



The Royal College of Pathologists

Pathology: the science behind the cure

Part 1 examination

Immunology: Second paper

This paper is for clinical scientist candidates only

Tuesday 22 September 2009

Candidates must answer FOUR questions ONLY

Time allowed: 3 hours

- 1 Using short notes answer each of the following with respect to antiphospholipid syndrome:
 - a) Outline the criteria necessary for a diagnosis of antiphospholipid syndrome
 - b) Describe the diagnostic tests used to support this diagnosis
 - c) Critically appraise the value of the tests described

- 2 **For each of the following three auto-antibodies outline: (i) what symptoms may prompt test requests, (ii) which analytical techniques may be used to detect their presence, and (iii) the clinical significance of positive results.**
 - a) Acetylcholine receptor.
 - b) Voltage-gated potassium channel
 - c) Purkinje cells (Yo antibody)

Please turn over for Questions 3, 4 & 5

- 3 Answer both parts of this question.
- a) You have been asked to write your Immunology laboratory's plan in the event of the Pathology integrated computer system (including both order communications and results reporting functions) "crashing" on a Monday morning with recovery predicted to take between three and five days. Write your response in the form of a laboratory controlled-document, including consideration of both your user and laboratory needs, and what tests you would prioritise along with the clinical rationale behind your decisions.
 - b) Your hospital's Ear Nose and Throat team have asked you to write a guideline for the investigation of a patient with sicca for use by both their surgical trainees and local general practitioners. Your response should be written in an appropriate format, including clinical features, reasons behind the selection of immunological tests recommended, other diagnostic tests which may be helpful, and why it is important not to miss a diagnosis of primary Sjogren's syndrome.
- 4 **You are telephoned in the Immunology laboratory with a request for advice concerning the following clinical scenarios. What further information would you wish to know, what immunological investigations would you recommend (and why), and what advice would you give with respect to immunological treatment (and why)?**
- a) A pest control officer with a history of a severely swollen arm following multiple wasp stings
 - b) A young adult with sickle cell anaemia and Howell-Jolly bodies on blood film with a recent episode of pneumococcal septicaemia.
 - c) A 60-year-old male with rheumatoid arthritis, recurrent chest infections and an IgG level of 2.0 g/L
- 5 Using short notes, describe the clinical features, underlying genetic defects, immunological evaluation, and principles of treatment of primary disorders of granulocyte function.



The Royal College of Pathologists

Pathology: the science behind the cure

Part 1 examination

Immunology: Second paper

This paper is for both medically qualified and clinical scientist candidates.

Tuesday 24 March 2009

Candidates must answer FOUR questions ONLY

Time allowed: 3 hours

1. Answer all three parts of this question:

- a) Describe the classification of cryoglobulinaemia, including the principal disease associations of each category.
- b) Write a standard operating procedure (SOP) for the collection of samples for cryoglobulin determination by a phlebotomy centre in a recently opened independent treatment centre (ITC) for which your laboratory provides an analytical service. The ITC is situated adjacent to your hospital campus, 0.5 miles from your laboratory. It does not wish to use the hospital phlebotomy service. Bear in mind your response to part a) of this question.
- c) How might you facilitate and monitor the introduction of this SOP?

Please turn over for Questions 2, 3, 4 & 5

2. Using short notes answer both parts of this question:

- a) Briefly outline the main clinical features of C1 inhibitor deficiency, explain the mechanism resulting in these manifestations, and comment on the scientific basis of current and proposed therapies.
- b) List the important “immunological” differential diagnoses for a 60 year old patient with a 5 year history of recurrent chest infections who has been found to have low total immunoglobulin levels and a mediastinal mass. Which immunology tests would you recommend to help achieve a diagnosis? Comment on the reasons for your choices with reference to the likely findings for each diagnosis.

3. Answer both parts of the question:

- a) A renal physician telephones you for advice about further investigation of a 20 year-old female who presented acutely with significant proteinuria and renal impairment. Renal biopsy has shown a diffuse proliferative glomerulonephritis, highly suggestive of lupus nephritis, but ANA performed in your laboratory was reported as negative last week. Advice is requested concerning (i) the result; and (ii) whether further immunological tests should be performed. What is your response?
- b) The Clinical Director of the Ear Nose and Throat (ENT) service is compiling a training manual for ENT trainees. You are asked to write a brief piece for the manual on Wegener’s granulomatosis with reference to (i) clinical features of ENT involvement; (ii) how the diagnosis is made in the ENT setting; and (iii) who to test for ANCA in the ENT clinic. Please write your answer in an appropriate format.**

Please turn over for Questions 4 & 5

4. Describe the principles of flow cytometric analysis. How may this technique be applied to the study of non-clonal disorders in the three following situations?
- a) Defects of B cells.
 - b) Defects of phagocytes.
 - c) Defects of NK cells.
5. **For each of the following three hypersensitivity disorders, briefly describe (i) the clinical features; (ii) the immunological testing strategy; and (iii) the problems which may be associated with interpretation of the results:**
- a) **Bakers' asthma.**
 - b) **Wheat-dependent exercise-induced anaphylaxis.**
 - c) **Birch pollen-associated oral allergy syndrome.**



The Royal College of Pathologists

Pathology: the science behind the cure

Part 1 examination

Immunology: Second paper

for non-medically qualified candidates only

Tuesday 23 September 2008

Candidates must answer FOUR questions ONLY

Time allowed: 3 hours

1. Discuss the utility of flow cytometry in the investigation and management of patients with primary immunodeficiencies. Illustrate your answer with appropriate examples.

2. Write short notes on each of the following conditions associated with neutrophil dysfunction covering clinical features, pathogenesis, and laboratory testing in your answers:
 - a) Warts, Hypogammaglobulinaemia, Infection, Myelokathexis (WHIM) syndrome.
 - b) Leucocyte adhesion deficiency (LAD).
 - c) Shwachman-Bodian-Diamond syndrome.

Please turn over for Questions 3, 4 & 5

3. Answer both parts of the question. *Part (a) is awarded two thirds of the marks and part (b) one third of the marks for this question.*
- Explain how (i) internal quality control, and (ii) external quality assessment procedures should be used to quality assure allergen specific IgE measurements.
 - How would you use the audit process for clinical governance within the Immunology laboratory?
4. Write short notes on each of the following tests in the diagnostic Immunology laboratory, with reference to indications for testing, technical limitations, and interpretation of results:
- Interferon gamma release assays in the diagnosis of mycobacterial infection.
 - Mast cell tryptase.
 - Pneumococcal antibody tests.
5. Outline the “immunological” differential diagnosis of each of the following scenarios. Suggest which immunology laboratory tests should be requested, giving reasons for your choices, and comment on the interpretation of their results:
- A 60 year old male who had presented to the Emergency Department with three episodes of angioedema in the past 12 months.
 - A 40 year old female presenting to the acute medical service with shortness of breath, haemoptysis and renal failure (pulmonary renal syndrome).
 - A 50 year old male presenting to the Immunology clinic with a history of recurrent chest infections with an IgG level of 5.0g/L in the absence of an obvious paraprotein band on serum protein electrophoresis.



The Royal College of Pathologists

Part 1 examination

Immunology: Second paper (For Non- Medical Candidates)

Tuesday 27 March 2007

Candidates must answer FOUR questions ONLY

Time allowed: 3 hours

1. Please answer both parts of this question:
 - a) Outline the procedures that you would use to ensure quality control of an ELISA method for detecting antibodies to tissue transglutaminase.
 - b) Explain the use of audit for ensuring quality in the diagnostic immunology laboratory.

2. Please answer both parts of this question:
 - a) Outline with supporting evidence the mechanisms of protection against pneumococcal sepsis
 - b) Critically discuss the laboratory investigation of a patient with recurrent pneumococcal infection.

3. Write short notes on the methodology and diagnostic utility of the immunological laboratory investigations for:
 - a) autoimmune liver diseases
 - b) pulmonary-renal syndromes
 - c) anaphylaxis.

Please turn over for Questions 4 and 5

4. Write short notes on each of the following:
 - a) immunological diseases associated with a thymoma
 - b) methods available for the detection of free light chains
 - c) the anti-phospholipid syndrome.

5. Outline the clinical utility of tests to detect antibodies to extractable nuclear antigens (ENA). Describe the available techniques for the detection of antibodies to extractable nuclear antigens. Discuss the benefits and drawbacks of each method and how this influences their use in the diagnostic immunology laboratory.