

UNIVERSITY COLLEGE LONDON

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

C312 SELECTED TOPICS IN IMMUNOLOGY AND CELL PATHOLOGY

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 ϵ 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