JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (BIOLOGICAL SCIENCES)

3rd YEAR 1st SEMESTER 2016/2017 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE:

COURSE TITLE: IMMUNOLOGY

EXAM VENUE: CHEM LAB **STREAM: (BIO)**

DATE: 27/04/16 **EXAM SESSION: 2.00 – 4.00 PM**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in Section A and Any two 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: ANSWER ALL QUESTIONS (30 MARKS)

1. Give and explain three features of adaptive immunity. (3 marks)
2. Describe the sequence of events leading to migration of leucocytes to sites of infection. (3 marks)
3. Describe the role of neutrophils in killing of microbes. (3 marks)
4. Draw the structure and give the function of the lymph node. (3 marks)
5. Describe the mechanism of killing of tumor cells by cytotoxic T cells. (3 marks)
6. Use examples to explain the following properties of cytokines. (3 marks)
    a. Pleiotropy.
    b. Redundancy.
    c. Synergy.
7. List two approaches to designingvaccines, and for each, give their nature of protection and one example. (3 marks)
8. Give the structure of immunoglobulin (Ig)A and outline its functions. (3 marks)
9. Outline the principle of ABO blood grouping system. (3 marks)
10. Explain any three (3) bacterial immune evasion mechanisms. (3 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

11. Describe the steps involved in processing and presentation by antigen presenting cells. (20 marks)
12. Discussthe activation and effector function of T helper cells. (20 marks)
13. Describe pathways of complement activation. (20 marks)
14. Discuss the mechanism underlying hypersensitivity responses. (20 marks)