



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 thrombocytopenia

### **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.



## Part 1 Examination

### Histocompatibility & Immunogenetics: First Paper

Tuesday September 26<sup>th</sup> 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



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### Histocompatibility & Immunogenetics: First Paper

Tuesday March 22 2016

***Candidates must answer FOUR questions only – Both questions in Section A and TWO questions from Section B***

**Time allowed THREE HOURS**

#### **Section A - Answer ALL questions**

1. Write short notes on the application of each of the following in an H&I laboratory:
  - a) change management
  - b) competency assessments
  - c) contingency planning
  
2. In the context of haematopoietic progenitor cell transplantation, write short notes on three of the following:
  - a) HLA alloantibodies
  - b) selection criteria for cord blood units
  - c) non-HLA factors that impact on outcome
  - d) post transplant monitoring

#### **Section B - Answer TWO out of the following three questions**

3. "In solid organ transplantation donor directed HLA specific antibodies are a contra indication to transplantation."  
Discuss this statement in relation to deceased donor organ (kidney, cardiothoracic, liver) donation.
  
4. With examples, explain why polymorphism within the peptide binding groove of HLA proteins can influence susceptibility to disease and adverse drug reactions. What role can the H&I laboratory play in diagnosis or prevention?
  
5. Describe the molecular organisation of the KIR system and its interaction with HLA. Discuss the role of KIR typing in haploidentical haematopoietic progenitor cell transplantation.



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## Part 1 Examination

### Histocompatibility & Immunogenetics: Second Paper

Tuesday March 22 2016

***Candidates must answer FOUR questions only – All questions in Section A and ONE question from Section B***

#### **Section A** - Answer ALL questions

1. Write short notes on:
  - a) methods available for detecting platelet specific antibodies,
  - b) the clinical significance of these antibodies in:
    - i) Neonatal Alloimmune Thrombocytopenia,
    - ii) Post Transfusion Purpura and
    - iii) Refractoriness to Random Donor Platelets.
2. Describe how the 'measurement uncertainty of measured quantity values' can be assessed for two of the following assays performed in the H&I laboratory:
  - a) HLA alloantibody specificity analysis using Luminex single antigen beads
  - b) flow cytometry crossmatch.
  - c) post haematopoietic progenitor cell transplant chimaerism monitoring
3. In relation to renal transplantation, write short notes on two of the following:
  - a) pathways of allorecognition
  - b) categories of rejection in which alloantibody is implicated
  - c) strategies used to deplete donor specific antibodies pre-transplant

#### **Section B** - Answer ONE out of the following two questions

1. Define the concepts of equity and equality. Describe how these are addressed within the current UK allocation system for deceased kidney donors.
2. Describe the principles of one of the next generation sequencing platforms currently available to define HLA polymorphism. What impact is next generation sequencing likely to have on transplantation in the future and what other data is required to fully elucidate the function of HLA?