The Royal College of Pathologists

Pathology: the science behind the cure

Part 1 examination

Histocompatibility and Immunogenetics: First paper

Tuesday 24 September 2019

Candidates must answer FOUR questions ONLY

Time allowed: Three hours

Section A – Answer TWO out of the following three questions

1. Define the third and fourth field resolution component of an HLA allele name. Write short notes on the application of third / fourth field resolution HLA typing of donors and recipients:

    a) Haematopoietic stem cell transplantation
    b) Solid organ transplantation
    c) Transfusion

2. Write short notes on the possible molecular mechanisms underlying HLA associations with three of the following conditions:

    a) Coeliac disease;
    b) Rheumatoid arthritis;
    c) Type 1 diabetes;
    d) Narcolepsy
    e) Abacavir hypersensitivity.

3. Write short notes on HLA-DP in the following:

    a) Allo-recognition
    b) Solid organ transplantation
    c) Haematopoietic stem cell transplantation

Section B – Answer TWO out of the following three questions

3. CAR-T cells are increasingly being used to treat patients with haematological malignancies. What are CAR-T cells, how are they generated and how do they mediate their effect?

4. Describe the process you would undertake when introducing a new technique to your laboratory leading to application for ISO 15189 Extension to Scope

5. Discuss the pros and cons of Virtual, Complement Dependent Cytotoxic and Flow Cytometry crossmatches. Select, with reasons why, which you would include in a crossmatch policy for a laboratory supporting kidney transplantation.

The Royal College of Pathologists
Pathology: the science behind the cure

Part 1 Examination

Histocompatibility & Immunogenetics: First Paper

Tuesday September 25 2018

Candidates must answer FOUR questions only – TWO questions from Section A and TWO questions from Section B.

Time allowed THREE HOURS

Section A - Answer TWO out of the following three questions

1. Write short notes on the role and importance of the following aspects of a quality management system:
   a) Internal quality assurance
   b) External proficiency testing
   c) Incident reporting

2. Describe the mechanism of action of the following immunosuppressive agents used for solid organ transplant patients, indicating where applicable the impact of such therapies upon the tests undertaken by the Histocompatibility and immunogenetics laboratory:
   a) Tacrolimus or Cyclosporin
   b) Basiliximab or Dacluzumab
   c) Mycophenolate mofetil
   d) Anti-Thymocyte Globulin

3. Write short notes on methods available for the detection of platelet specific antibodies and describe the clinical significance of these antibodies in:
   a) Refractoriness to random donor platelets
   b) Post transfusion purpura
   c) Neonatal alloimmune thomobocytopaenia

Section B - Answer TWO out of the following three questions

4. Describe the clinical significance of donor HLA specific antibodies in patients being worked up for a cardiac transplant; a haplo-identical haematopoietic stem cell transplant and a liver transplant.

5. The current United Kingdom scheme for allocation of kidneys from DBD donors has been in place since 2006. A recent review has resulted in the proposal of a new scheme. Describe how the proposed changes will differ from the current scheme and how these changes will impact on patients awaiting a kidney transplant

6. Describe the interaction of KIR gene products with HLA-A, B and C glycoproteins. Discuss the clinical utility of KIR genotyping in haematopoietic progenitor cell transplantation.

The Royal College of Pathologists
Pathology: the science behind the cure

Part 1 Examination

Histocompatibility & Immunogenetics: First Paper

Tuesday September 26th 2017

Candidates must answer FOUR questions only – TWO questions from Section A and TWO questions from Section B.

Time allowed THREE HOURS

Section A - Answer TWO out of the following three questions

1. In the context of the health & care professions council's documents "Standards of Proficiency – Clinical Scientists" and "Standards of conduct, performance & ethics", write short notes on the following: …

   a) Be able to reflect on and review practice
   b) Report concerns about safety
   c) Maintain and develop your knowledge and skills

2. For each of the following identify why results of laboratory testing should be urgently communicated to clinical teams with direct patient care responsibilities.

   a) Deceased donor HLA retype discrepancy with offer type
   b) Deceased donor crossmatch results
   c) De-novo detection of post-transplant donor HLA specific antibodies

3. In the context of cord blood transplantation, write short notes on the following :

   a) the requirement for high resolution HLA matching
   b) the influence of Total Nucleated Cell (TNC) count and CD34+ content
   c) NIMA

Section B - Answer TWO out of the following three questions

4. Graft nephrectomy of a non-functioning renal graft should be considered in all patients awaiting kidney re-transplantation. Enumerate the potential immunological impacts of this intervention and provide a justified argument for or against the position.

5. Compare and contrast the function of the T cell and NK cell.

6. Describe the gene and protein structure of HLA-DP and discuss the role of HLA-DP in transplantation