

**SAVITRIBAI PHULE PUNE UNIVERSIT**

Progressive Education Society's

Modern College of Arts, Science and Commerce, Ganeshkhind, Pune-411016 (Autonomous)

**B.Sc. Blended Program**

(A degree of Savitribai Phule Pune University equivalent to the degree of University of Melbourne)

**End Semester Examination: April/May- 2024**

**Program:** B.Sc. Blended      **Program (Specific):** B.Sc. Blended (Chemistry)      **Set:** B

**Class:** S.Y.B.Sc. Blended      **Semester:** IV

**Course code:** BIO 404

**Course name:** Genetics, Evolution and Ecology

**Credits:** 3

**Time:** 2½ hours

**Maximum marks:** 50

**Instructions to the candidate:**

*1) All questions are compulsory.*

*2) Figures to the right indicate full marks.*

*3) Draw a well labelled diagram wherever necessary.*

**Q. 1 Select the appropriate answer. (Solve any 10 out of 12) (1x10=10 10M)**

1. Which of the following is not gaseous type of cycle?  
a. Carbon. b. Nitrogen c. Phosphorus d. Oxygen
2. The most ecologically relevant environmental factor is.....  
a. Water b. Temperature c. Light d. Soil
3. An ecological pyramid of number in pond ecosystem is.....  
a. Inverted b. Upright c. First upright then inverted d. May be upright or inverted
4. Which is the most important factor for the success of animal population?  
a. Natality b. Adaptability c. Unlimited food d. Inter species activity
5. A human population is small; there is a greater chance of.....  
a. Genetic drift b. Natural selection c. Mutation d. Genetic flow
6. A group of populations of two or more species occupying the same geographical area at the same time is called  
a. Ecosystem b. Interaction c. Community d. Commensalism
7. Who is called as Father of Linkage?  
a. Morgan b. Mendel c. Golgi d. Duve
8. Which of the following is a chromosomal mutation?  
a. Deletion b. Linkage c. Crossing over d. Aneuploidy

9. According to Mendel the phenotypic ratio of a dihybrid cross is  
a. 9:3:3:1 b. 12:3:1 c. 1:3:1:3 d. 3:1
10. A pair of contrasting characters is called as  
a. Chromosome b. Chromatid c. Phenotype d. Allele
11. In human sex determination is by  
a. XX,XY mechanism b. ZZ,ZW mechanism c. XX,XO mechanism d. ZZ,ZO mechanism
12. No two individuals are alike due to  
a. Heridity b. Variation c. Linkage d. Recombination

**Q.2 Answer in brief (Solve any 10 out of 12)**

**(2x10= 20M)**

1. Comment on Genetic drift.
2. Name two parameters that decreases the size of population and how?
3. Explain the examples of natural selection.
4. What is alpha, Beta and gamma diversity?
5. Explain balanced polymorphism.
6. What are life tables?
7. Explain recombination.
8. What do you mean by the term population genetics?
9. Explain Natural selection.
10. Enlist the types of mutation.
11. What is pleiotropy?
12. State law of Independent assortment.

**Q.3 Answer the following. (Solve any 4 out of 6)**

**(4x5 = 20M)**

1. What are biogeochemical cycles? Explain the water cycle in detail.
2. Comment on pond ecosystem in details.
3. Comment on Age structure of population. Explain the different types population pyramid?
4. Comment on types of linkage.
5. Describe epistasis.
6. Explain the factors affecting population genetics.