# Organisms and Populations

## Question1

### When will the population density increase, under special conditions?

### When the number of :

### [NEET 2024 Re]

**Options:**

A.

Deaths exceeds number of births and also number of emigrants equals number of immigrants.

B.

Births plus number of immigrants equals number of deaths plus number of emigrants.

C.

Births plus number of emigrants is more than the number of deaths plus number of immigrants.

D.

Births plus number of immigrants is more than the sum of number of deaths and number of emigrants.

**Answer: D**

### Solution:

(N) is the population density at time t , then its density at time t + 1 is

$N_{t+1} = N_t + [(B + I) - (D + E)]$

Population density will increase if the number of births plus the number of immigrants (B + 1) is more than the number of deaths plus the number of emigrants (D + E).

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## Question2

### Match List-I with List-II.

| | List-I | | List-II |
|---|---|---|---|
| A. | Migratory flamingoes and resident fish in South American lakes | I | Interference competition |
| B. | Abingdon tortoise became extinct after introduction of goats in their habitat | II | Competitive release |
| C. | Chathamalus expands its distributional range in the absence of Balanus | III | Resource Partitioning |
| D. | Five closely related species of Warblers feeding in different locations on same tree | IV | Interspecific competition |

### Choose the correct answer from the options given below:

## [NEET 2024 Re]

**Options:**

A.

A-I, B-IV, C-III, D-II

B.

A-IV, B-I, C-II, D-III

C.

A-III, B-1, C-II, D-IV

D.

A-II, B-IV, C-III, D-I

**Answer: B**

## Solution:

(1) In some shallow south American lakes, visiting flamingoes and resident fishes compete for their common food i.e., their is interspecific competition.

(2) The Abingdon tortoise in Galapagos Islands become extinct within a decade after goats were introduced on the island, apparently due to the greater browsing efficiency of the goats this is an example of interference competition.

(3) The larger and competitively superior barnacle Balanus dominates the intertidal areas and excludes the smaller barnacle Chathamalus from that zone.

(4) If two species compete for the same resource, they could avoid competition by choosing for example related species of warblers living on the same tree were able to avoid competition and coexist due to behavioural difference in their foraging activities.

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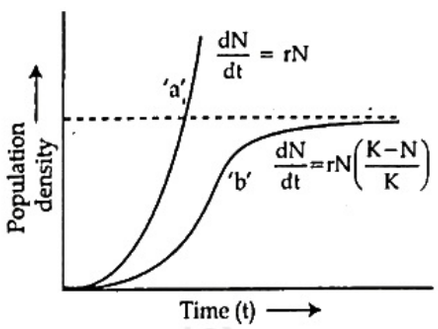
# Question3

## What do 'a' and 'b' represent in the following population growth curve?




## [NEET 2024 Re]

**Options:**

A.

'a' represents exponential growth when responses are not limiting the growth; and 'b' represents logistic growth when responses are limiting the growth.

B.

'a' represents logistic growth when responses are not limiting the growth; 'b' represents exponential growth when responses are limiting the growth.

C.

'a' represents carrying capacity and 'b' shows logistic growth when responses are limiting the growth.

D.

' a ' represents exponential growth when responses are not limiting the growth and 'b' shows carrying capacity.

**Answer: A**

## Solution:

The given graph represents the population growth curve where 'a' represents exponential growth when responses are not limiting the growth which forms a J-shaped curve and 'b' represents logistic growth when responses are limiting the growth which forms an S-shaped curve.

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# Question4

The equation of Verhulst-Pearl logistic growth is $\frac{dN}{dt} = rN\left[\frac{K-N}{K}\right]$.

From this equation, K indicates:

## [NEET 2024]

### Options:

A.

Intrinsic rate of natural increase

B.

Biotic potential

C.

Carrying capacity

D.

Population density

**Answer: C**

## Solution:

In the equation $\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$, K represents carrying capacity.

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# Question5

## Which one of the following factors will not affect the Hardy-Weinberg equilibrium?

## [NEET 2024]

**Options:**

A.

Genetic recombination

B.

Genetic drift

C.

Gene migration

D.

Constant gene pool

**Answer: D**

## Solution:

The correct answer is option (4) as a constant gene pool will not disturb the Hardy-Weinberg equilibrium. Option (1), (2) & (3) will affect the equilibrium leading to evolution.

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# Question6

## Given below are two statements:
## Statement I: Gause's competitive exclusion principle states that two closely related species competing for different resources cannot exist indefinitely.
## Statement II: According to Gause's principle, during competition, the inferior will be eliminated. This may be true if resources are limiting.

## In the light of the above statements, choose the correct answer from the options given below :

## [NEET 2024]

**Options:**

A.

Both Statement I and Statement II are true.

B.

Both Statement I and Statement II are false.

C.

Statement I is true but Statement II is false.

D.

Statement I is false but Statement II is true.

**Answer: D**

## Solution:

Gause's competitive exclusion principle states that two closely related species competing for the same resources cannot exist indefinitely and the competitively inferior one will be eliminated eventually. This may be true if resources are limiting.

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# Question7

## Plants offer rewards to animals in the form of pollen and nectar and the animals facilitate the pollination process. This is an example of : [NEET 2023 mpr]

**Options:**

A.

Amensalism

B.

Competition

C.

Commensalism

D.

Mutualism

**Answer: D**

## Solution:

**Solution:**

This is an example of Mutualism. Mutualism is a type of symbiotic relationship in which both organisms involved benefit. In this case, the plant benefits by having its pollen dispersed by the animal, thus facilitating pollination, and the animal benefits by obtaining food in the form of pollen and nectar.

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# Question8

## If there are 250 snails in a pond, and within a year their number increases to 2500 by reproduction. What should be their birth rate per snail per year?

**[NEET 2023 mpr]**

**Options:**

A.

10

B.

9

C.

25

D.

15

**Answer: B**

## Solution:

$$\text{Birth rate} = \frac{\Delta N}{N\,\Delta t}$$

Here, $N = 250$

$\Delta t = 1$ year

$\Delta N = 2500 - 250$

$= 2250$

$$\text{Birth rate} = \frac{2250}{250 \times 1}$$

$= 9$

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# Question9

## Match List I with List II :

| List I (Interaction) | List II (Species A and B) |
|---|---|
| A. Mutualism | I. $+(A), O(B)$ |
| B. Commensalism | II. $-(A), O(B)$ |
| C. Amensalism | III. $+(A), -(B)$ |
| D. Parasitism | IV. $+(A), +(B)$ |

**Choose the correct answer from the options given below:**
**[NEET 2023]**

**Options:**

A. A-IV, B-I, C-II, D-III

B. A-IV, B-III, C-I, D-II

C. A-III, B-I, C-IV, D-II

D. A-IV, B-II, C-I, D-III

**Answer: A**

## Solution:

(+,+) Mutualism : In this interaction, both the interacting species are benefitted.

(+,0) Commensalism : Only one species is benefitted and the other species remains unharmed.

(−,0) Amensalism : Neither species is benefitted. One remains unharmed and the other is harmed.

(+,−) Parasitism : One species is benefitted and other is negatively effected.

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# Question10

## Given below are two statements:

## Statement I : Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and competitively inferior one will be eliminated eventually.

## Statement II : In general, carnivores are more adversely affected by competition than herbivores.
## In the light of the above statements, choose the correct answer from the options given below:
## [NEET 2023]

**Options:**

A. Both Statement I and Statement II are false.

B. Statement I is correct Statement II is false.

C. Statement I is incorrec but Statement II is true.

D. Both Statement I and Statement II are true.

**Answer: B**

## Solution:

Gause's 'Competitive Exclusion Principle' states that two closely related species competing for the same resources cannot co-exist indefinitely and the competitively inferior one will be eliminated eventaully. Thus, statement I is correct.

Statement II is incorrect as in general, herbivores and plants appear to be more adversely affected by competition than carnivores.

# Question11

## Match List I with List II.

| List I (Interacting species) | List II (Name of interaction) |
|---|---|
| A. A Leopard and a Lion in a forest/grassland | I. Competition |
| B. A Cuckoo laying egg in a Crow's nest | II. Brood parasitism |
| C. Fungi and root of a higher plant in Mycorrhizae | III. Mutualism |
| D. A cattle egret and a Cattle in a field | IV. Commensalism |

## Choose the correct answer from the options given below. [NEET 2023]

**Options:**

A. A-I, B-II, C-IV, D-III

B. A-III, B-IV, C-I, D-II

C. A-II, B-III, C-I, D-IV

D. A-I, B-II, C-III, D-IV

**Answer: D**

## Solution:

**Solution:**

A leopard and a lion in a forest/grassland exemplify competition where both the species are competing for the same resources.

A cuckoo laying egg in a crow's nest is brood parasitism where cuckoo is the parasitic bird that lays its egg in the nest of crow (host bird).

Fungi and root of a higher plant in mycorrhizae exemplify mutualism where both the species are benefitted. The fungi help the plant in the absorption of essential nutrients from the soil while the plant in turn provides the fungi with energy yielding carbohydrates.

A cattle egret and a cattle in a field exemplify commensalism where one species benefits and the other remains unaffected.

The egrets always forage close to where cattle are grazing because the cattle, as they move, stir up and flush out insects from the vegetation that otherwise might be difficult for the egrets to find and catch.

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# Question12

## Match List I with List II.

| List I | List II |
|---|---|
| A. Logistic growth | I. Unlimited resource availability condition |
| B. Exponential growth | II. Limited resource availability condition |
| C. Expanding age pyramid | III. The percent individuals of pre-reproductive age is largest followed by reproductive and post reproductive age groups |
| D. Stable age pyramid | IV. The percent individuals of pre-reproductives and reproductive age group are same |

### Choose the correct answer from the options given below:
### [NEET 2023]

**Options:**

A. A-II, B-III, C-I, D-IV

B. A-II, B-IV, C-I, D-III

C. A-II, B-IV, C-III, D-I

D. A-II, B-I, C-III, D-IV

**Answer: D**

## Solution:

Logistic growth occurs when there is limited resource availability condition.

Exponential growth occurs when there is unlimited resource availability condition.

Expanding age pyramid reflects growing population where the percent individuals of pre-reproductive age is largest followed by reproductive and post-reproductive age groups.

Stable age pyramid shows stable population where the percent individuals of pre-reproductive and reproductive age group are same.

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# Question13

### Two butterfly species are competing for the same nectar of a flower in a garden. To survive and coexist together, they may avoid competition in the same garden by
### [NEET Re-2022]

**Options:**

A. predating on each other

B. feeding at the same time

C. choosing different foraging patterns

D. increasing time spent on attacking each other

**Answer: C**

## Solution:

Two butterfly species are competing for same nectar of a flower. To survive and co-exist together they can choose different foraging patterns.

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# Question14

## Which one of the following statements cannot be connected to Predation?
## [NEET-2022]

**Options:**

A. It helps in maintaining species diversity in a community

B. It might lead to extinction of a species

C. Both the interacting species are negatively impacted

D. It is necessitated by nature to maintain the ecological balance

**Answer: C**

## Solution:

**Solution:**

One of the species in predation gains benefit on the expense of the other. Predators help in maintaining species diversity in a community, by reducing the intensity of competition among competing prey species. If a predator is too efficient and overexploits its prey, then the prey might become extinct.

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# Question15

## While explaining interspecific interaction of population, (+) sign is assigned for beneficial interaction, (–) sign is assigned for detrimental interaction and (0) for neutral interaction. Which of the following interactions can be assigned (+) for one specifies and (–) for another specifies involved in the interaction ?
## [NEET-2022]

**Options:**

A. Predation

B. Amensalim

C. Commensalism

D. Competition

**Answer: A**

## Solution:

In predation, one species is benefitted where as the other is harmed. It is (+ –) type of population interaction

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# Question16

## Inspite of interspecific competition in nature, which mechanism the competing species might have evolved for their survival? [NEET 2021]

**Options:**

A. Resource partitioning

B. Competitive release

C. Mutualism

D. Predation

**Answer: A**

## Solution:

**Solution:**

• Inspite of interspecific competition the competing species may co-exist by doing resource partitioning.

• In mutualism two organisms are equally benefitted.

• In predation one organism (Predator) eats the another one (Prey).

• In competition release there occurs dramatical increase in population of a less distributed species when its superior competitor is removed.

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# Question17

## Amensalism can be represented as: [NEET 2021]

**Options:**

A. Species A (–); Species B (0)

B. Species A (+); Species B (+)

C. Species A (–); Species B (–)

D. Species A (+); Species B (0)

**Answer: A**

## Solution:

Amensalism is an interaction between two organisms of different species in which one species inhibits the growth of other species by secreting certain chemicals. The first species is neither get benefited nor harmed.

• (+) : (0) interaction is observed in commensalism

• (+) : (+) interaction is observed in mutualism.

• (–) : (–) interaction is seen in competition

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# Question18

## In the exponential growth equation $N_t = N_0e^{rt}$, e represents [NEET 2021]



**Options:**

A. The base of number logarithms

B. The base of exponential logarithms

C. The base of natural logarithms

D. The base of geometric logarithms

**Answer: C**

## Solution:

In the exponential growth equation $N_t = N_0e^{rt}$
e represents the base of natural logarithms
$N_t$ = Population density after time t
$N_0$ = Population density at time zero
r = Intrinsic rate of natural increase called biotic potential.

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# Question19

## The process of growth is maximum during [NEET-2020]

**Options:**

A. Lag phase

B. Senescence

C. Dormancy

D. Log phase

**Answer: D**

## Solution:

In exponential growth, the initial growth is slow (lag phase) and it increases rapidly thereafter at an exponential rate in log or exponential phase.

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# Question20

## Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their [NEET-2020]

**Options:**

A. Growth response

B. Defence action

C. Effect on reproduction

D. Nutritive value

**Answer: B**

## Solution:

**Solution:**

A wide variety of chemical substances that we extract from plants on a commercial scale (nicotine, caffeine, quinine, strychnine, opium, etc. ) are produced by them (plants) as defences against grazers and browsers.

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# Question21

## Which of the following is not an attribute of a population? [NEET-2020]

**Options:**

A. Natality

B. Mortality

C. Species interaction

D. Sex ratio

**Answer: C**

## Solution:

Natality – Population attribute

Mortality – Population attribute

Species interaction – Population interaction

Sex ratio – Population attribute

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# Question22

**Between which among the following, the relationship is not an example of commensalism?**
**[NEET OD 2019]**

**Options:**

A. Orchid and the tree on which it grows

B. Cattle Egret and grazing cattle

C. Sea Anemone and Clown fish

D. Female wasp and fig species

**Answer: D**

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# Question23

**Which of the following shows whorled phyllotaxy?**
**[NEET OD 2019]**

**Options:**

A. Mustard

B. China rose

C. Alstonia

D. Calotropis

**Answer: C**

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# Question24

**Carnivorous animals - lions and leopards, occupy the same niche but lions predate mostly larger animals and leopards take smaller ones. This mechanism of competition is referred to as -**
**[NEET OD 2019]**

**Options:**

A. Character displacement

B. Altruism

C. Resource partitioning

D. Competitive exclusion

**Answer: C**

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# Question25

## Which one of these animals is not a homeotherm? [NEET 2018]

**Options:**

A. Macropus

B. Chelone

C. Psittacula

D. Camelus

**Answer: B**

## Solution:

**Solution:**

Homeotherm are animals that maintain constant body temperature, irrespective of surrounding temperature.

Birds and mammals are homeotherm.

Chelone (Turtle) belongs to class reptilia which is Poikilotherm or cold blood.

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# Question26

## Match Column-I with Column-II

| Column-I | Column-II |
|---|---|
| (A) Saprophyte | (i) Symbiotic associationoffungi with plantroots |
| (B) Parasite | (ii) Decomposition of dead organicmaterials |
| (C) Lichens | (iii) Living on livingplants or animals |
| (D) Mycorrhiza | (iv) Symbioticassociationofalgae and fungi |

| | (A) | (B) | (C) | (D) |
|---|---|---|---|---|
| (a) | (i) | (ii) | (iii) | (iv) |
| (b) | (iii) | (ii) | (i) | (iv) |
| (c) | (ii) | (i) | (iii) | (iv) |
| (d) | (ii) | (iii) | (iv) | (i) |

**[2018]**

**Options:**

A. (a)

B. (b)

C. (c)

D. (d)

**Answer: D**

## Solution:

(d) Saprophytes are organisms which live on dead organic matter and help in their decomposition.
Parasites is an organisms that live in or on other living plants and animals and dependent on them for their food.
Lichens represent a type of symbiotic association of algae and fungi, in which, both of them dependent on each other for their food and shelter.
Mycorrhiza is also a type of symbiotic association of fungi and plant roots, e.g., Cycas coralloid root.

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# Question27

## In a growing population of a country,
## [NEET 2018]

**Options:**

A. pre-reproductive individuals are more than the reproductive individuals

B. reproductive individuals are less than the post-reproductive individuals

C. pre-reproductive individuals are less than the reproductive individuals

D. reproductive and pre-reproductive individuals are equal in number

**Answer: A**

## Solution:

**Solution:**

Whenever the pre-reproductive individuals or the younger population size is larger than the reproductive group, the population will be an increasing population.

# Question28

## Which one of the following population interactions is widely used in medical science for the production of antibodies? [NEET 2018]

**Options:**

A. Commensalism

B. Mutualism

C. Amensalism

D. Parasitism

**Answer: C**

## Solution:

**Solution:**

Amensalism/Antibiosis (0, –)

Antibiotics are chemicals secreted by onemicrobial group (eg : Penicillium) which harm other microbes (eg :Staphylococcus)

It has no effect on Penicillium or the organism which produces it.

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# Question29

## Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other? [NEET 2018]

**Options:**

A. Hydrilla

B. Yucca

C. Viola

D. Banana

**Answer: B**

## Solution:

**Solution:**

Yucca have an obligate mutualism with a species of moth i.e. Pronuba.

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# Question30

## World Ozone Day is celebrated on [NEET 2018]

**Options:**

A. 5th June

B. 21st April

C. 22nd April

D. 16th September

**Answer: D**

## Solution:

World Ozone day is celebrated on 16th September.

5th June - World Environment Day

21st April - National Yellow Bat Day

22nd April - National Earth Day

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# Question31

## Asymptote in a logistic growth curve is obtained when : [NEET 2017]

**Options:**

A. K = N

B. K > N

C. K < N

D. The value of 'r' approaches zero

**Answer: A**

## Solution:

**Solution:**

The logistic growth curve is the curve which shows a decrease in the growth rate when the population reaches its carrying capacity. It is represented by equation dN/dt = rN(K-N/K) where, N is the population density at a given time, r = intrinsic rate of natural increase, K= carrying capacity.

Asymptote is a straight line associated with a curve. A population that survives in a habitat with limited resources shows a lag phase during the initial stage as the organism needs to adjust during the initial stage and the population is less than the carrying capacity.

After, the initial stage it shows accelerated growth as the population increases and utilizes the resources. The resources get utilized at the later stage and thus the growth deaccelerates and further, it turns to an asymptote when the population density becomes equivalent to carrying capacity. So, in the case of an asymptote, K=N.

# Question32

**Plants which produce characteristics pneumatophores and show vivipary belongs to:**
**[NEET 2017]**

**Options:**

A. Halophytes

B. Psammophytes

C. Hydrophytes

D. Mesophytes

**Answer: A**

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# Question33

**Pressence of plants arranged into well defined vertical depending on their height can be seen best in:**
**[NEET 2017]**

**Options:**

A. Tropical Rain Forest

B. Grassland

C. Temperate Forest

D. Tropical Savannah

**Answer: A**

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# Question34

**Mycorrhizae are the example of:**
**[NEET 2017]**

**Options:**

A. Amensalism

B. Antibiosis

C. Mutualism

D. Fungistasis

**Answer: C**

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# Question35

## Which of the following is correct for r-selected species? [NEET 2016 P2]

**Options:**

A. Small number of progeny with large size

B. Large number of progeny with small size

C. Large number of progeny with large size

D. Small number of progeny with small sizer-p

**Answer: B**

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# Question36

## If '+' sign is assigned to beneficial interaction, '–' sign to detrimental and '0' sign to neutral interaction, then the population interaction represented by '+' '–' refers to [NEET 2016 P2]

**Options:**

A. parasitism

B. mutualism

C. amensalism

D. commensalism

**Answer: A**

## Solution:

Parasitism + , –

Mutualism + , +

Amensalism 0, –

Commensalism +, 0

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# Question37

**The principle of competitive exclusion was stated by**
**[NEET 2016 P2]**

**Options:**

A. Verhulst and Pearl

B. C. Darwin

C. G. F. Gause

D. MacArthur

**Answer: C**

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# Question38

**It is much easier for a small animal to run uphill than for a large animal, because:**
**[NEET 2016 P1]**

**Options:**

A. The efficiency of muscles in large animals is less than in the small animals.

B. It is easier to carry a small body weight.

C. Smaller animals have a higher metabolic rate.

D. Small animals have a lower $O_2$ requirement.

**Answer: C**

## Solution:

**Solution:**

smaller animals have higher BMR related with sustained energy production and delayed muscle fatigue

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# Question39

**When does the growth rate of a population following the logistic model equal zero ? The logistic model is given as $\frac{dN}{dt} = rN\left(1 - \frac{N}{K}\right)$ :**
**[NEET 2016 P1]**

**Options:**

A. when death rate is greater than birth rate.

B. when N/K is exactly one.

C. when N nears the carrying capacity of the habitat.

D. when N/K equals zero.

**Answer: B**

## Solution:

$$\frac{dN}{dt} = rN\left(1 - \frac{N}{k}\right)$$

$$\frac{dN}{dt} = rN(1-1) = 0$$

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# Question40

## Gause's principle of competitive exclusion states that:
## [NEET 2016 P1]



**Options:**

A. Larger organisms exclude smaller ones through competition

B. More abundant species will exclude the less abundant species through competition.

C. Competition for the same resources excludes species having different food preferences.

D. No two species can occupy the same niche indefinitely for the same limiting resources.

**Answer: D**

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# Question41

## In which of the following interactions both partners are adversely affected?
## [NEET 2015]



**Options:**

A. Competition

B. Predation

C. Mutualism

D. Parasitism

**Answer: A**

## Solution:

Competition is the rivalry between two or more organisms for obtaining the same resources such as food, light, water, space, shelter, mate, etc. Competitors adversely affect each other.

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# Question42

## An association of individuals of different species living in the same habitat and having functional interactions is - [NEET 2015]

**Options:**

A. Ecological niche

B. Ecosystem

C. Population

D. Biotic community

**Answer: D**

## Solution:

**Solution:**
Biotic community is an association of individuals of different species living in the same habitat and showing functional interactions.

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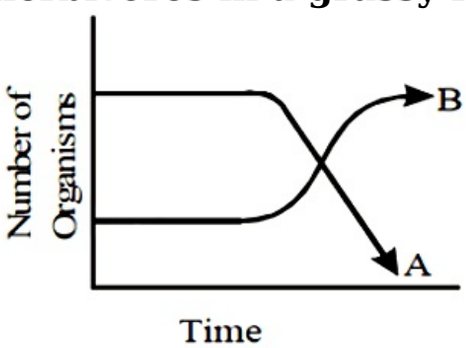
# Question43

## The following graph depicts changes in two populations (A and B) of herbivores in a grassy field A possible reason for these changes is that:




## [NEET 2015 C]

**Options:**

A. Population B competed more successfully forfood than population A

B. Population A produced more offspring thanpopulation B

C. Population A consumed the members ofpopulation B

D. Both plant populations in this habitat decreased

**Answer: A**

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# Question44

## Just as a person moving from Delhi to Shimla to escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to:
## [NEET 2014]

**Options:**

A. Western Ghat

B. Meghalaya

C. Corbett National Park

D. Keolado National Park

**Answer: D**

## Solution:

**Solution:**
Every winter the famous Keolado National Park (Bharatpur) in Rajasthan host thousands ofmigratory birds coming from Siberia and other extremely cold northern region.

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# Question45

## Besides paddy fields, cyanobacteria are also found inside vegetative part of
## (NEET 2013)

**Options:**

A. Equisetum

B. Psilotum

C. Pinus

D. Cycas.

**Answer: D**

## Solution:

Coralloid roots of Cycas have symbiotic association with blue-green algae like Nostoc and Anabaena.
Coralloid roots are irregular, negatively geotropic, dichotomously branched coral like roots which do not possess root hairs and root caps.

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# Question46

## A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is (NEET 2013)



**Options:**

A. commensalism

B. amensalism

C. ectoparasitism

D. symbiosis

**Answer: A**

## Solution:

**Solution:**
One of the best-known examples of commensalism is that between the hermit crab and a sea anemone (e.g., Adamsia). The anemone is often found attached to the shell in which the hermit crab lives. A sea anemone attaches itself to the crabs shelter and it may envelop part of the crab's shell as well. The growth of the crab and anemone keep pace with each other and the crab has no need to change its shell more and more of its is sheltered by the anemone. As the crab moves about in search of food the anemone is brought into contact with a greater supply of food and the crab is protected by the anemone's stinging cells.

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# Question47

## A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240 , immigration 20 and emigration 30. The net increase in population is (NEET 2013)



**Options:**

A. 05

B. zero

C. 10

D. 15

**Answer: B**

## Solution:

(b) : Natality and immigration positively contribute to the population growth while mortality and emigration are negative factors. In the given question,
The net increase in population is
natality + immigration $= 250 + 20 = 270$
The net decrease in population is
mortality + emigration $= 240 + 30 = 270$
Thus, net increase in population $= 270 - 270 = 0$

---

# Question48

## The age pyramid with broad base indicates (KN NEET 2013)

**Options:**

A. high percentage of old individuals

B. low percentage of young individuals

C. a stable population

D. high percentage of young individuals.

**Answer: D**

## Solution:

**Solution:**
(d) : Age pyramid is a graphic representation of abundance of individuals of different age groups with pre-reproductive individuals at the base, reproductive individuals in the middle and post-reproductive individuals at the top.
Triangular age pyramid has high proportion of pre-reproductive individuals, moderate number of reproductive individuals and fewer post-reproductive individuals. It represents young or rapidly growing population. In bell-shaped age pyramid, the number of pre-reproductive and reproductive individuals is almost equal. Post reproductive individuals are comparatively fewer. It represents stable or stationary population where growth rate is nearly zero. In urn-shaped age pyramid, the number of reproductive individuals is higher than the number of pre-reproductive individuals. It represents declining or diminishing population.

---

# Question49

## Which one of the following is not a parasitic adaptation? (KN NEET 2013)

**Options:**

A. Development of adhesive organs

B. Loss of digestive organs

C. Loss of reproductive capacity

D. Loss of unnecessary sense organs

**Answer: C**

## Solution:

**Solution:**
(c) : Parasitism is a relationship between two living organisms of different species in which one organism called parasite obtains its food directly from another living organism called host. The parasite spends a part or whole of its life either on or inside the body of the host.
The general parasitic adaptations are
(i) anaerobic respiration in internal parasites,
(ii) loss of certain organs,
(iii) presence of adhesive organs,
(iv) excessive multiplication,
(v) resistant cysts and eggs for safe transfer of their progeny to new hosts and
(vi) well developed and complicated reproductive organs.

---

# Question50

## Benthic organisms are affected the most by (KN NEET 2013)



**Options:**

A. light reaching the forest floor

B. surface turbulence of water

C. sediment characteristics of aquatic ecosystems

D. water-holding capacity of soil.

**Answer: C**

## Solution:

**Solution:**
(c) : Benthic organisms are bottom dwelling forms found crawling or attached to the bottom. The sediment characteristics often determine the type of benthic animals that can thrive there.

---

# Question51

## Cuscuta is an example of (Mains 2013)

**Options:**

A. ectoparasitism

B. brood parasitism

C. predation

D. endoparasitism.

**Answer: A**

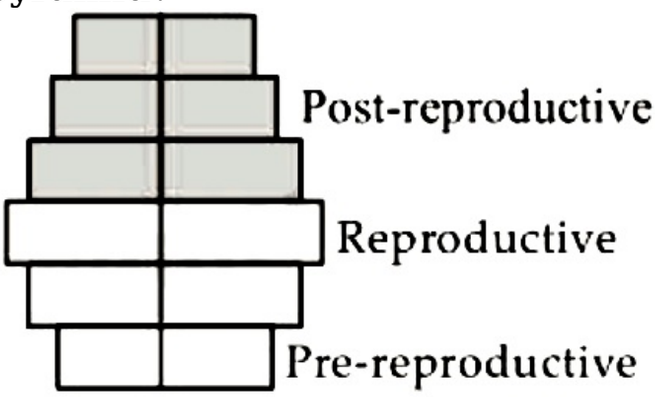
## Solution:

**Solution:**
(a) : Cuscuta is a total stem parasite which is a good example of ectoparasitism. It is commonly found growing on hedge plants. It has lost chlorophyll and leaves in the course of evolution. It attaches and wraps itself around the stem of host plant and produces haustoria that gets inserted into the vascular system of host. The parasitic plant sucks all the nutrients from the host plant with the help of haustoria. Cuscuta is known to receive even the flower inducing hormone or florigen from the host.

---

# Question52

## What type of human population is represented by the following age pyramid?




## (2011)

**Options:**

A. Vanishing population

B. Stable population

C. Declining population

D. Expanding population

**Answer: C**

## Solution:

**Solution:**
(c) : Age pyramid is a graphic representation of abundance of individuals of different age groups with pre-reproductive individuals at the base, reproductive individuals in the middle and post-reproductive individuals at the top. Triangular age pyramid has high proportion of pre-reproductive individuals, moderate number of reproductive individuals and fewer post-reproductive individuals. It represents young or rapidly growing population. In bell-shaped age pyramid, the number of pre-reproductive and reproductive individuals is almost equal. Post reproductive individuals are comparatively fewer. It

represents stable or stationary population where growth rate is nearly zero. In urn-shaped age pyramid, the number of reproductive individuals is higher than the number of pre-reproductive individuals. It represents declining or diminishing population.

---

# Question53

## Large woody vines are more commonly found in (2011)

**Options:**

A. temperate forests

B. mangroves

C. tropical rainforests

D. alpine forests.

**Answer: C**

## Solution:

**Solution:**
(c) : Lianas are large climbing woody vines that drape tropical rainforest trees. They have adapted to life in rainforest by having their roots in the ground and climbing high onto the tree canopy to reach available sunlight. Many lianas start life in the rainforest canopy and send roots down to the ground.

---

# Question54

## Consider the following four conditions (1 − 4) and select a correct pair of them as adaptations to environment in desert lizards. Conditions: 1. Burrowing in soil to escape high temperature. 2. Losing heat rapidly from the body during high temperature. 3. Bask in sun when temperature is low. 4. Insulating body due to thick fatty dermis. (2011)

**Options:**

A. 3,4

B. 1,3

C. 2,4

D. 1,2

**Answer: B**

## Solution:

(b) : Desert lizards lack the physiological ability that mammals have to deal with the high temperatures of their habitat, but manage to keep their body temperature fairly constant by behavioural means. They bask in the sun and absorb heat when their body temperature drops below the comfort zone, but move into shade when the ambient temperature starts increasing. Some species are capable of borrowing into the soil to hide and escape from the above-ground heat.

---

# Question55

## Which one of the following is categorised as a parasite in true sense? (2011)



**Options:**

A. The female Anopheles bites and sucks blood from humans

B. Human foetus developing inside the uterus draws nourishment from the mother

C. Head louse living on the human scalp as well as laying eggs on human hair

D. The cuckoo (koel) lays its eggs in crow's nest.

**Answer: C**

## Solution:

**Solution:**
(c) : Parasitism is an association in which one organism (the parasite) lives on (ectoparasitism) or in (endoparasitism) the body of another (the host), from which it obtains its nutrients. They also produce vast numbers of eggs there e.g., head louse living on the human scalp.

---

# Question56

## The logistic population growth is expressed by the equation: (2011 Mains)



**Options:**

A. $\frac{dt}{dN} = Nr\left(\frac{K-N}{K}\right)$

B. $dN/dt = rN\left(\frac{K-N}{K}\right)$

C. $dN/dt = rN$

D. $dN/dt = rN\left(\frac{N-K}{N}\right)$

**Answer: B**

## Solution:

26. (b) : Logistic population growth is expressed by following equation:

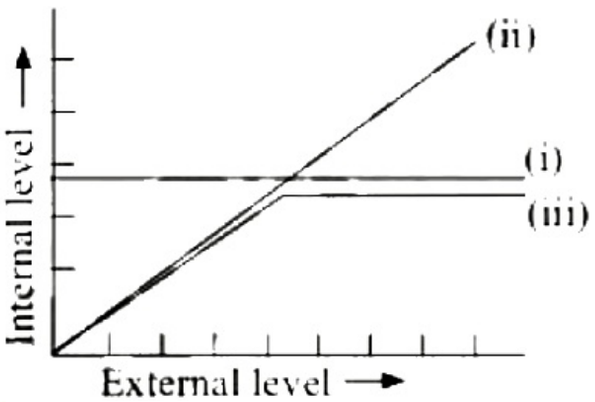
$$\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$$

Where, N = population density at time t
r = intrinsic rate of natural increase
K = carrying capacity

---

# Question57

**The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do (i), (ii) and (iii) represent respectively?**




| | (i) | (ii) | (iii) |
|---|---|---|---|
| (a) | conformer | regulator | partial regulator |
| (b) | regulator | partial regulator | conformer |
| (c) | partial regulator | regulator | conformer |
| (d) | regulator | conformer | partial regulator |

**(2010)**

**Options:**

A. (a)

B. (b)

C. (c)

D. (d)

**Answer: D**

## Solution:

(d) : Some organisms are able to maintain homeostasis by physiological (sometimes behavioural also) means which ensures constant body temperature, constant osmotic concentration, etc. They are known as regulators. A majority of animals and plants cannot maintain a constant internal environment. Their body temperature changes with the ambient temperature. These animals and plants are simply conformers. During the course of evolution, the costs and benefits of maintaining a constant internal environment are taken into consideration. Some species have evolved the ability to regulate, but only over a limited range of environmental conditions, beyond which they simply conform. They are known as partial regulators.

---

# Question58

## Which one of the following is one of the characteristics of a biological community?
## (2010)



**Options:**

A. Stratification

B. Natality

C. Mortality

D. Sex-ratio

**Answer: A**

## Solution:

**Solution:**
(a) : The characteristics of biological community are dominance, species diversity, trophic organisation, stratification, dynamism and stability. Organisms are not uniformly distributed throughout a community. They usually occur in definite zones. This spatial arrangement of populations is called stratification. Structurally a community may be divided horizontally into sub communities. This horizontal division constitutes the zonation in the community. Natality, mortality, age structure and sex ratio are the basic characteristics of a population.

---

# Question59

## Which one of the following is most appropriately defined?
## (Mains 2010)



**Options:**

A. Host is an organism which provides food to another organism.

B. Amensalism is a relationship in which one species is benefitted whereas the other is unaffected.

C. Predator is an organism that catches and kills other organism for food.

D. Parasite is an organism which always lives inside the body of other organism and may kill it.

**Answer: C**

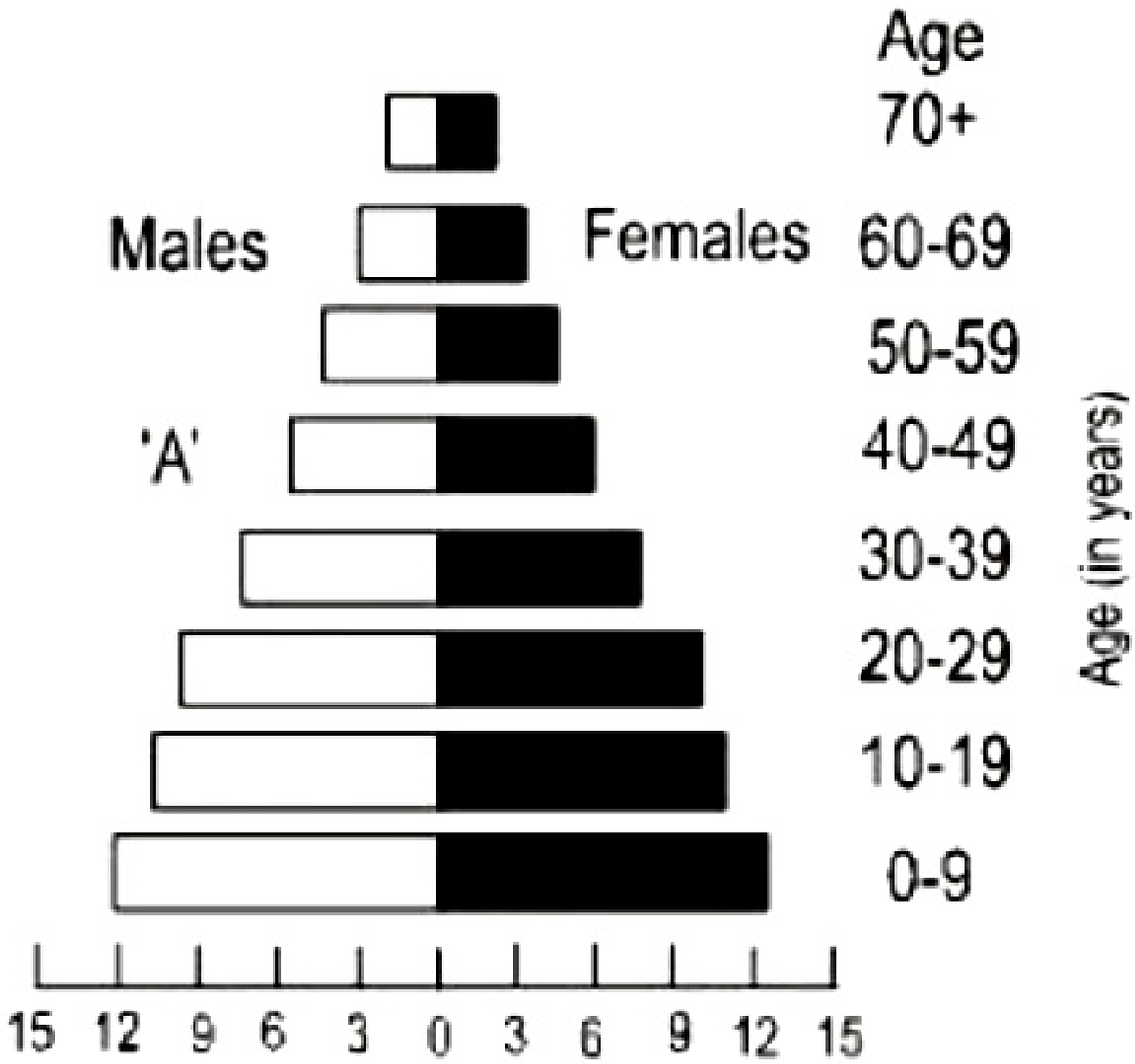
## Solution:

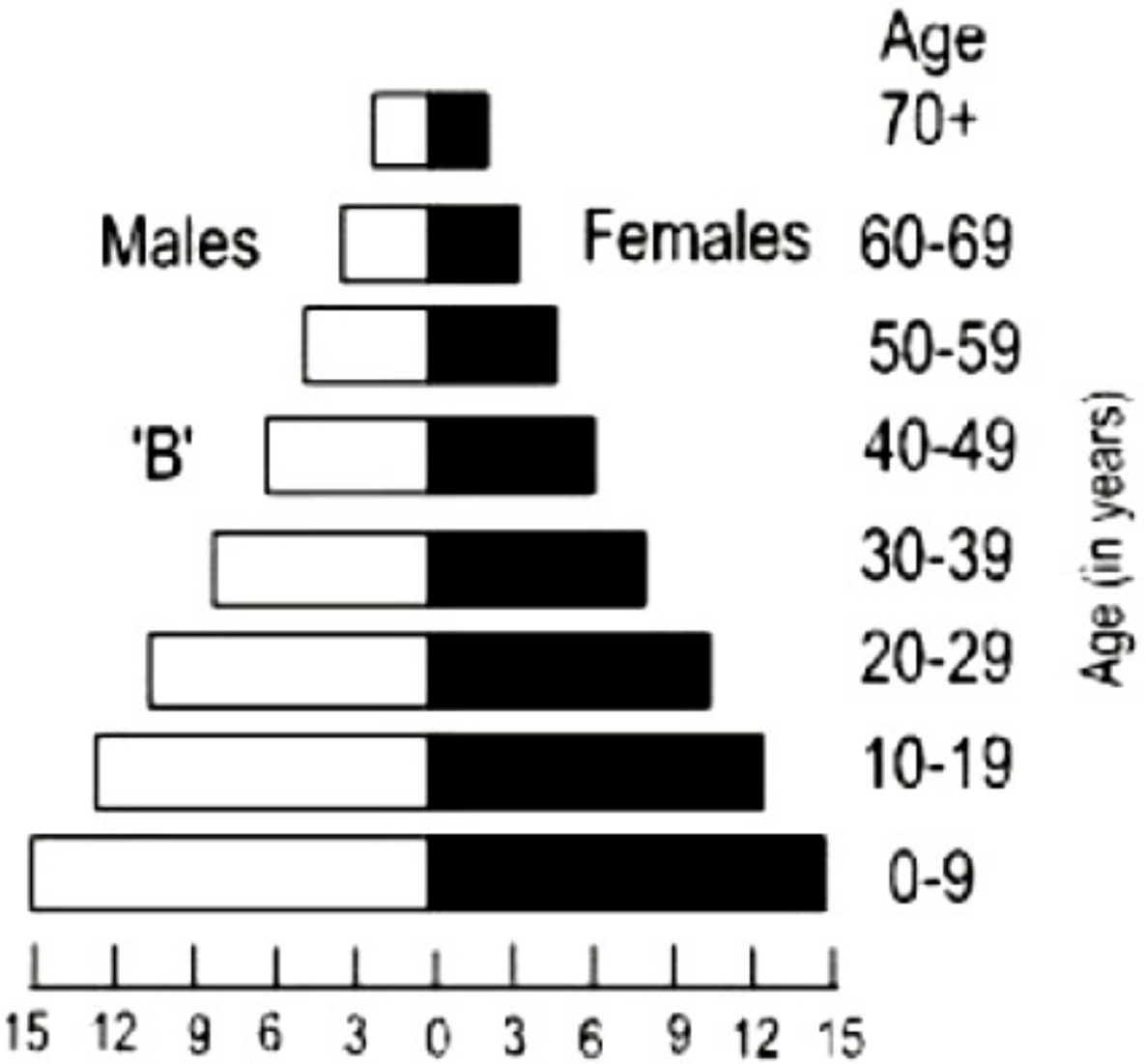
(c) : Predation is an interaction between members of two species in which members of one species capture, kill and eat up members of other species. Host is a term which is specifically related to parasitism. Amensalism is an interspecies interaction in which one species is harmed whereas the other one is unaffected. Parasitic organism can live both over the surface of their host or inside their body.

---

# Question60

**A country with a high rate of population growth took measures to reduce it. The figure below shows age-sex pyramids of populations A and B twenty years apart. Select the correct interpretation about them.**






## Interpretations:

### (2009)

**Options:**

A. "B" is earlier pyramid and shows stabilized growth rate.

B. "B" is more recent showing that population is very young.

C. "A" is the earlier pyramid and no change has occurred in the growth rate.

D. "A" is more recent and shows slight reduction in the growth rate.

**Answer: D**

### Solution:

(d) : "A" is more recent and shows slight reduction in growth rate.

# Question61

## Reduction in vascular tissue, mechanical tissue and cuticle is characteristic of
## (2009)



**Options:**

A. mesophytes

B. epiphytes

C. hydrophytes

D. xerophytes.

**Answer: C**

## Solution:

**Solution:**
(c) : In hydrophytes mechanical tissue i.e., sclerenchyma, conducting tissue xylem, absorbing tissues are in reduced form or absent. Cuticle is either completely absent or if present it is thin and poorly developed.

---

# Question62

## Consider the following four statements (1 − 4) about certain desert animals such as kangaroo rat.
## (1) They have dark colour and high rate of reproduction and excrete solid urine.
## (2) They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs.
## (3) They feed on dry seeds and do not require drinking water.
## (4) They excrete very concentrated urine and do not use water to regulate body temperature.
## Which two of the above statements for such animals are true?
## (2008)

**Options:**

A. 3 and 1

B. 1 and 2

C. 3 and 4

D. 2 and 3

**Answer: C**

## Solution:

(c) : Kangaroo rat (Dipodomys merriami) feeds on dry seeds. It seldom drinks water. The requirement of water is met by food (10%) and metabolic water (90%). Water loss is prevented by living in burrows during the day, concentration of urine and solidification of faeces. It has a thick coat to minimise evaporative desiccation.

---

# Question63

## Quercus species are the dominant component in (2008)



**Options:**

A. scrub forests

B. tropical rain forests

C. temperate deciduous forests

D. alpine forests.

**Answer: C**

## Solution:

**Solution:**
(c) : Temperate broad leaf (deciduous) forests have warm summer and moderately cool winter. Rainfall is $100-250\text{cm}$. Dominant trees are oak, elm, birch, maple ash, chestnut, hickory, beech, poplar and Magnolia. Indian temperate broad leaves forests are dominated by oak like Quercus semecarpifolia (Brown oak of Himalayas, Khrsu oak), Q. floribunda (Tilonaj oak), Q. lanuginose (Rianj oak) and Q. leucotrichophora (Banj oak). Fauna of latitudinal temperate broad leaf forests consists of deer, fox, beaver, wild cat, racoon etc.

---

# Question64

## Geometric representation of age structure is a characteristic of (2007)



**Options:**

A. population

B. landscape

C. ecosystem

D. biotic community.

**Answer: A**

## Solution:

(a) : Population has several characteristics or attributes which are a function of the whole group and not of an individual. Age distribution is one of them that is the number or the percentage of individuals in a population in different age groups. This is represented geometrically in the form of age pyramid.

---

# Question65

## The population of an insect species shows an explosive increase in numbers during rainy season followed by its disappearance at the end of the season. What does this show?
## (2007)



**Options:**

A. The food plants mature and die at the end of the rainy season.

B. Its population growth curve is of J-type.

C. The population of its predators increases enormously.

D. S-shaped or sigmoid growth of this insect.

**Answer: B**

## Solution:

(b) : J-shape of growth pattern can be easily observed in algae blooms, some insects, annual plants and the lemmings of Tundra. In the beginning density of the population increases rapidly in compound interest fashion and then stops abruptly as the environmental resistance or other limiting factors become effective. These factors may be food, space, seasonal (frost, excessive rain etc.) or the termination of reproduction session.

---

# Question66

## If the mean and the median pertaining to a certain character of a population are of the same value, the following is most likely to occur
## (2007)



**Options:**

A. a bi-modal distribution

B. a T-shaped curve

C. a skewed curve

D. a normal distribution

**Answer: D**

## Solution:

(d) : If the mean and the median pertaining to a certain character of a population are of the same value, a normal distribution is most likely to occur.

---

# Question67

## A high density of elephant population in an area can result in (2007)



**Options:**

A. intraspecific competition

B. interspecific competition

C. predation on one another

D. mutualism

**Answer: A**

## Solution:

**Solution:**
(a) : Competition is rivalry for obtaining the same resource. Competition is of two types, intra specific and interspecific. Intra specific competition is the competition amongst members of the same species for a common resource. It may be for food, space, and mate. So if the density of elephant population in an area increases, it will lead to intra specific competition. This will lead to the establishment of territories in elephants which will result in pushing out of the extra number securing shelter, mate and food for the rest.

---

# Question68

## Niche overlap indicates (2006)



**Options:**

A. mutualism between two species

B. active cooperation between two species

C. two different parasites on the same host

D. sharing of one or more resources between the two species.

**Answer: D**

## Solution:

(d) : Niche/ecological niche is specific part of habitat occupied by individuals of a species which is circumscribed by its

range of tolerance, range of movement, microclimate, type of food and its availability, shelter, type of predator and timing of activity. A habitat has several ecological niches and supports a number of species. An ecological niche is used by a single species. Two or more species cannot use the same niche despite having a mutualistic association. Organisms or populations in competition have a niche overlap of a limited resource for which they compete. Both owl and cat feed on shrews and mice. They occupy the same niche because of being ecological equivalents though their habitats are different.

---

# Question69

## More than 70% of world's freshwater is contained in (2005)



**Options:**

A. polar ice

B. glaciers and mountains

C. Antarctica

D. Greenland.

**Answer: A**

## Solution:

**Solution:**
(a) : Nearly about 97% of the earth's water is saline in the oceans and seas. 3% of the earth's water is locked up on the polar ice caps. 85% of the frozen freshwater is in the Antarctic is ice cap, 15% of the frozen freshwater is in the northern polar ice cap and glaciers.

---

# Question70

## At which latitude, heat gain through insolation approximately equals heat loss through terrestrial radiation? (2005)



**Options:**

A. $22\frac{1}{2^{\circ}}$ North and South

B. $40^{\circ}$ North and South

C. $42\frac{1}{2}\circ$ North and South

D. $66^{\circ}$ North and South

**Answer: B**

## Solution:

(b) : Earth does not receive equal radiation at all points. The East West rotation of earth provides equal exposure to sunlight but latitude and dispersion do affect the amount of radiation received. The poles receive far less radiation than equator. This uneven heating is called differential insolation. At $40^{\circ}$ North and South, approximately the heat gain is equal to heat loss through terrestrial radiation.

---

# Question71

## Animals have the innate ability to escape from predation. Examples for the same are given below. Select the incorrect example. (2005)



**Options:**

A. Colour change in Chamaeleon

B. Enlargement of body size by swallowing air in puffer fish

C. Poison fangs in snakes

D. Melanism in moths

**Answer: C**

## Solution:

**Solution:**
(c) : Colour change in Chameleon and melanism in moths are examples of camouflage in animals adapted to prevent predation from prey. As a defence mechanism puffers have the ability to inflate rapidly, filling their extremely elastic stomach with water (or air) until they are almost spherical. This prevents them from being identified by the predator. But poison fangs in snakes are a method adopted for preying and not escaping predation.

---

# Question72

## Which one of the following pairs is mismatched? (2005)



**Options:**

A. Tundra - permafrost

B. Savanna - Acacia trees

C. Prairie- Epiphytes

D. Coniferous forest - Evergreen trees

**Answer: C**

## Solution:

(c) : A biome is a major terrestrial community characterized by a distinct climate and inhabited by a particular species of plants and animals.
Tundra is characterized by precipitation of less than $25 \mathrm{~cm}$ annually. Permafrost or permanent ice is found about a meter down from the surface, it never melts and is impenetrable to both water and roots.
Savannahs are open grasslands with scattered shrubs and trees. Coniferous forest contain evergreen trees. In these forests all plants do not shed their leaves at the same time hence forest remains always evergreen. But Paiaries is a grassland and epiphytes and ephemerals are found in deserts.

---

# Question73

## Certain characteristic demographic features of developing countries are (2004)



**Options:**

A. high fertility, low or rapidly falling mortality rate, rapid population growth and a very young age distribution

B. high fertility, high density, rapidly rising mortality rate and a very young age distribution

C. high infant mortality, low fertility, uneven population growth and a very young age distribution

D. high mortality, high density, uneven population growth and a very old age distribution.

**Answer: A**

## Solution:

**Solution:**
(a) : In developing countries the conditions are becoming better for survival of human beings. So the mortality rate or the number of individuals dying per unit of time is low. Mortality or the average number of individuals produced by a population in a unit of time is high. So that there is rapid population growth and there are more individuals in the pre-reproductive age group. So there is young age distribution.

---

# Question74

## What is a keystone species? (2004)



**Options:**

A. A species which makes up only a small proportion of the total biomass of a community, yet has a huge impact on the community's organization and survival

B. A common species that has plenty of biomass, yet has a fairly low impact on the community's organization

C. A rare species that has minimal impact on the biomass and on other species in the community

D. A dominant species that constitutes a large proportion of the biomass and which affects many other species.

**Answer: A**

## Solution:

(a) : Keystone species are those species which has significant and disproportionately large influence on the community structure and characteristics. It has often considerably low abundance and biomass as compared to dominant species. Removal of such species causes serious disruption in structure and function of community.

---

# Question75

## In which one of the following pairs is the specific characteristic of a soil not correctly matched?
## (2004)



**Options:**

A. Laterite contains aluminium compound

B. Terra rosa- most suitable for roses

C. Chernozems - richest soil in the world

D. black soil rich in calcium carbonate

**Answer: D**

## Solution:

**Solution:**
(d) : Black soil forms the largest group. It is developed mainly on the Deccan traps of Maharashtra, Madhya Pradesh and Kathiawar. Because of its hydrology and climatic conditions of the environment, the medium and deep black soils are very suitable for cotton cultivation. Laterite soil is rich in insoluble iron oxides and aluminium compounds, which gives laterites a reddish appearance. Chernozems are rich in nutrients (due to abundant organic rich compounds) and consequently the most fertile in the world.

---

# Question76

## The maximum growth rate occurs in
## (2004)



**Options:**

A. stationary phase

B. senescent phase

C. lag phase

D. exponential phase.

**Answer: D**

## Solution:

(d) : Maximum growth rate occurs in exponential or acceleration or log phase. The point at which the exponential growth begins to slow down is known as inflexion point.

---

# Question77

## In which one of the following habitats does the diurnal temperature of soil surface vary most?
## (2004)



**Options:**

A. Shrub land

B. Forest

C. Desert

D. Grassland

**Answer: C**

## Solution:

**Solution:**
(c) : Deserts are places where the diurnal temperatures vary greatly. It is extremely hot during the day time and very cold at night. This change in temperature also affects the temperature condition of the soil.

---

# Question78

## Mycorrhiza is an example of
## (2003)



**Options:**

A. symbiotic relationship

B. ectoparasitism

C. endoparasitism

D. decomposers.

**Answer: A**

## Solution:

(a) : In mutalism or symbosis both the organisms in association are mutually benefitted and further this association is obligatory, i.e., necessary for existence of both organisms. Mycorrhiza is a example of symbiosis. It is association between roots of higher plants and fungal hyphae. The fungal hyphae supply water and nutrients to the plant and in turn get food form the plant. So both the organism are mutually benefitted.

---

# Question79

## What is true for individuals of same species? (2002)



**Options:**

A. Live in same niche

B. Live in same habitat

C. Interbreeding

D. Live in different habitat

**Answer: C**

## Solution:

**Solution:**
(c) : Species may be defined as the uniform interbreeding population of individuals which freely interbreed among themselves. Niche represents the habitat and functions of a species. Habitat is a specific place where an organisms lives.

---

# Question80

## Which type of association is found in between entomophilous flower and pollinating agent? (2002)



**Options:**

A. Mutualism

B. Commensalism

C. Cooperation

D. Co-evolution

**Answer: D**

## Solution:

(d) : Co-evolution can occur in any interspecific relationship like symbiosis or mutualism. The relation between an entomophilous flower and pollinating insect shows co-evolved mutualism. In this the plant depends exclusively on the insect for pollination and the insect relies on the plant for food.

---

# Question81

## Two different species cannot live for long duration in the same niche or habitat. This law is
## (2002)



**Options:**

A. Allen's law

B. Gause's hypothesis

C. Dollo's rule

D. Weisman's theory.

**Answer: B**

## Solution:

**Solution:**
(b) : Interspecific competition is rivalry amongst members of different species. The severity of competition depends upon similarity in the requirement of food and shelter. Every type of organism has a particular niche, no two organisms can live in same niche. One of the two is eliminated. This phenomenon is called Gause hypothesis of competitive exclusion.

---

# Question82

## Which part of the world has a high density of organisms?
## (1999)



**Options:**

A. Deciduous forests

B. Tropical rain forests

C. Grasslands

D. Savannahs

**Answer: B**

## Solution:

(b) : Tropical forests are found in tropical zone of the world and are characterized by very high temperature with rainfall in abundance. The flora of tropical rain forest is very rich and highly diversified. The tropical forests have a very rich fauna both in density as well as in varieties. The reason for this high diversity and variety of flora and fauna is the occurrence of suitable conditionsin these forests.

---

# Question83

## In desert grasslands, which type of animals are relatively more abundant?
## (1998)



**Options:**

A. Aquatic

B. Fossorial

C. Diurnal

D. Arboreal

**Answer: B**

## Solution:

**Solution:**
(b) : Desert animals prefer to live under the surface. The animal residing either permanently or for most of life inside the burrows or under the earth surface are known as burrowing or fossorial animals and their mode of existence is described as subterranean or underground.

---

# Question84

## Plants such as Prosopis, Acacia and Capparis represent examples of tropical
## (1998)



**Options:**

A. deciduous forests

B. evergreen forests

C. grass lands

D. thorn forests.

**Answer: D**

## Solution:

(d) : Tropical shrubs or thorn forests are found in places where moisture conditions are intermediate between desert and savanna on one hand and seasonal or rain forests on the other hand. Acacia and Prosopis are non-succulent perennial plants and Capparis is a xerophytic shrub.

---

# Question85

## Which of the following communities is more vulnerable to invasion by outside animals and plants?
## (1998)



**Options:**

A. Temperate forests

B. Oceanic island communities

C. Mangroves

D. Tropical evergreen forests

**Answer: D**

## Solution:

**Solution:**
(d) : Tropical forests are found in tropical zone of the world and are characterised by very high temperature with rainfall in abundance. The flora of tropical rain forest is very rich and highly diversified. The tropical forests have a very rich fauna both in density as well as in varieties. The reason for this high diversity and variety of flora and fauna is the occurrence of suitable conditions in these forests. So these are more vulnerable to invasion by outside plants and animals.

---

# Question86

## During adverse season, therophytes survive by
## (1997)



**Options:**

A. rhizomes

B. seeds

C. bulbs

D. corms.

**Answer: B**

## Solution:

(b) : Therophytes are those plants that survive the winter as a seed and complete their life cycle between the spring and autumn.

---

# Question87

## Benthoic animals are those, which (1996)

**Options:**

A. are submerged in area

B. float on the sea surface

C. are deep dweller in sea

D. are floating (free) organisms.

**Answer: C**

## Solution:

**Solution:**
(c) : Benthoic organisms are attached or rest on the bottom sediments. Benthic animal may be divided into filter feeders, e.g., clams and deposit feeders e.g., snails.

---

# Question88

## The 'niche' of a species is meant for (1996)

**Options:**

A. habitat and specific functions of a species

B. specific place where an organism lives

C. specific species function and its competitive power

D. none of these

**Answer: A**

## Solution:

**Solution:**
(a) : Niche/ecological niche is specific part of habitat occupied by individuals of a species which is circumscribed by its range of tolerance, range of movement, microclimate, type of food and its availability, shelter, type of predator and timing of activity. A habitat has several ecological niches and supports a number of species. An ecological niche is used by a single species. Two or more species cannot use the same niche despite having a mutualistic association. Organisms

or populations in competition have a niche overlap of a limited resource for which they compete. Both owl and cat feed on shrews and mice. They occupy the same niche because of being ecological equivalents though their habitats are different.

---

# Question89

## The abundance of a species population, within its habitat, is called (1995)

**Options:**

A. relative density

B. regional density

C. absolute density

D. niche density.

**Answer: D**

## Solution:

**Solution:**
Niche or ecological niche is specific part of habitat occupied by individuals of a species, which is limited by its range of tolerance, range of movement, type of food and its availability, shelter, type of predator, and timing of activity.
A habitat has several ecological niches and supports a number of species. An ecological niche is used by a single species. Two or more species cannot use the same niche despite having a mutualistic association.

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# Question90

## Which one of the following pairs is correctly matched? (1995)

**Options:**

A. Parasitism - intraspecific relationship

B. Uricotelism - aquatic habitat

C. Excessive perspiration - xeric adaptation

D. Streamlined body - aquatic adaptation

**Answer: D**

## Solution:

(d) : Streamline body is a secondary aquatic adaption. It is found in animals that live permanently in water but most of them are amphibious in nature. The streamlined body consists of compression of head, body and tail into a curved

streamlined form. There is no protruberance over the body so that the animal can move easily through water. Parasitism is a relationship between two organisms of different species in which one organism called parasite obtains its food directly from another living organism called host.
In xeric adaptation perspiration is reduced to conserve water. Uricotelism is characteristic ofterrestrial animals which excrete uric acid.

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# Question91

## Study of inter-relationships between organisms and their environment is
## (1993)



**Options:**

A. ecology

B. ecosystem

C. phytogeography

D. ethology

**Answer: A**

## Solution:

**Solution:**
(a) : Ecology is the branch of science which deals with the study of inter-relationship between organisms and their environment. The scope of ecology is very vast as it treats the organisms at the level of population, community and ecosystem.

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# Question92

## The sum total of the populations of the same kind of organisms constitute
## (1993)



**Options:**

A. colony

B. genus

C. community

D. species

**Answer: D**

## Solution:

(d) : The sum total of the populations of the same kind of organisms constitute species. A species is a group of individuals of same kind of phenotypic characters and can interbreed.

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# Question93

## Association of animals when both partners are benefitted (1993)



**Options:**

A. colony

B. mutualism

C. commensalism

D. ammensalism

**Answer: B**

## Solution:

**Solution:**
(b) : In mutalism or symbosis both the organisms in association are mutually benefitted and further this association is obligatory, i.e., necessary for existence of both organisms. Mycorrhiza is a example of symbiosis. It is association between roots of higher plants and fungal hyphae. The fungal hyphae supply water and nutrients to the plant and in turn get food form the plant. So both the organism are mutually benefitted.

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# Question94

## Fertility of soil is measured by its ability to (1992)



**Options:**

A. retain nutrients

B. hold organic materials

C. hold water

D. support life

**Answer: D**

## Solution:

(d) : Soil fertility is the characteristic of soil that supports abundant plant life. In particular the term is used to describe agricultural and garden soil.

# Question95

## Soil particles determine its (1992)

**Options:**

A. texture

B. field capacity

C. water holding capacity

D. soil flora

**Answer: A**

## Solution:

(a) : Soil particles determines its texture. The soil particles enclose living spaces in between them called pore space. In coarse textured soils, the pore space is wide but pore frequency is low. But in fine textured soil, the pore space is narrow but pore frequency is high.

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# Question96

## Homeostasis is (1991)

**Options:**

A. tendency of biological systems to change with change in environment

B. tendency of biological systems to resist change

C. disturbance of self regulatory system and natural controls

D. biotic materials used in homeopathic medicines

**Answer: B**

## Solution:

**Solution:**
(b) : The ability to maintain a steady state within constantly changing environment is essential for the survival of living systems. The maintenance of a constant internal environment is called homeostasis.

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# Question97

## Deep black soil is productive due to high proportion of (1991)

**Options:**

A. sand and zinc

B. gravel and calcium

C. clay and humus

D. silt and earthworm

**Answer: C**

## Solution:

**Solution:**
(c) : Deep black soil is productive due to high proportion of clay and humus. The organic matter present in the soil is contributed by the death and decay of living organisms. These are the richest in nutrients and therefore these soils are the most fertile.

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# Question98

## Which one is true? (1991)

**Options:**

A. Commensalism when none of the interacting populations affect each other.

B. Symbiosis when the interaction is useful to both the populations.

C. Symbiosis when neither populations affects each other.

D. Commensalism when the interaction is useful to both - populations

**Answer: B**

## Solution:

(b) : In mutalism or symbosis both the organisms in association are mutually benefitted and further this association is obligatory, i.e., necessary for existence of both organisms. Mycorrhiza is a example of symbiosis. It is association between roots of higher plants and fungal hyphae. The fungal hyphae supply water and nutrients to the plant and in turn get food form the plant. So both the organism are mutually benefitted.

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# Question99

## The relation between algae and fungi in a lichen is (1989)

**Options:**

A. symbiosis

B. parasitism

C. commenalism

D. protocooperation

**Answer: A**

## Solution:

(a) : Algae and fungi in a lichen show symbiotic relationship. Fungi give support to the algae, give protection and help in absorption of water while algae provide food to fungi which is achlorophyllous. No one is harmed but both are benefitted by each other.

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# Question100

## Competition for light, nutrients and space is most severe between (1988)



**Options:**

A. closely related organism growing in different niches

B. closely related organisms growing in the same area/niche

C. distantly related organisms growing in the same habitat

D. distantly related organisms growing in different niches

**Answer: B**

## Solution:

**Solution:**
(b) : Competition is rivalry for obtaining the same resource. Competition is of two types, intraspecific and interspecific. Intraspecific competition is the competition amongst members of the same species for a common resource. It may be for food, space, and mate. So if the density of elephant population in an area increases, it will lead to intraspecific competition. This will lead to the establishment of territories in elephants which will result in pushing out of the extra number securing shelter, mate and food for the rest.

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# Question101

## A mutually beneficial association necessary for survival of both partners is
## (1988)

**Options:**

A. mutualism/symbiosis

B. commensalism

C. amensalism

D. both a and b

**Answer: A**

## Solution:

(a) : In mutalism or symbosis both the organisms in association are mutually benefitted and further this association is obligatory, i.e., necessary for existence of both organisms. Mycorrhiza is a example of symbiosis. It is association between roots of higher plants and fungal hyphae. The fungal hyphae supply water and nutrients to the plant and in turn get food form the plant. So both the organism are mutually benefitted.

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