

M.Sc Sem-3 Examination

501

MLT

Time : 2-30 Hours]

November-2024

[Max. Marks : 70

Q1A	Explain autosomal recessive and autosomal dominant inheritance in detail.	7 Marks
Q1B	What is incomplete dominance? Explain in detail.	7 Marks
OR		
Q1A	Explain X-lined inheritance with examples in detail.	7 Marks
Q1B	Explain overdominance in detail with example.	7 Marks
OR		
Q2A	Describe the genetic mutation responsible for sickle cell anaemia. Explain how this mutation affects hemoglobin and leads to the characteristic symptoms of the disease.	7 Marks
Q2B	Compare and contrast Turner syndrome and Klinefelter syndrome. Include the chromosomal abnormalities involved, their impact on physical and reproductive development, and how they are diagnosed.	7 Marks
OR		
Q2A	Discuss Huntington's disease with regard to its genetic cause, inheritance pattern, and clinical features. How does the expansion of CAG repeat in the HTT gene affect individuals with this disorder?	7 Marks
Q2B	What are chromosomal aberrations? Discuss Down syndrome in terms of its chromosomal cause, key physical and cognitive characteristics, and the implications of having an extra chromosome 21.	7 Marks
OR		
Q3A	What is the full form of PCR? Explain it in detail.	7 Marks
Q3B	Explain sanger sequencing in detail.	7 Marks
OR		
Q3A	What is RT-PCR? Explain in detail.	7 Marks
Q3B	Explain FISH in detail.	7 Marks
OR		
Q4A	Explain the process of genetic counselling and its importance.	7 Marks
Q4B	Discuss the different methods of prenatal testing. Compare their procedures, risks, and benefits in detecting genetic abnormalities.	7 Marks
OR		
Q4A	Explain the roles of Chorionic Villus Sampling (CVS) and Amniocentesis in prenatal genetic testing.	7 Marks
Q4B	Describe how risk assessment is conducted during genetic counselling. What factors are considered when evaluating the risk of genetic disorders in individuals or families?	7 Marks
OR		
Q5	Answer the following questions (Any Seven)	14 Marks
I	Explain principle of dominance and principle of segregation.	2 Marks
II	What is sex-influenced inheritance? Give example of it.	2 Marks
III	What is penetrance and expressivity?	2 Marks
IV	What type of mutation leads to sickle-shaped red blood cells in sickle	2 Marks

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	cell anaemia?	
V	What is a single-gene disorder? Provide an example.	2 Marks
VI	What is the chromosomal pattern seen in Klinefelter syndrome?	2 Marks
VII	Which type of DNA polymerase is used in PCR? Why?	2 Marks
VII	What is the role of ddNTPs in sanger sequencing? Which type of electrophoresis is used in sanger sequencing?	2 Marks
IX	What are the advantages of Next-generation sequencing?	2 Marks
X	What is Non-Invasive Prenatal Testing (NIPT)?	2 Marks
XI	What role does psychological support play in genetic counselling?	2 Marks
XII	What is the primary goal of genetic counselling?	2 Marks

BEST OF LUCK