



## THE COLLEGES OF MEDICINE OF SOUTH AFRICA

Incorporated Association not for gain  
Reg No 1955/000003/08

### Part I Examination for the Fellowship of the College of Pathologists of South Africa – Haematology



27 June 2019

Paper 1

(3 hours)

*All questions are to be answered. Each question must be answered in a separate answer booklet (or booklets if more than one is required for the one answer).*

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- 1 Write short notes on the Kell and Kidd (Jk) blood groups systems. [10]
- 2 Write short notes on recent advances in the CRISPR/Cas9 methodology and its applications in haematology. [10]
- 3 Central tolerance is more important than peripheral tolerance to limit T cell autoreactivity. Discuss this statement critically and briefly describe mechanisms of central and peripheral T-cell tolerance. [25]
- 4 Outline the key components and actions of the proteasome-ubiquitin pathway and discuss the relevance of the pathway in haematology. [25]
- 5 Write short notes on adipokines. [10]
- 6 In the form of a table, illustrate the changes in the cell surface/phenotype that accompany B cell maturation. [10]
- 7 Compare the principles of Sanger and next-generation sequencing. [10]



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Paper 2

(3 hours)

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- 1 Erythropoiesis is a function of iron homeostasis. Discuss this statement critically considering the normal iron regulatory pathways, the impact of iron on erythropoiesis and the influence of inflammation on iron homeostasis. [25]
  
- 2 With respect to the coagulation pathway, write short notes on the following:  
**Please answer question 2a in one book.**
  - a) The termination phase of coagulation with special reference to the role of thrombomodulin. (10)**Please answer question 2b and 2c in one book.**
  - b) The concept of extravascular coagulation. (10)
  - c) The role of von Willebrand factor in angiogenesis. (10)[30]
  
- 3 Aging appears to be a function of the DNA damage response. Discuss the DNA damage response including the p53 pathway and new understanding of the aging stem cell. [25]
  
- 4 Discuss the role of the transcription factor GATA-1 in neonatal erythropoiesis. [10]
  
- 5 Discuss the concept of the mesenchymal niche in haematopoiesis. [10]