

*University of London*

**EXAMINATION FOR INTERNAL STUDENTS**

*For The Following Qualifications:-*

*B.Sc. B.Sc. (Intercal)*

**Immunology C312: Selected Topics in Immunology and Cell Pathology**

COURSE CODE : IMMNC312

UNIT VALUE : 1.00

DATE : 20-MAY-03

TIME : 10.00

TIME ALLOWED : 3 Hours

## C312 SELECTED TOPICS IN IMMUNOLOGY AND CELL PATHOLOGY

Candidates must write **THREE essays** and **SIX short notes**.

Each essay should come from a different week of the course.

Each short note should come from a different week of the course.

You should take approximately **30 minutes for each essay** and approximately **15 minutes for each short note**.

Please answer **each essay question** in a separate book and write the **question number clearly on each front page**.

Please use the single sheets of paper provided for your **short notes**. Answer **each of these** on a new sheet of paper. Write your candidate number and the question number on the top of each sheet.

The fraction of marks allocated to each section is as follows:

Section A: 90/180  
**(essay, 3 out of 12)**

Section B: 90/180  
**(short notes, 6 out of 24)**

The in-course assessment constituted 15% of the final mark.

**TURN OVER**

**SECTION A**

Choose THREE titles from the list below.

**Each essay must be chosen from a different week**

**Week one: Chronic Immunity and Inflammation**

1. The host virus relationship has been described as a molecular arms race. Discuss.
2. Discuss how regulatory T cells might contribute to the outcome of parasitic infections?

**Week two: Chronic Disease: Cellular Immunopathology**

3. The role of the macrophage in the pathogenesis of atherosclerosis.
4. The pathogenesis, diagnosis and treatment of systemic amyloidosis.

**Week three: Autoimmunity**

5. What are the advantages and disadvantages of using monoclonal antibodies to treat autoimmune disease?
6. Compare and contrast the pathogenesis of Hashimoto's disease and Graves' disease.

**Week four: Allergy**

7. Describe the role of eosinophils in asthma.
8. Discuss the hurdles to effective immunotherapeutic treatment of atopic allergy?

**Week five: Immunodeficiency**

9. Write an overview of mannose-binding lectin deficiency.
10. Describe the molecular basis of chronic granulomatous disease and how animal models have led to a better understanding of this disease.

**CONTINUED**

## C312 SELECTED TOPICS IN IMMUNOLOGY AND CELL PATHOLOGY

### **Week six: Transplantation**

11. What treatments might lead to immunological tolerance towards allografts?
12. How is graft versus host disease minimized and what are the advantages and disadvantages of the various methods?

### **Week seven: Cellular and Molecular Pathology of Neoplasia**

13. "At the cellular level cancer is a genetic disease". Discuss in relation to chromosome abnormalities, giving some clinical applications.
14. Discuss the multistage model of carcinogenesis, and why colon cancer is a good example of this model.

### **Week eight: Immunological and Therapeutic Aspects of Cancer**

15. Discuss the role of human herpes viruses in the pathogenesis of neoplasia.
16. Discuss the different approaches to gene therapy that have been suggested for the management of tumours.

## **SECTION B**

Write short notes on SIX of the following.

**Each short note must be chosen from a different week.**

### **Week one: Chronic Immunity and Inflammation**

- 1a. Describe the function of 3 viral genes that have been pirated from their host in the course of evolution.
- 1b. The immune evasion strategies of Leishmania.
- 1c. The association of hepatitis C virus and liver cancer.
- 1d. Bacille Calmette-Guérin.

**TURN OVER**

## **C312 SELECTED TOPICS IN IMMUNOLOGY AND CELL PATHOLOGY**

### **Week two: Chronic Disease: Cellular Immunopathology**

- 2a. The different types of granulomatous inflammation.
- 2b. Natural defences of ocular tissues.
- 2c. Role of inflammation and remodeling in the pathogenesis of emphysema.
- 2d. How can chronic inflammation lead to a disease of connective tissue.

### **Week three: Autoimmunity**

- 3a. The effect of pregnancy on autoimmune disease.
- 3b. The autoantigens associated with systemic lupus erythematosus.
- 3c. Lymphocyte trafficking through the blood-brain barrier.
- 3d. Pernicious anaemia.

### **Week four: Allergy**

- 4a. The role of T-cells in eczema.
- 4b. The contribution of type III hypersensitivity reactions to allergic disease.
- 4c. The genetic contribution to allergy.
- 4d. Fc $\epsilon$  receptors.

### **Week five: Immunodeficiency**

- 5a. The role of dendritic cells in HIV pathogenesis.
- 5b. Bruton's tyrosine kinase.
- 5c. WASP (the Wiskott-Aldrich syndrome protein).
- 5d. Laboratory investigations which should be carried out in a young child with unexplained recurrent infection.

**CONTINUED**

## **C313 SELECTED TOPICS IN IMMUNOLOGY AND CELL PATHOLOGY**

### **Week six: Transplantation**

- 6a. The mechanism of action of calcineurin inhibitors.
- 6b. The effect of HLA polymorphism on rejection of the different types of allografts.
- 6c. Chronic rejection.
- 6d. Obstacles to xenotransplantation.

### **Week seven: Cellular and Molecular Pathology of Neoplasia**

- 7a. Stem cell flexibility.
- 7b. Cellular responses to DNA damage produced by alkylating agents.
- 7c. Role of retinoblastoma protein family abnormalities in malignancy.
- 7d. Mechanisms involved in tumour invasion and metastasis.

### **Week eight: Immunological and Therapeutic Aspects of Cancer**

- 8a. Recognition of tumour cells by cytotoxic T lymphocytes.
- 8b. Epidemiology of cancers associated with papillomavirus.
- 8c. Role of foetal antigens as potential targets for protective immune responses.
- 8d. DNA crosslinking drugs in cancer chemotherapy.

**END OF PAPER**