RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES, MIHINTALE

B.Sc. (Special) Degree in Applied Biology
Fourth year – Semester I Examination – March/ April 2015

ZOO 4310 – POST HARVEST TECHNIQUES IN FISHERIES

Time: Three (03) hours

Answer six (06) questions including questions 1 and 2.

1. a) Write a brief account on major food fish species of Sri Lanka. **(40 marks)**
   b) Describe the importance of fatty acids of fish in human health and nutrition. **(30 marks)**
   c) Write a short note on essential amino acids that can be obtained from fish. **(30 marks)**

2. a) Discuss the anaerobic breakdown of glucose in fish muscle. **(40 marks)**
   b) Compare the levels of ATP in fish muscle before and after death of fish. **(30 marks)**
   c) Write a brief description on the chemical and physical changes that occur before and after *rigor mortis* **(30 marks)**

3. The *K* value of fish can be expressed by ;

$$K\ (\%) = \frac{[\text{Ino}] + [\text{A}]}{[\text{ATP}] + [\text{B}] + [\text{AMP}] + [\text{IMP}] + [\text{Ino}] + [\text{A}]} \times 100$$

Where

ATP	:	Adenosine triphosphate,	AMP	:	Adenosine monophosphate
IMP	:	Inosine monophosphate	Ino	:	Inosine

The following HPLC data have been obtained during a storage experiment of Cod fish in ice. In addition, TVBN values were also measured.

Compound	ATP	B	AMP	IMP	Ino	A	TVBN mg/100g fish
Relative amount (%)	0.8	1.2	6.2	6.3	4.9	0.52	7.9

a) Identify "A" and "B", and calculate the K value of Cod fish stored in ice **(30 marks)**

b) In a p arallel experiment, K value and TVBN of Sword fish were 15.4 % and 16.8 mg/100g respectively. If the conditions of the two storages were similar to each other, discuss the freshness / spoilage of two species by comparing the K and TVBN values. **(30 marks)**

c) Explain the formation of formaldehyde in fish muscle using following chemical reaction that takes place in fish muscle

$$(CH_3)_3\,NO \rightarrow (CH_3)_2\,NH + HCHO$$ **(40 marks)**

4. a) Explain the variation of composition of fish due to environmental factors in their habitat **(50 marks)**

b) Write a brief account on lipid oxidation in fish muscle. **(50 marks)**

5. a) Describe the mechanisms of formation of histamine in fish **(40 marks)**

b) Discuss the natural detoxification process of histamine in fish **(30 marks)**

c) Write a short description note on Puffer fish poisoning (PSP). **(30 marks**

6. a) Explain how fast-freezing preserves the fish quality better than Slow-freezing **(50 marks)**

b) Describe the process of Chilled Sea Water (CSW) in fish preservation. List its advantages over normal icing in fish preservation. **(50 marks)**

7. a) Give a brief account on microbiological and physical hazards in fish processing industry. **(50 marks)**

b) Write a concise account on fishery by-products of Sri Lanka **(50 marks)**