

UG Odd Semester Examination, 2022

EDUCATION B.Sc. B.Ed
(5th Semester)

Course No.: BSBH-501
(Genetics)

Full Marks: 50
Pass Marks: 20

Time: 2 hours

*The figures in the right margin indicate full marks for the question.
Answer the following five (5) questions*

1. (a) Describe polymeric gene interaction. 3
- (b) Describe Mendel's law using suitable examples. 3
- (c) What is wild type allele? 1
- (d) Write a note on : Semi-dominance 3

Or

2. (a) Determine F₂ phenotype and genotypic ratios of following cross :

$$P_1 = YYCCWW$$

$$P_2 = yyccww$$

Dominant characters are : pod green in colour, pod shape full, flower colour purple.

Recessive characters are : pod yellow in colour, pod shape constricted, flower colour white. 4

- (b) Describe recessive lethal alleles using suitable example. 4
- (c) What is backcross? 2
3. What are multiple alleles? Describe multiple alleles using *Drosophila melanogaster* as an example. If a child as B blood group, then determine the possible genotypes of child and both parents? 2+4+4

Or

4. What is meant by polygenic inheritance? Describe it using two suitable examples. Is it important or not? Describe transgressive segregation. 3+4+1+2
5. (a) What is genetic linkage? Describe it taking *Drosophila melanogaster* as an example. 2+4
- (b) Write a note on : Sex Limited Traits. 4

Or

6. (a) Write note on : Chromosomal theory of sex determination 4
- (b) Describe coupling and repulsion hypothesis. 3
- (c) Explain X-linked recessive inheritance. 3
7. (a) What is extra-nuclear inheritance? 2
- (b) Describe inheritance due to infective particles. 4
- (c) Explain chromosomal duplication. What is its significance. 3+1

Or

8. (a) Differentiate between Mendelian and cytoplasmic inheritance. 3
- (b) Describe cytoplasmic male sterility (CMS). 4

- (c) Explain translocation. Give some examples. 3
9. (a) What is polyploidy? Give effects of polyploidy. 1+2
- (b) Describe Trisomy by suitable examples. 3
- (c) Explain properties of genetic code. What are alternative start codons. 3+1

Or

10. (a) Describe the impact of mutation on protein using suitable examples. 4
- (b) Explain the characteristics of mutation. 3
- (c) Describe Pleiotropy. Give some examples. 3
