

BOTANY

ENTHUSIAST | LEADER | ACHIEVER



EXERCISE

Demography

ENGLISH MEDIUM

EXERCISE-I (Conceptual Questions)

Build Up Your Understanding

- 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 ?
 (1) The population of its predators increases enormously
 (2) S-shaped or sigmoid growth of this insect
 (3) The food plants mature and die at the end of the rainy season.
 (4) Its population growth curve is of J-type

DG0001

- The formula for exponential population growth is
 (1) $\frac{dN}{dt} = rN$ (2) $\frac{dN}{rN} = dt$
 (3) $rN/dN = dt$ (4) $dN/dt = rN$

DG0002

- Regarding life history variations. Which among the following is incorrect ?
 (1) Breeding once in life time – Bamboo
 (2) Breeding many times in life time – Birds
 (3) Production in large number of small size offspring – Mammals
 (4) Production in small number of large size offspring – Birds

DG0003

$$4. \quad \frac{dN}{dt} = rN \left(\frac{K-N}{K} \right)$$

In above equation $\left(\frac{K-N}{K} \right)$ represent :-

- Carrying capacity
- Environmental resistance
- Rate of change in population density
- Intrinsic rate of growth

DG0004

- In a pond there are 400 lotus plant last year, through reproduction 16 new lotus plants are added, taking the current population to 416, then calculate the birth rate.

- 0.4 offspring per year
- 0.6 offspring per year
- 0.08 offspring per year
- 0.04 offspring per year

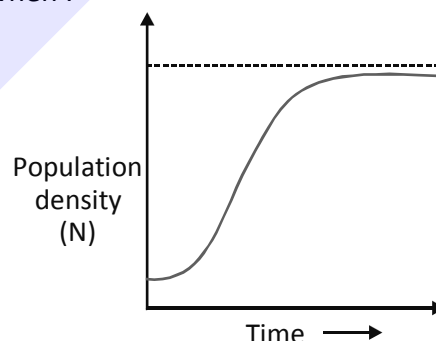
DG0005

- A country has a high number of reproductive individual than pre-reproductive individual, what is correct about the population ?

- Population is expanding
- Population is declining
- Population is stable
- Cannot be predicted

DG0006

- In a logistic growth curve of population, environmental resistance is maximum when :-



- value of 'r' is high
- value of 'r' is low
- N approaches K
- K approaches N

DG0007

EXERCISE-I (Conceptual Questions)

ANSWER KEY

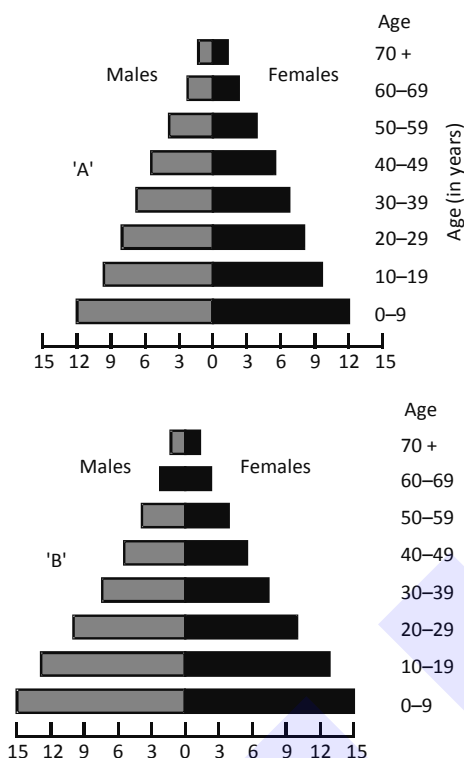
Que.	1	2	3	4	5	6	7
Ans.	4	4	3	2	4	2	3

EXERCISE-II (Previous Year Questions)

AIPMT/NEET

AIPMT 2009

1. 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 :



- (1) "A" is the earlier pyramid and no change has occurred in the growth rate
- (2) "A" is more recent and shows slight reduction in the growth rate
- (3) "B" is the earlier pyramid and shows stabilised growth rate
- (4) "B" is more recent showing that population is very young

DG0008

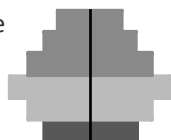
AIPMT Pre-2011

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

Post-reproductive

Reproductive

Pre-reproductive



- (1) Vanishing population
- (2) Stable population
- (3) declining population
- (4) Expanding population

DG0009

AIPMT Mains-2011

3. The logistic population growth is expressed by the equation :

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

$$(2) \frac{dt}{dN} = Nr \left(\frac{K-N}{K} \right)$$

$$(3) \frac{dN}{dt} = rN \left(\frac{K-N}{K} \right)$$

$$(4) \frac{dN}{dt} = rN$$

DG0010

AIPMT 2016

4. When does the growth rate of a population following the logistic model equal zero ? The logistic model is given as $\frac{dN}{dt} = rN(1-N/K)$:-

- (1) when N/K is exactly one.
- (2) when N nears the carrying capacity of the habitat.
- (3) when N/K equals zero.
- (4) when death rate is greater than birth rate.

DG0014

AIPMT 2017

5. Asymptote in a logistic growth curve is obtained when :

- (1) $K = N$
- (2) $K > N$
- (3) $K < N$
- (4) The value of 'r' approaches zero

DG0015

NEET(UG) 2018

6. Which of the following flowers only once in its life-time ?

(1) Bamboo species (2) Jackfruit
(3) Mango (4) Papaya

DG0016

7. Natality refers to

(1) Death rate
(2) Birth rate
(3) Number of individuals leaving the habitat
(4) Number of individuals entering a habitat

DG0017

8. In a growing population of a country

(1) pre-reproductive individuals are more than the reproductive individuals.
(2) reproductive individuals are less than the post-reproductive individuals.
(3) reproductive and pre-reproductive individuals are equal in number.
(4) pre-reproductive individuals are less than the reproductive individuals.

DG0018

NEET(UG) 2020

9. Which of the following is **not** an attribute of a population?

(1) Species interaction
(2) Sex ratio
(3) Natality
(4) Mortality

DG0019

NEET(UG) 2020 (Covid-19)

10. The impact of immigration on population density is :-

(1) Negative
(2) Both positive and negative
(3) Neutralized by natality
(4) Positive

DG0020

NEET(UG) 2021

11. In the exponential growth equation

$$N_t = N_0 e^{rt}, e \text{ represents:}$$

(1) The base of number logarithms
(2) The base of exponential logarithms
(3) The base of natural logarithms
(4) The base of geometric logarithms

DG0021

NEET(UG) 2021 (Paper-2)

12. If a pond has 40 lotus plants last year and through reproduction 8 new plants are added, taking the current population to 48, what will be the birth rate?

(1) 0.6 offspring per lotus per year
(2) 0.5 offspring per lotus per year
(3) 0.2 offspring per lotus per year
(4) 0.1 offspring per lotus per year

DG0032

NEET(UG) 2022

13. If '8' *Drosophila* in a laboratory population of '80' died during a week, the death rate in the population is _____ individuals per *Drosophila* per week.

(1) 10 (2) 1.0
(3) zero (4) 0.1

DG0033

NEET(UG) 2022 (OVERSEAS)

14. The process of individuals of the same species that have come into the habitat from elsewhere during the time period under consideration is referred as :

(1) Emigration
(2) Competition
(3) Immigration
(4) Association

DG0034

15. A population with finite resources shows a logistic growth curve where the correct sequence of events will be :

- (1) Acceleration phase → Deceleration → Asymptote
- (2) Acceleration phase → Lag phase → Stationary phase
- (3) Lag phase → Acceleration phase → Deceleration → Asymptote
- (4) Stationary phase → Acceleration phase → Lag phase → Asymptote

DG0035

EXERCISE-II (Previous Year Questions)

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	3	1	1	1	2	1	1	4	3	3	4	3	3

EXERCISE-III

Master Your Understanding

EXERCISE-III(A) (NCERT BASED QUESTIONS)

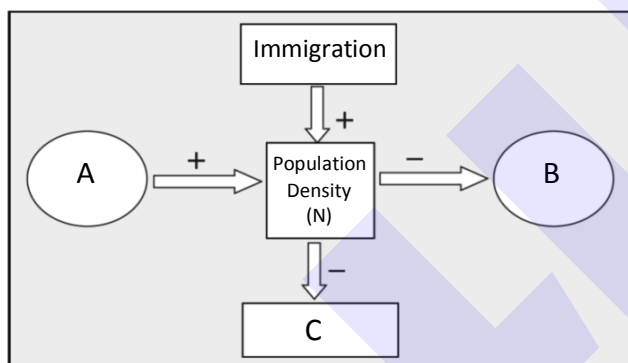
1. The age pyramid with broad base indicates:-
- (1) High percentage of young individuals
 - (2) Low percentage of young individuals
 - (3) High percentage of old individuals
 - (4) Low percentage of old individuals

DG0022

2. In a decline population of a country :-
- (1) Number of pre reproductive is more than reproductive.
 - (2) Number of pre reproductive is less than reproductive.
 - (3) Number of pre reproductive is equal to reproductive.
 - (4) Reproductive are less than post reproductive.

DG0023

3.



In the diagram given above, which of the following option correctly represents A, B and C.

- (1) A = Death rate, B = Birth rate, C = Emigration
- (2) A = Birth rate, B = Death rate, C = Emigration
- (3) A = Emigration, B = Death rate, C = Birth rate
- (4) A = Death rate, B = Emigration, C = Birth rate

DG0024

4. Which of the following equation is/are correct for the population density (N) at time $t + 1$?

N = Density at time 't'

B = Natality

D = Mortality

I = Immigration

E = Emigration

(A) $N = N + [(B + I) - (D + E)]$ (B) $N = N + [(B - D) + (I - E)]$ (C) $N = N + [(B + I) + (D + E)]$ (D) $N = N - [(B - D) + (I - E)]$

(1) Only A

(2) Only A and B

(3) Only C

(4) A, B, C and D

DG0025

5. In a population there are higher number of prereproductive individuals, moderate number of reproductive individuals and less post reproductive individuals are present. This type of population represents:-

- (1) Population of developed countries
- (2) Population of developing country
- (3) Stable growth
- (4) Declining population

DG0026

6. In a new habitat which is just being colonised which will play significant role in population growth :-

- (1) Birth rate
- (2) Emigration
- (3) Migration
- (4) Immigration

DG0027

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

7. In a population birth rate is 0.15 and death rate is 0.08 during a unit time period. What is the value of r (intrinsic rate of natural increase) for given population ?

- (1) 0.23
- (2) 0.07
- (3) 0.05
- (4) 0.25

DG0028

8. A population has more young individuals, compared to older individuals. What would be the status of the population after some years:

- (1) It will decline
- (2) It will stabilize
- (3) It will first decline and then stabilize
- (4) It will increase

DG0029

9. In a month of January Siberian cranes migrate from Russia to India for breeding, a survey was done
- Till December total population of Siberian cranes = 1200
 - Birth rate = 400
 - Mortality rate = 200
 - Number of cranes immigrated = 600
 - Number of cranes emigrated = 300
- Calculate the total population
(1) 1500 (2) 1000 (3) 2000 (4) 1700
DG0030
10. If a population of 50 *Paramecium* present in a pool increase to 150 after an hour, what would be the growth rate of population ?
(1) 50 per hours (2) 200 per hour
(3) 5 per hour (4) 100 per hour
DG0031

EXERCISE-III

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10	
Ans.	1	2	2	2	2	4	2	4	4	4	

IMPORTANT NOTE

