

1) Which of the following can result in a bimodal distribution of a trait in a population?

- A) stabilizing selection
- B) random mating
- C) directional selection
- D) disruptive selection
- E) none of the above

Answer: D

2) The evaporation of water from internal surfaces of leaves, stems, and other living parts of a plant is called:

- A) osmosis.
- B) transpiration.
- C) diffusion.
- D) infiltration.
- E) evaporation.

Answer: B

3) When the amount of water in soil exceeds what the pore space can hold, the soil is

- A) at field capacity.
- B) at the wilting point.
- C) saturated.
- D) dessicated.
- E) unsuitable for plant life.

Answer: C

4) What is the primary original source of genetic variation in a population?

- A) mutation
- B) genetic drift
- C) blending inheritance
- D) cloning
- E) none of the above

Answer: A

5) Evolution is a generational change in

- A) phenotypes.
- B) mutations.
- C) gene frequencies.
- D) heritability of characteristics
- E) complexity.

Answer: C

6) Researchers R. & P. Grant have discovered that beak size frequency of Galapagos Island medium ground finch populations varies with all the following, except:

- A) rainfall.
- B) seed hardness.
- C) seed size.
- D) seed color.

E) none of the above.

Answer: D

7) Which of the following is necessary for the process of speciation?

- A) directional selection
- B) random mating
- C) reproductive isolation
- D) genetic drift
- E) all of the above are necessary

Answer: C

8) In the vicinity of the Equator, air typically

- A) rises, cools, and precipitates.
- B) descends, warms, and precipitates.
- C) rises, cools, and is dry.
- D) descends, warms, and is dry.
- E) none of the above

Answer: A

9) Which of the following is considered to be an important function of soil?

- A) controlling the fate of water in terrestrial environments
- B) breaking down and transforming the waste products of plants and animals
- C) providing habitat for a diversity of life
- D) B and C only
- E) A, B, and C

Answer: E

10) The process of converting carbon dioxide into organic molecules is called:

- A) respiration.
- B) assimilation.
- C) fusion.
- D) oxidation.
- E) photosynthesis.

Answer: E

11) Organisms that derive their energy from hydrogen sulfide are referred to as

- A) heterotrophs.
- B) omnivores.
- C) autotrophs.
- D) sulfido-therms.
- E) chemotrophs.

Answer: E

12) Net carbon uptake per unit time by a plant is directly related to

- A) photosynthetic rate.
- B) respiration rate.

- C) the difference between photosynthetic rate and respiration rate.
D) the difference between photosynthetic rate and decomposition rate.
E) none of the above
Answer: C

- 13) The regulation of body temperature in an animal by internal metabolism is called
A) endothermy.
B) ectothermy.
C) poikilothermy.
D) respiration.
E) heterothermy.
Answer: A

- 14) The C₄ photosynthetic pathway is most common among plants inhabiting _____ habitats.
A) cool
B) high-latitude
C) high-altitude
D) hot
Answer: D

- 15) The basal metabolic rate per unit of body mass is highest in a
A) large endotherm.
B) small endotherm.
C) large ectotherm.
D) small ectotherm.
E) none of the above
Answer: B

- 16) As an individual _____ its reproductive effort it _____ its survivorship.
A) increases; reduces
B) increases; increases
C) increases; does not change
D) decreases; reduces
E) none of the above
Answer: A

- 17) A reproductive strategy in which relatively few young are produced at repeated intervals during an individual's life is referred to as
A) semelparity.
B) iteroparity.
C) altricial.
D) precocial.
E) none of the above
Answer: B

- 18) An r-strategist is characterized by
A) slow population growth.
B) a slow rate of development.
C) a long life expectancy.
D) density-independent mortality.
E) all of the above
Answer: D

- 19) Which of the following is NOT a property of a population?
A) size
B) density
C) number of species
D) distribution
E) all of the above
Answer: C

- 20) Separated subpopulations interconnected by the movement of individuals are called
A) genets.
B) ramets.
C) metapopulations.
D) ecogroups.
E) ecotypes
Answer: C

- 21) Which of the following is a graphical depiction of the age structure of a population?
A) phase plane plot
B) life table
C) age pyramid
D) age tower
E) none of the above
Answer: C

- 22) A systematic compilation of mortality and survival data for a population is called a(n)
A) age pyramid.
B) cohort group.
C) life table.
D) probability summary.
E) mortality log.
Answer: C

- 23) The growth of populations inhabiting favorable environments at low population densities, such as during the process of colonization and establishment in new environments, is usually
A) exponential.
B) logistic.
C) tangential.
D) dynamic.

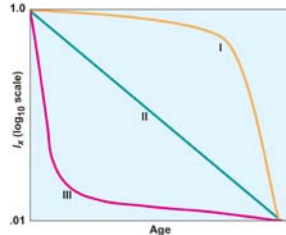
E) differential.

Answer: A

24) A survivorship curve typical of humans and other mammals, in which survival rate is high throughout the life span followed by heavy mortality at the end, is categorized as

- A) Type I.
- B) Type II.
- C) Type III.
- D) Type IV.
- E) none of the above

Answer: A



25) In logistic growth, the level at which population growth ceases is referred to as the

- A) threshold of security.
- B) Malthusian parameter.
- C) saturation point.
- D) carrying capacity.
- E) vanishing point.

Answer: D

26) A population of lice ($N = 100$ individuals) has an intrinsic rate of growth (r) of 0.2 indiv./indiv./day, what will be the population size 1 day later?

- A) 20
- B) 50
- C) 120
- D) 140
- E) 200

Answer: C

27) The Allee effect predicts that small populations may be susceptible to

- A) inbreeding depression
- B) stochastic (random) events
- C) disruption of mating behavior
- D) all of the above.
- E) only A and C.

Answer: D

28) A population that is decreasing in size has an intrinsic rate of population growth (r) that is

- A) < 0 .
- B) $= 0$.
- C) > 0 .
- D) > 1 .
- E) $= -1$.

Answer: A

29) The true measure of an organism's

reproductive success is

- A) its fitness.
- B) its survival.
- C) the total number of offspring produced.
- D) its life span.

Answer: A

30) The most common spatial distribution of individuals within a population is

- A) homogenous.
- B) clumped.
- C) random.
- D) uniform.

Answer: B

31) As an individual _____ its reproductive effort, it _____ its survivorship.

- A) increases; reduces
- B) increases; increases
- C) increases; does not change
- D) decreases; reduces
- E) decreases; does not change

Answer: A

32) What unusual adaptation is documented in marine iguanas during El Niño events?

- A) improved digestion of brown algae
- B) migration to Chile
- C) a switch to eating bird eggs
- D) body size shrinkage
- E)

Answer: D

33) Which of the following is an advantage of homeothermy?

- A) low caloric intake
- B) maximum allocation of energy to growth
- C) indeterminate growth
- D) wide fluctuations in body temperature
- E) activity regardless of external temperature

Answer: E

34) A population reaches a stable-age distribution when

- A) the population stops growing.
- B) the birthrate is less than the deathrate.
- C) the net reproductive rate (R_0) is zero.
- D) the proportion of individuals in each age group remains the same.
- E) the sex ratio is 1:1

Answer: D

35) A group of individuals of the same species occupying a given area is referred to as a(n)

- A) community.
- B) population.
- C) biome.
- D) ecosystem.
- E) none of the above.

Answer: B

True/False Questions (True = A; False = B)

36) Large body size is often positively correlated with fecundity.

Answer: TRUE

37) Demography is the study of interactions between climate and species.

Answer: FALSE

38) Subspecies with little gene flow between them may be in the first stages of speciation.

Answer: TRUE

39) Semelparous organisms initially allocate energy into growth, development, and energy storage and later allocate energy into one massive reproductive effort before dying.

Answer: TRUE

40) Parental investment is generally positively correlated with the number of young produced.

Answer: FALSE

41) Phenotypic plasticity is the ability of a population to adapt to changing environmental conditions.

Answer: FALSE

42) Species that are R-strategists usually live longer than those that are K-strategists.

Answer: FALSE

43) As the surface area of a body increases, the surface-area to volume ratio (SA/V) also increases.

Answer: FALSE

44) Seasonal changes in the behavior of animals is usually stimulated by changing critical daylengths.

Answer: TRUE

45) The sex ratio in a population is usually fixed, not varying among age classes.

Answer: FALSE

46) The complicated circulation of air in Earth's atmosphere is due to both the Earth's rotation and irregular land masses on Earth's surface.

Answer: TRUE

47) The location of the Earth's deserts is due, in part, to Hadley cells

Answer: TRUE

48) Solar radiation is the driving force behind the water cycle.

Answer: TRUE

49) Coprophagy is not common among animals living in caves.

Answer: FALSE

50) Ecology is a science that studies the impact of humans on the environment.

Answer: FALSE