



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (ENVIRONMENTAL HEALTH)

HEH 110: PRINCIPLES OF IMMUNOLOGY

DATE: Friday 30th March 2012

TIME: 11.00a.m – 1.00p.m

INSTRUCTIONS

SECTION I (20 MARKS) ANSWER ALL QUESTIONS

1. a) Name four molecules that are responsible for antigen recognition by the immune system. [2marks]
- b) Outline the effects exerted by adjuvant in the immune system. [2marks]
- c) Explain the terms antigen processing and antigen presentation and give examples of the immune cells that carry out this function. [3marks]
- d) Identify the consequence of activation of the classical complement pathway in Type II hypersensitivity. [5marks]
- e) State the functions of the following cytokines and name the organs that produce them. [5marks]
 - i) Tumor necrosis factor-alpha (TNF-alpha)
 - ii) Interferon-gamma (IFN-gamma)
 - iii) Transforming growth factor-beta (TGF-beta)
 - iv) Interleukin-7 (IL-7)
 - v) Lymphotoxin (LT)

SECTION II

This has two parts. Answer all questions in part I, and any 2 in part II

2. a) With the aid of an illustration explain the major events in an inflammatory response. [15marks]
- b) Explain the four characteristics attributes of Adaptive immunity. [5marks]

PART II (30MARKS)

3. a) Define the term endogenous antigen and explain how it can be recognized by the immune system. [7marks]
- b) Discuss the following biological factors that contribute to immunogenicity
- i) Genotype of the recipient [2marks]
- ii) The dose and route of antigen administration. [6marks]
4. a) Discuss the following functions of antibodies in the host defence.
- i) Steric hindrance [3marks]
- ii) Agglutination and precipitation. [3marks]
- b) Using illustration, explain the following concepts of antibody antigen interactions and their relevance in the host body.
- i) Antibody excess [3marks]
- ii) Antigen excess [4marks]
- iii) Equivalence [2marks]
5. a) Discuss the following cells of the immune system.
- i) Natural killer cells [4marks]
- ii) Eosinophils [4marks]
- b) Using examples explain the concept of cross reaction as applied in antibody antigen interactions. [7marks]