UNIVERSITY OF SWAZILAND

2nd SEM. 2016/2017

FINAL EXAMINATION PAPER

PROGRAMME: B.Sc. AGRICULTURAL EDUCATION YEAR 4
B.Sc. ANIMAL SCIENCE YEAR 4
B.Sc. AGRICULTURAL & BIOSYSTEMS ENGINEERING YEAR 4

COURSE CODE: AS 404

TITLE OF PAPER: FISH FARMING

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS

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QUESTION 1

(a) Draw a graph where critical standing crop is 8000 kg/ha, carrying capacity is at 12000 kg/ha, at 6 months standing crop is at 4000 kg/ha and beginning of production stands at 600 kg/ha at 2 months.

(10 Marks)

b) Based on the graph drawn in (a), what is the overall production rate between 4000 kg/ha and 8000 kg/ha months?

(10 Marks)

(c) Assuming that this crop can be produced year round, what is the net yield from 4000 kg/ha to 12000 kg/ha.

(5 Marks)

QUESTION 2

Write an essay under the heading, "Pond requirements and preparation". **(25 Marks)**

QUESTION 3

Discuss 4 technologies commonly used to propagate an all-male tilapia crop in aquaculture .

(25 Marks)

QUESTION 4

In the past one month, you have lost a few of your fish, and just recently, you experienced a massive fish kill in one of the ponds. After a preliminary examination, infections from *Pseudomonas* and *Branchiomyces* species were discovered. Interpret this situation and in your discussion include;

a) Your fish species and its scientific name, **(2 Marks)**

b) Disease that each organism causes, **(3 Marks)**

c) Treatment methods you would use to salvage any of the surviving fish, and **(10 Marks)**

d) Symptoms you supposedly missed identifying early on. **(10 Marks)**

QUESTION 5

a) Based on Table 1 below,

(i) When was the critical standing crop reached and on what information did you draw that conclusion?

(5 Marks)

(ii) Explain why the production rate drops at 100 000/ha stocking density. **(5 Marks)**

Table 1: The stocking density and performance measures of tilapia cultured for 200 days.

Performance Measures	**Stocking density/ha**					
	18 000	20 000	30 000	60 000	80 000	100 000
Stocking weight, g	380	279	206	260	150	243
Harvest weight, g	580	399	390	420	354	318
Growth, g/day	2.45	2.60	2.60	2.3	2.0	1.48
Production rate, kg/ha/d	50	46	76	143	163	146
Calculated standing crop at 200 days, kg/ha	10 100	9 200	15 100	28 800	32 600	29 300
Feed conversion	2.7	1.5	3.0	2.9	3.1	3.2

(b) As a manager of a tilapia farm, your assistant gave the information below as part of a report from the aquaria section of the farm.

Fingerlings average initial weight: 2.8 g,

Stocking date: 1 March 2017,

Harvest date: 31 May 2017

Tank dimensions: 510 mm x 225 mm

15% of the fingerlings in one tank were sampled and the results are presented in Table 2 below.

Table 2: The weight (g) of fingerlings sampled from an aquarium at harvest.

Fish	Weight (g)
1.	15.1
2.	8.3
3.	9.1
4.	12.5
5.	11.5
6.	7.5
7.	10.5
8.	11.5
9.	12.2
10.	10.4

Calculate the standing crop and the absolute growth rate at harvest. **(15 Marks)**