

Total Page - 5

PG/2nd Sem/ZOO/19

M.Sc.

2nd Semester Examination - 2019

ZOOLOGY

Paper - ZOO 203

Full Marks : 40

Time : 2 Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

(Molecular Biology)

1. Answer any *two* questions from the following :

2×2=4

- (a) What would be result if an organism's telomere were mutated and nonfunctional ?
- (b) What are GC box and CAAT box ?
- (c) Attenuation results when which regions of the 5' UTR pair ?

1 and 3, 2 and 3, 2 and 4, 3 and 4.

[Turn Over]

- (d) During the initiation of translation, the small ribosome binds to which consensus sequence in bacteria ?

2. Answer *two* questions from the following : $2 \times 4 = 8$

- (a) Characterize replicator in sequence *E. coli* with proper diagram.
- (b) Briefly describe the process of RNA editing of the mitochondrial cytochrome b pre-mRNA in the Trypanosome.
- (c) Based on the data given in the table below fill in the level of enzyme activity that would be expected. (Explain)

Genotype	β -galactosidase		Permease	
	-inducer	+inducer	-inducer	+inducer
$i^+o^+z^+y^+$	0.1	100	0.1	100
$i^-o^+z^+y^+$	100	100	100	100
$i^+o^c z^+y^+$.25	100	25	100
$i^-o^+z^+y^- / F i^-o^+z^+y^+$	200	200	100	100
$i^-o^c z^+y^+ / F i^+o^+z^+y^+$	—	—	—	—

- (d) What is rho dependent termination ? State the function of Nus A protein.

3. Answer any *one* of the following : 1×8=8

(a) Describe the summary of events involved in RNA interference pathways.

(b) (i) Describe the role of ATP in sliding clamp loading in *E.coli* DNA replication. 3+5

(ii) Permease, an enzyme of *E.coli*, lac Y⁺ makes rapid transportation of galactosides from the medium to inside of cell. Its allele lac Y⁻ makes no permease. The galactoside lactose must enter the cell to induce the lac Z⁺ to produce β-galactosidase. The allele lac Z⁻ makes a related enzyme which is inactive called lac CZ. Predict the production or non production of each of the products with a normal operator O⁺ by placing + or O in the table below :

Genotype	Inducer Absent			Inducer Present		
	P	β-gal	lacCZ	P	β-gal	lacCZ
(1) I ⁺ Y ⁺ Z ⁻						
(2) I ⁺ Y ⁺ Z ⁺						
(3) I ⁻ Y ⁺ Z ⁺						
(4) I ⁺ Y ⁻ Z ⁺						
(5) I ⁻ Y ⁻ Z ⁻						
(6) I ⁻ Y ⁻ Z ⁺						

[Turn Over]

(4)

P = permease enzyme

β gal = beta-galactosidase

lacCZ = lac CZ protein.

Group - B

(Parasitology)

4. Answer *two* questions of the following : $2 \times 2 = 4$

(a) What do you mean by Paratenic host? Give example.

(b) Mention about the physiological and reproductive adaptations of parasites.

(c) (i) What is hypnozoites?

(ii) What is schistosomule? 1+1

(d) Name the vectors transmitting the following diseases : Japanese encephalitis, Papatasi fever, Relapsing fever, Loiasis. 2

5. Answer *two* questions of the following : $2 \times 4 = 8$

(a) State the name and functions of the glands found in cercaria stage of blood fluke.

(5)

- (b) Distinguish between hard tick and soft tick with example.
- (c) Discuss the epidemiology of Kala-azar.
- (d) Enumerate the structural features of cestode tegument with suitable diagram.
6. Answer *one* question of the following : $1 \times 8 = 8$
- (a) Describe in brief the life cycle, Pathogenicity and Prophylaxis of *Paragonimus* sp. $5+2+1$
- (b) What is VSG ? Explain how does it help Trypanosomes to evade host immune response. Discuss the pathogenicity of *Schistosoma haematobium*. $2+4+2$
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