JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

SECOND YEAR SECOND SEMESTER UNIVERSITY EXAMINATION

2017/2018 ACADEMIC YEAR

REGULAR

COURSE CODE: AHT 3223

COURSE TITLE: PRINCIPLES OF GENETICS

EXAM VENUE: **STREAMS**: Bsc. Horticulture and AGED

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in section A and ANY other 2 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 [30 MARKS]

Answer ALL questions from this Section.

1. Differentiate between mitosis and meiosis   (4 marks)

2. (i) Explain the process of cell cycle   (4 marks)
   (ii) How is the cell cycle regulated?   (2 marks)

3. With a specific example and with reference to hybrid inheritance, describe a test cross in plants   (4 marks)

4. Briefly describe the structures of the following: Chromosomes, DNA and genes
              (4 marks)

5. Describe the technique of chromosome mapping   (4 marks)

6. Explain Hardy-Weinberg theory and state its applications in the study of population genetics   (4 marks)

7. Describe crossing over and its significance in gametogenesis   (4marks)

SECTION B [40 MARKS]

Answer ANY TWO questions from this Section.

8. Describe the synthesis of RNA from DNA in the process of transcription (20 marks)

9. With well labeled cell diagrams, explain the process of mitosis in cell division
              (20 marks)

10. Describe gene expression pathway and how the process is regulated   (20 marks)