

**2011**

**M.Sc.**

**2nd Semester Examination**

**ZOOLOGY**

**PAPER—ZOO-203**

*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.*

*Illustrate the answers wherever necessary.*

**Group—A**

*(Molecular Biology)*

1. Answer any two questions from the following : 2×2
- (a) What are three types of hydrogen bond in tRNA?
  - (b) Enumerate the function of TFIID in initiation of transcription in eukaryotes.
  - (c) What is the function of telomerase?
  - (d) How does tRNA<sub>i</sub><sup>Met</sup> differ from tRNA<sub>m</sub><sup>Met</sup>?

*(Turn Over)*

2. Answer any two questions from the following : 2×4
- (a) Mention the role of GTP in sliding clamp with proper diagram.
- (b) If the non template strand of a gene in E-coli had the sequence.  
 $5^1$  TTGACA — 18 bases — TATAAT— 8 bases — GCCTTCCAGTC— $3^1$
- (i) What nucleotide would be present in the RNA transcript of the gene.
- (ii) If the non template strand shown above were part of Drosophila gene rather than E-coli, would the same transcript be produced ? 2+2
- (c) Draw a labelled diagram of DNA polIII holoenzyme & mention their functions.
- (d) Briefly describe the translocation process with proper diagram.
3. Answer any one question from the following.: 1×8

- (a) Consider the following hypothetical case. The three loci : a regulator gene, an operator gene and a structural gene are arbitrarily given the designation d, e, and f which of these genes are

<i>Genotype</i>	<i>NonInduced</i>	<i>Induced</i>
$d^-e^+f^+$	+	+
$d^+e^+f^-$	+	+
$d^+e^-f^-$	-	-
$d^+e^-f^+ / d^-e^+f^-$	+	+
$d^+e^+f^+ / d^-e^-f^-$	-	+
$d^+e^+f^- / d^-e^-f^+$	-	+
$d^-e^-f^+ / d^+e^-f^-$	-	-

- (b) (i) What consequences would a mutation in the catabolite activator protein (CAP) gene of *E. coli* have for the expression of a wild type lac operon ?
- (ii) For *E. coli* lac operon, write partial diploid that will produce
- (a)  $\beta$ -galactosidase constitutively and permease by induction.
- (b) Produce  $\beta$ -galactosidase constitutively but not permease either constitutively or inducibly, even a  $y^+$  gene is present.

### Group—B

( Parasitology )

4. Write any *two* questions from the following : 2×2
- (a) What is Glycocalyx ? Mention its functions.
- (b) What is meant by VSG ?
- (c) (i) Define Paratenic host with example.
- (ii) Enlist the cytoskeletal protein found in trophozoite of Giardia.
- (d) What do you mean by antigenic variation ?

5. Answer any *two* questions from the following : 4×2
- (a) What is Zoonosis? Enumerate the transmission pattern of *W. bancrofti* within intermediate host.
  - (b) Write the bionomics of Sand fly.
  - (c) Enumerate the structure of Trematode tegument.
  - (d) Discuss about the complement activation in the immunology of African trypanosomiasis.
6. Answer any *one* question from the following : 8×1
- (a) Describe briefly about the life cycle of *Schistosoma* sp. Mention its Pathogenesis and Prophylaxis. 5+2+1
  - (b) (i) Discuss the host factor in epidemiology of filariasis.
  - (ii) Write the morphology of the trophozoite of *Balantidium* sp. with labelled diagram. 3+5
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