JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

DEPARTMENT OF BIOLOGICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOLOGICAL SCIENCES

4th YEAR FIRST SEMESTER 2016/2017 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE:	**SBI 3437**
COURSE TITLE:	**FISH AND FISHERIES BIOLOGY**
EXAM VENUE:	**STREAM: (BSC BIO)**
DATE:	**EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in Section A and Any <u>TWO</u> questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Explain the Von Bartallanfy growth model. (3 marks)
2. A water supply delivers $5M^3$ per minute and it is 88% saturated with air. What stock of 200g fish could be on-grown at this site if the basal rate is $100mg/0_2/kg/hr$ and the critical oxygen concentration is 3mg/l [100% saturation at 20^0C is 9.2mg/l]. (3 marks)
3. Clearly explain the anatomical differences between lampreys and hagfishes. (3 marks)
4. Explain why shallow or fluctuating aquatic habitats generally produce higher fish yields. (3 marks)
5. State three advantages and three disadvantages of integrated fish farming. (3 marks)
6. State three biotic and three abiotic factors that determine growth rates in fish. (3 marks
7. State three main fishing techniques employed in commercial fishing. (3 marks)
8. Briefly explain the osmoregulatory adaptations of freshwater teleosts. (3 marks)
9. Distinguish between: (3 marks)
   i. Fertility and Fecundity
   ii. Semelparous and Iteroparous spawning
   iii. Maximum Sustainable Yield and Maximum Economic Yield
10. State one common example of the following taxa: (3 marks)
    i. Sarcopterygian
    ii. Crossopterygian
    iii. Cichlidae

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss the genetic and environmental basis of sex determination in Tilapia and their practical applications in aquaculture. (20 marks)
12. Account for the loss of species diversity in Lake Victoria. (20 marks)
13.

A) Discuss the main methods used to determine age in fish. (10 marks)

B) Discuss any three methods of quantifying the diet of fish and their limitations.(10 marks)

14. The management of a fishery to yield year after year profitable yield depends upon knowledge and application of three main fisheries management requirements. Discuss these requirements. (20 marks)