

**PG (CBCS)**  
**M.SC Semester- II Examination, 2023**  
**ZOOLOGY**  
**PAPER: ZOO 203**  
**(MOLECULAR BIOLOGY AND PARASITOLOGY)**

Full Marks: 40

Time: 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Write the answer for each unit in separate sheet

**UNIT: ZOO 203.1**

**MOLECULAR BIOLOGY**

**GROUP-A**

1. Answer any **TWO** from the following questions: 2×2=4
- What is Kozak sequence?
  - Why does lac I-d/lac I+ condition in a partially diploid operon transcribed continually?
  - What catalyses the opening and placement of sliding clamps on DNA?
  - Differentiate between COXII DNA and RNA.

**GROUP-B**

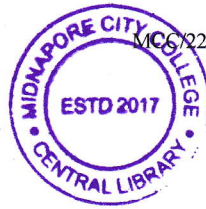
2. Answer any **TWO** from the following questions: 2×4=8
- Write a short note on catabolite repression or glucose effect.
  - Write down the role of sliding clamp in DNA replication in E.coli.
  - The mmm operon which has sequence A,B,C and D(which may be structural genes or regulatory sequences)encodes enzymes 1 and 2. Mutation in sequence A,B,C and D have the following effects:

Mutation in sequence	Mmm absent		Mmm present	
	Enzyme 1	Enzyme 2	Enzyme 1	Enzyme 2
No mutation	+	+	-	-
A	-	+	-	-
B	+	+	+	+
C	+	-	-	-
D	-	-	-	-

- Is Mmm operon inducible or repressible? Explain
- Indicate which sequence (A, B, C and D) is part of the following components of operon and explain.  
 Regulator gene-  
 Promoter gene-

**(P.T.O)**

(2)



MCC/22/M.SC/SEM.-II/ZOO/1

Structural gene for enzyme 1-

Structural gene for enzyme 2-

d) Describe the process of eukaryotic helicase loading with appropriate diagram.

**GROUP-C**

3. Answer any **ONE** from the following questions: 1×8=8
- a) Briefly describe the regulatory mechanism (attenuation) used in bacterial repressible operon (trp). 5+3
- b) Describe the process of gene silencing by miRNA and siRNA. 5+3

**UNIT: ZOO 203.2**

**PARASITOLOGY**

**GROUP-A**

4. Answer any **TWO** from the following questions: 2×2=4
- a) Differentiate hyperplasia with hypertrophy.
- b) What is paratenic host? Explain with proper example.
- c) What do you mean by mechanical and biological transmission?
- d) What is Zoonosis? What are obligatory and facultative parasite?

**GROUP-B**

5. Answer any **TWO** from the following questions: 2×4=8
- a) Name the causative organism and clinical manifestation of Sleeping sickness. 1+3
- b) Enumerate ultrastructural features of the cestode tegument with suitable diagram. 4
- c) Describe the morphology of the trophozoite of Balantidium sp. with labelled diagram.
- d) Write the causative agent of cerebral malaria. Mention the pathogenicity it shows.

**GROUP-C**

6. Answer any **ONE** from the following questions: 1×8=8
- a) Describe briefly the life cycle of *Paragonimus westremani*. Write the pathogenicity and treatment of that disease. 5+2+1
- b) 4+4
- i) Distinguish between Hard tick and soft tick. Give example of each.
- ii) Write notes on Pathogenicity of lymphatic filariasis.

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