

**May 2025**  
**M.Sc.**  
**Fourth Semester**  
**CORE – 12**  
**ANTHROPOLOGY**  
*Course Code: MANC 4.21*  
**(Medical Genetics)**

*Total Mark: 70*

*Pass Mark: 28*

*Time: 3 hours*

*Answer five questions, taking one from each unit.*

**UNIT-I**

1. Discuss the history and impact of genetics in medicine. 14
2. Compare and contrast how genetic predisposition and environmental triggers contribute to complex diseases like diabetes. 14

**UNIT-II**

3. Evaluate the role of environmental factors in triggering genetic disorders in individuals with predisposing mutations. 14
4. Critically evaluate the limitations of the twin method in studying complex genetic disorders with multifactorial inheritance. 14

**UNIT-III**

5. Define haemoglobinopathy. Discuss the pathophysiology of sickle cell anaemia in detail. 2+12=14
6. What is inborn error metabolism? Explain in detail the error metabolism of carbohydrate with special reference to hereditary fructose intolerance. 2+12=14

**UNIT-IV**

7. Compare and contrast the immunological defects in chronic granulomatous disease (CGD) and leukocyte adhesion deficiency (LAD). How do their infection profiles differ? 14

8. “Some cancers have strong environmental links while others are heavily genetic.” Are there cancers where both factors are equally important? Justify your answer. 14

**UNIT–V**

9. Analyse the psychological impact of prenatal genetic testing on expectant parents. How can genetic counsellors mitigate anxiety while ensuring informed decision-making? 7+7=14
10. “It is ethical to edit the human germline to eliminate genetic diseases.” Justify your answer. 14
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