correct answer from the bracket :

A group of indiviuals belonging to a species residing in an area constitute a..... (population / community)

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7. Given below is a table which shows the interspecific interaction + sign indicates benefical − sign indicate dterimental and 0 indicate netural .

a. Fill in the blanks

B . Name the interaction where one species is benefitted and the other is deterimental .

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8. Given below is a schematic representatin with circules and squares which shows four factors / processes that influence the population density a . Write the positive factors in circles and negative factors is squares.

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9. Snakes change their body temperature with changes in external temperature . But human beings not . Classify the organsim according to the above character and explain.

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10. Density of population in a given during a gi ven period fluctuates due to changes in four basic processer natality mortality immigration and

emigration.

a. Differntate natality and mortality

b. Differentiate immigration and emigration

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11. Two students Unni and Kannan sutdied inter specific interactions be interaction - for dtermental and 0 for neutral ineraction. Can you help them by naming the interaction between species in different cases ?

Write one example for each interaction

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Previous Entrance Exam Corner

1. The study of trends in human population growth and the prediction of future development is know as

A. sociology

B. geography

C. demography

D. anthoropology

Answer: c

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2. The permanent decrease in population occurs due to

A. migration

B. emigration

C.

D. mortality

Answer: e

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3. The relationship between two organsims in which one obtains some benefit at the expense of the other is called.

A. parasitism

B. predation

C.

D. none of these

Answer: a

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4. In biotic community which one of the following is a protective device ?

A. mimicry

B. Symbiosis

C. Commensalism

D. Parasiitism

Answer: c

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5. In some plants particularly halophytes the seeds germinate with the fruits while still attached to the parent plant .Identify this phenomenon from the following terms

A. Vernalization

B. Monocarpic

C. Vivipary

D.

Answer: c

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6. The World Environment Day is observed on

A. 5^{th}july

B. 15^{th} May

C. 5^{th} june

D. 15^{th} June

Answer: c

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7. The phenomenon which helps in maintaining a cosntant internal enviroment in living organism is

A. entropy

B. hemolysis

C. apoptosis

D. homeostasis

Answer: e

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8. Red data book provides data on

A. red flowered plaints

B. red colured fishes

C. endangered plants and animals

D. red coloured insects

Answer: c

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9. What is the animal symbol of W.W.F (World wildife fund)

A. Dolphin

B. Kangaroo

C. Giant Panda

D. Great indian Bustand

Answer: d

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10. Insectivorous plants are seen in

A. water logged soil

B. soil deficient in salts

C. soil deficient in nitrogenous compounds

D.

Answer: d

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11. Group of organisms of the same species in a given area at a particular time is called as

A. Community

B. ecosytem

C. biosphere

D. population

Answer: e

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12. Which of the following is an endangered species of India ?

A. Horse

B. Elephant

C. Tortoise

D. Fox

Answer: c

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13. When is the World Wildlife Week observed?

A. First week of spetember

B. last week of spetember

C. last week of october

D. first week of october

Answer: e

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14. An interactior between two individuals where one is benefitted while the other is neither benefitte nor harmed is called as

A. predation

B. symbiosis

C. commensalism

D. parasitism

Answer: d

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15. Rhizobium bacteria and root nodules of pea plant is an exampel for

A. symbiosis

B. commensalism

C. predation

D. parasitism

Answer: a

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16. The plants that grow on salinc soild with high concentration $NaCI_2 MgSO_4$ and $MgCI_2$ are called.

A. Succulents

B. Mesophytes

C. Ephemerals

D. Halophytes

Answer: e

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17. natality is the characteristic of population which means

A. a. The total number of indivduals present per unit are at a given time

B. b. the increase in number of individuals in a population under given environmental condition

C. c. Loss of individuals due to death in population under given environmental conditions.

d. the movement of individuals into and out of population

D. e . each population has three different atge groups.

Answer: b

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18. Match the following with correct combination .

column I	Column II
a Mutualism	i Tiger and deer
b Commensalism	ii Cuscuta on cissus
c Parasitism	iii Sucker fish and shark
d Predation	iv Crab and sea anemone

A. $(a)a - I, b - ii, c - iii, d - iv$

B. (b)$a - iv, b - iii, c - ii, d - i$

C. $c.\ A-I, b-iii, e-ii, d-iv(d).\ A-ii, b-iiic-I, d-iv$

D. (d) . A- ii, b- iii c- I , d-iv `

Answer: b

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19. Haustorial root are found in

A. cuscuta

B. vanda , heritiera

C. dahlia

D. mirabilis

Answer: b

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20. Match the following and choose correct combination from the option given

$(\text{column I, Column II}), (\text{a Visible light, i 0.1 to 1nm}), (\text{b Ultraviolet, ii 400 lt} 0.1nm) :\}$

A. $a - a - I, b - ii, c - iv, d - v$

B. $ba - iii, b - ii, c - I, d - I(d), a - ii, b - iv, c - I, d - ii$

C. $a - v, b - iv, c - iii, d - ii$

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

Answer: d

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21. Which of the following statements regarding species interdepedence are true ?

A. An association of two species where one is benefitted and other ramins unaffected is called mutualsim

B. An interspecific association where both parthers deriver benefit from each other is called commensalism

C. A direction food relation between two specis of animals in which one animal kills and feeds on another is referred as predation.

D. A relationship between two species of organism where both the parthners are bnefitted from each other is called symbiosis.

Answer: b

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22. Match the colum I with column II and and select the correct option

column I	Column II
a Camouflage	i Dendrobates pumilio
b Batesian mimicry	ii Horse shoe bat
c Warning colouration	iii Monarch butterfly
d Echo location	iv Praying mantis

A. $a - ii, b - iv, c - iii, d - I(b)a - iii, b - iv, c - ii, d - i$

B. $a - iv, b - I, c - iii, d - ii$

C. $a - iv, b - iii, c - I, d - ii$

D. $a - iii, b - iv, c - I, d - ii$

Answer: d

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23. The formula of growth for population in a given time is

A. a. Rate of immigration mortality natality rate.

B. b. Rate of emigration natality rate mortality rate

C. c. Mortality rate natality rate rate of immigration

D. d. Mortality rate rate of immigration natality rate

Answer: e

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24. Plant species having a wide range of genetical distribution evolve into a local population know as

A. Ecotype

B. Biome

C. Ecosytem

D. popultaion

Answer: a

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25. The formula of growth for population in a given time is

A. $dt / dN = rN$

B. $dt / tN = dN$

C. $rN / dN = dt$

D. $dN/dt = rN$

Answer: e

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26. many freshwater animals cannot live for long in sea water and vice versa mainly because of the :

A. Change in N levels

B. Variatins in light intensity

C. Osmotic problems

D. Spectral quality of solar radiation.

Answer: d

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27. the species diversity of plant on earth will be

A. 2.4%

B. 22%

C. 8.1%

D. 85%

Answer: b

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Cbse Corner

1. Study the three representative figures of ae pyramid relating to human population given below and answer the following questin

a. Mention the names given to three kinds of age profiles (i) (ii) and (iii)

b. Which one of them is ideal for a population and why

c. how do such age profile studies help policy makers get concerned about our growing population and prepare for future planing (say for example for the year 2022)

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2. In the following table the ecological units are mentioned in the first column vertically and their attributes are mentioned horizontally. Match the ecological cal units and their attribute and put at tick in the blanks withing table.

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3. List the attributes that populations but not individuals posses.

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4. What is an exosytem ? How energy transformation occurs in an ecosystem ?

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5. Which one the two stendothermals or eurthermals shows wide range of distribution on earth and why ?

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6. Cartain species of wasps are sen to frequently visit flowering fig trees .What type of interaction is seen between them and why ?

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