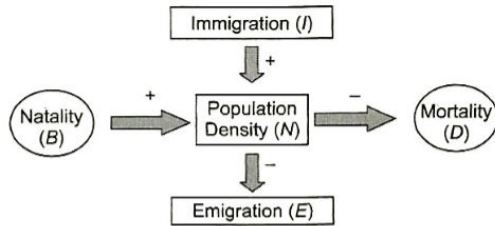


### Topic :- Organisms & Popoulations

1 (d)



( - ) Sign indicates factors decreasing population density

( + ) Sign indicates factors increasing population density

2 (a)

Gause's competitive exclusion principal is effective when resources are limited. Limited resources gives better opportunity for adaptation

3 (a)

Physiological ecology.

Ecology at the organismic level is essentially called physiological ecology which tries to understand how different organisms are adapted to their environments in terms of not only survival but also reproduction

4 (b)

Climate.

Differences between weather and climate

Weather	Climate
It is a short term property of the atmosphere.	It is the long term property of the atmosphere. It is average weather.
Weather changes from place to place.	Climate is same over larger area.
Weather changes have little impact	Climate determines the

on flora and fauna of a place. Changes in weather occur from time to time	flora and fauna of a place. Climate remains the same over a long period of time
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- 5 **(a)**  
Eurythermal organisms are those organisms, which can tolerate wide range of temperature variations. Most mammals and birds can live at very wide temperature variation
- 6 **(b)**  
Psammophytes grow on sand and gravel.
- 7 **(b)**  
Benthic animals are animals which lives at the bottom of water. Their diversity and distribution determined by type of sediment characteristics like rocky or soil surface
- 8 **(c)**  
Carrying capacity can be defined as the level beyond, which no major increase can occur. This limit is constant and represented by K. When a population reaches the carrying capacity of its environment, the population has zero growth rate so, the growing rate of a population stabilizes around the carrying capacity.
- 9 **(c)**  
When there is no natural predator of a species than it goes on increasing until on unless, nature does not resist that species
- 10 **(b)**  
Commensalism is an association in which two or more populations live together without entering into any kind of physiological exchange. Here only one species is benefitted.
- 11 **(d)**  
All of above.  
A bell-shaped polygon indicates a moderate proportion of young to old. As the rate of growth becomes slow and stable, the pre-reproductively and reproductive age group become more or less equal in size and post-reproductive group remaining as the smallest. In stable population 'r' is zero. And bell-shaped curve only possible when

$r = 0$  means growth of population is zero

**Age pyramid** Graphic representation of different age groups found in a population with pre-reproductive group at the base. Reproductive ones in the middle and post-reproductive group at the top is called age pyramid.

*Age pyramid have three kinds*

(i) **Triangular Age Pyramid** The number of pre-reproductive is very large. Number of reproductive individual is moderate and post-reproductive are fewer. Population size is growing

(ii) **Bell-shaped Age Pyramid** The number of prereproductive and reproductive individuals is almost equal. Post-reproductive individuals are comparatively fewer. Population size is stable

(iii) **Urn-shaped Age Pyramid** Proportion of reproductive age group is higher than the individuals in pre-reproductive age group. Number of post-reproductive individuals is also sizable. It is declining population with negative growth

12 (c)

In exploitation, one species harms the other by making its direct or indirect use for support, shelter or food. In contrast with parasite which derives nourishment form its host without killing, a predator is free living which catches and kills another species for food.

13 (b)

Population size of Siberian cranes at Bharatpur wetlands in any year is less than 10.

**Population size** The size of a population depends upon several factors like mortality, natality, etc. The size in nature could be as low as less than 10 (Siberian cranes at Bharatpur wetlands in any year) or go in million (*Chlamydomonas* in a pond).

Population size, more technically called population density (designated as N) need not necessarily be measured in numbers only.

Although the total number is the most appropriate measure of population density. But in

some cases in is different to determine

**For example**

In a forest area suppose there are 200 *Parthenium* plants but only a single banyan tree will huge canopy

*The following inference could be made*

(i) Population density of banyan is low

(ii) Population cover area of banyan to high

In this example percentage of cover of biomass is more meaningful than population size

14 **(a)**

The prickly pear cactus introduced into Australia in 1920's caused Havoc by spreading rapidly into million of hactares of range land. Finally invasive cactus was brought under control only after a cactus-feeding predator (a moth) from its natural habitat was introduced into the country

15 **(b)**

Exponential growth curve.

As we can see clearly in the given diagram that the growth of the population is unlimited and increasing. That is the distinguish feature of exponential growth model or curve. As it has the J-shaped appearance so, it is also called J-shaped curve

16 **(a)**

Due to non-limiting condition, natality (birth rate) will increase and mortality (death rate) will decrease, that will cause population explosion.

17 **(c)**

Deserts have a very hot days and very cold nights. Due to bare plant cover, the soil of desert is much more exposed to these fluctuations as compared to that of other areas. During day time, the soil becomes hot and in night it frequently, becomes cool.

18 **(c)**

Poikilothermic or cold-blooded or ectotherms are those animals (*e.g.*, reptiles, fish, amphibians) in which the body temperature fluctuate with change in environment temperature

19 **(a)**

Bioma is a large regional unit delimited by a

specific climatic zone having a particular major vegetation zone associated with fauna, *e.g.*, ocean, tropical rainforest

20 **(b)**

Character displacement was first explicitly explained by William L Brown and EO Wilson (1956); Two closely related species have overlapping ranges. In the parts of the ranges where one species occurs alone, the population of that species are similar to the other species and may even be very difficult to distinguish from it. In the area of overlap, where the two species occur together, the populations are more divergent and easily distinguished, *i.e.*, they 'displace' one another in one or more characters. The characters involved can be morphological, ecological, behavioral or physiological; they are assumed to be genetically based

**Competitive release** (Grant; 1972), defined as the expansion of an ecological niche in the absence of a competitor, is essentially the mirror image of character displacement. It too was described by Brown and Wilson (1956). Two closely related species are distinct where they occur together, but where one member of the pair occurs alone it converges toward the second, even to the extent of being nearly identical with it in some characters

ANSWER-KEY										
<b>Q.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>A.</b>	<b>D</b>	<b>A</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>B</b>
<b>Q.</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>A.</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>C</b>	<b>C</b>	<b>A</b>	<b>B</b>