

**M.Sc. 2nd Semester Examination, 2010**

**AQUACULTURE MANAGEMENT &  
TECHNOLOGY**

*(Aquaculture Biotechnology)*

PAPER—AMT-1204

*Full Marks : 40*

*Time : 2 hours*

*The figures in the right-hand margin indicate marks*

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

*Illustrate the answers wherever necessary*

**1. Answer any four of the following questions :     2 × 4**

**(a) What is cell line ? How are they developed ?**

**(b) Define cloning. Give an example.**

**(c) Differentiate between meiotic and mitotic  
gynogenesis.**

(d) Why a triploid fish is sterile while tetraploid fish is fertile ?

(e) What are the basic functional differences between a biofilter and mechanical filter ?

(f) Compare between primary cell and secondary cell.

(g) What do you understand by recombinant DNA ?

(h) State the advantages of sex-reversal.

2. Answer *four* of the following questions : 4 × 4

(a) Write down the functions of enzyme endonuclease in the context of recombinant DNA technology.

(b) Elucidate the different properties of an ideal vector.

(c) How will you produce sterile fish ? What are the advantages of sterile fish production ?

(d) Why gynogenesis production is easier compared to androgenesis production ?

- (e) How mycoplasma contamination can be prevented during development of fish cell line ?
- (f) State the procedure of batch culture in nitrifying biofilter.
- (g) Write down the process of production of artificial polyploidy.
- (h) Briefly discuss the application of biofilter.

3. Answer *two* of the following questions : 8 × 2

- (a) What is cryoprotectant ? Write the name of four cryoprotectants commonly used in aquaculture. Add a note on chromosomal manipulation. 2 + 2 + 4
- (b) State the application of biotechnology in applied aquaculture ? Mention the advantages of using rotating biodrum filter over trickling filter. 4 + 4
- (c) Write down the principle of PCR. Briefly elaborate the different steps of PCR reaction. Add a note on its application. 2 + 4 + 2

(d) Write notes on :

4 + 4

(i) Biofertilization and Biofermentation

(ii) Principles of cell and tissue culture.

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