2007

ZOOLOGY

Group-B

PAPER-IX

The figures in the right-hand margin indicate marks

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

[FISHERY SPECIAL PAPER]

Full Marks : 50

Time : 2 hours

Answer any **four questions**, taking two from each Unit

UNiT-I

(Inland and Marine Fisheries)

1. (a) What is estuary ? State the divisions of an estuary on the basis of salinity. 2+2

(b) Elaborate the ideas leading to the eutrophication in reservoir. 4

(c) Why conservation is essential for reservoir fishery? 2

(d) Enlist the residential fish species of Hooghly-Matlah estuary. 2

2. (a) What is. remote sensor ?

(**b) Distinguish** between Active **Remote** sensor vs. **Passive Remote sensor.**

(**c) State the uses of remote sensing system.**

(**d) Note on** : **Public Health Fishery.** 21

2

3. Answer any *four* **of the following :** 3+3+3+3

1

2

(a) Define sewage and sludge.

(**b) Write down the adverse effects of raw sewage on aquatic life.**

(c) What are the major differences between Inshore fisheries and Offshore fisheries?

(**d) Sewage constituents.**

(e) Give **the names** of marine products export from India.

(f) What is 'hybride viger' ?

(g) State the mode of **functioning** of `facultative **stabiliza-**tion pond.'

4. Write short notes on any *three :* 4+4+4

1

2

(a) Local habitat and ecology of freshwater prawn.

(b) Dams **and their** effects on fish migration.

(c) Bio-gas

(d) Oil sardine/mackerels/ Indian shad fishery in India.

(e) **Conservation and management** practices **of marine fisheries.**

UNIT Il

(Aquaculture and Fish Technology)

Write short notes on any *three*	4+4+4½
(i) Nursery and Rearing pond	
(ii) Protocol for cryopreservation	

(iii) Role of **fisheries extension in rural development, or** hypophysation **and its advantages.**

(iv) **Fish body oil extraction and its use.**

(v) Wet /Dry method of fish meal production.

(vi) Preparation of Fish Protein concentrate.

6. **(i)** Brood fish management. 6½

(ii) Natural spawning-with special reference to Environmental control. 6

7.. (i) Name **bacterial**, **fungal and crustacean diseases of** carps with their causative agents. 3x2

(i) Describe the important fish disease with their causati-**ve agents**, symptoms and control. 61 2'

8. Describe briefly the post harvest activity with special reference to freezing, **smoking, drying**, **canning, and pickling technology and its importance**. 5 x 2+21 **2**

[GENETICS AND MOLECULAR BIOLOGY
SPECIAL PAPER)

Fuil Marks : 50

Time : **2 hours**

Answer any four questions, **taking two from each Unit**

UNrr I

*(**Recombinant** DNA* and *Molecular **Analysis)***

1. What is RFLP ? **How is it different from RAPD-PCR? Write the applications of DNA finger printing in**

(**a) Forensic Sciences.**

(**b) Paternal Dispute**. 3+3+(3+32)

2. Write short notes on (any *three) :* 4+4+41 **2**

(a) Sanger's dideoxy sequencing

(b) RT-PCR

(c). DNA modifying enzymes

(d) Expression vectors

(**e) Oligonucleotide probe.**

3. **What is meat by recombinant DNA? Mention the properties of an ideal vector. Describe** how a DNA **segment is cloned by homopolymer tailing. Explain `shotgun' approach for cloning and discuss how this approach was employed in Human Genome project** .	1+2+3+6 1/2
4. **Write short notes on** (**any *three) :***	4+4+4 1/2
(a) Southern blotting (**b) Fundamental of PCR** (c) c-DNA library (d), A plasmid **cloning** vector.	

UNrr-II

(Applied Genetics)

5. **What is genetic erosion** ? Write briefly **on conservation of genetic resources**. How could **you measure genetic variation at the** level of DNA? 2 1/2 +5+5

6. (a) What do you mean by variable number Tandem Repeats ?

(b) Why are they useful for study?

(c) What do you mean by sequence-tagged site (STS) ?

(d) What is the basic difference **between** VNTR and STS ?

(e) Add a note on the working draft ofthehumangenome.

$2+2+2+2+4\frac{1}{2}$

7. **(a) Write the pinciple of immunoflubrescence.**

(b) Describe briefly about direct and i**ndirect immuno**

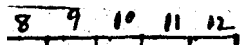
(c) Write notes on myasthenia gravis.

$4+5+3\frac{1}{2}$

8. **In 1938**, **Marcus Rhoades analysed an ear of the Mexican** black corn, that came from a selfmg of a pure breeding pigmented genotype, but it showed a surprising modified Mendelian inheritance ratio of 1,2: 3: 1 among Pigmented dotted and colourless camels. Explain how the results were explained by Rhoades. Keep proper passet square and genotype.

$12\frac{1}{2}$

The diagram below is.the representative line drawing of the gel electrophoresis pattern of the enzyme lactose dehydrogenase from the fish sticklebacts from 12 individuals.



Comment on the genotype of each individual with proper symbols and calculate the heterozygote and homozygote allele frequency. Also comment on the exceptional pattern observed for the individual 7 and 10. Justify your arguments. $12\frac{1}{2}$

(ECOLOGY SPECIAL PAPER)

Fa Marks : 50

***Time* : 2 hours**

Answer any **four questions**, **taking two from** each Unit

UNrr-I

(Aquatic Ecology)

1. **Define coastal zone. Mention the importance of coastal Zone. Discuss different aspects of integrated coastal zone management**. $2\frac{1}{2}+4+6$

2. **What is mangrove ecosystem** ? **What are the speciality of this ecosystem** ? **Discuss the structure and function for this ecosystem**. $2\frac{1}{2}+4+6$

3. **Define eutrophication**. **Schematically outline the environmental consequences of eutrophication. Discuss one case study of eutrophication**. $2\frac{1}{2}+4+6$

4. Write short **notes on** (any *three)* $4+4+4\frac{1}{2}$

   (a) Lotic and lentic water bodies

   (b) Values of wetland

   (c) Thermal stratification

   (d) Classification for zooplankton

   (e) Types of lakes-based on mixing pattern.

UNrr u

(Human Ecology)

5. What are the causes for human population explosion? Compare trend for population growth in developed and developing countries. State in brief the concept of `Demographic Transition'. What is doubling time? Calculate doubling time of a population which is growing at a rate of 3.5% per year. $3+2\frac{1}{2}+4+1+2$

6. What is **thermal inversion** ? What are the different ways **in which thermal inversion** may be formed? In what way **thermal inversion is related to air pollution** ? What is **`normal lapse rate'?** $2+7+2+1\frac{}{2}$

7. **What are the criteria for a place to be considered as urban area? Discuss the positive and negative impact for unbanisation on biodiversity**. $31+31+51$
$2 \quad 2 \quad 2$

8. Write short notes (any *three) :* $4+4+4\frac{1}{2}$

(a) Impact for global worming on marine-coastal biodiversity

(b) Importance of biodiversity

(c) Impact of acid rain i'on plants

(d) Difference between London type and Los-Angelles type of smog

(e) Greenhouse Gases.