ASSIGNMENT
(Tutor Marked Assignment)

Course Code: MZOE-003
Assignment Code: MZOE-003/TMA/2026
Maximum Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it.

1.	a).	Discuss the different models for effective transfer of technology with respect to aquaculture.	(5)
	b).	Discuss the different principles of extension education in fisheries.	(5)
2.		Give an account of the classification of coastal regulation zone. Describe the regulation of activities in coastal regulation zone.	(4+6=10)
3.		Describe the structure of fisheries co-operatives in India. What are the activities of fisheries co-operatives?	(5+5=10)
4.		Describe the different types of vaccines used in aquaculture.	(10)
5.		Mention the causal organism and symptoms of any five parasitic diseases of fish.	(10)
6.		Describe the role of different minerals as nutrients of aquatic animals.	(10)
7.		Describe the different post-mortem changes that occur after the death of fish.	(10)
8.	a).	Discuss the method of spawning in a bundh.	(5)
	b).	Describe the biotic components of biofloc.	(5)
9.	a).	Discuss the preparation of cages for culturing aquacrops.	(5)
	b).	Write an account on the distribution and biology of any two brackish water fish species.	(5)
10.	a).	Discuss the trend of fish consumption in the context of India.	(5)
	b).	Give a comparative account of oligotrophic lake and eutrophic lake.	(5)

1. a). Discuss the different models for effective transfer of technology with respect to aquaculture. (5)

Answer: Transfer of technology (TOT) in aquaculture means moving useful scientific knowledge, improved practices and innovations from research institutions to fish farmers in a form that can be understood, tested and adopted. Effective transfer is important because aquaculture technologies work only when they fit local water resources, species, inputs, skills and the economic condition of farmers. The main models are as follows.

Top-down model

In the top-down model, technology is developed mainly by scientists and technical institutions and is then passed through extension workers to farmers. The flow is largely one-way: research system to extension agency to fish farmer. It is useful when a proven and standard technology has to be spread quickly, such as pond liming, feed formulation, disease-control measures, hatchery practices or recommended stocking density. Its weakness is that local knowledge and practical constraints of farmers may receive less attention, so adoption can remain low if the technology is costly or unsuitable for local conditions.

Feedback model

The feedback model adds a return flow of information. Farmers communicate their field problems, results and difficulties to extension personnel, who send the feedback to researchers. Researchers can then modify the technology and extension advice. For example, if farmers report poor survival of a cultured species under a local salinity range, the recommendation can be revised after field verification. This model is more responsive than the simple top-down approach because technology is improved through field experience.

Farmer-back-to-farmer model

In this participatory model, the farmer is involved from the beginning. Problems are identified with farmers, possible solutions are developed and tested under farm conditions, and the results are again evaluated with them. Researchers and extension workers act as partners rather than only as suppliers of instructions. In aquaculture this is especially useful for location-specific issues such as species choice, low-cost feeds, water management, integrated farming and disease prevention. Since farmers take part in testing and adaptation, the final technology is usually more practical, acceptable and sustainable. Thus, effective aquaculture