Australian Institute of
Medical and Clinical Scientists (AIMS)

FELLOWSHIP EXAMINATION

HAEMATOLOGY Sample paper

Compulsory Module HAEM 1
(Routine Cellular Haematology)

INSTRUCTIONS TO CANDIDATE

Time allowed is three (3) hours

Answers should be written in the answer book provided, writing on the right-hand page only leaving the margin blank. The facing page may be used for rough work if desired

The examination consists of:

- 2 essay style questions; each question is worth 35 marks.

  (Allow approximately 30 mins each)

- 20 short answer questions; each question is worth 5 marks.

Time allowed for writing is three (3) hours. There is an additional initial reading time of 15 minutes during which notes only may be written on the examination paper but no writing in the examination answer books is permitted at this time.

Candidates may attempt either the essay questions or the short answer questions first.

No papers or books of any kind may be taken into the examination room. No electronic devices of any type* are to be taken in to or accessed in the examination room. A non-programmable calculator only is permitted.

*This includes, but is not restricted to: phones, iPads, iPods, eBook readers, MP3 players, memory sticks (flash drives) and WiFi enabled devices of all types.

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ESSAY QUESTIONS

Each question is worth 35 marks. Suggested time allocation is 30 minutes per question.

Essay questions (35 marks each)

Q1. Describe the pre-analytical variables and clinical conditions that could affect haematological tests. In your answer you should consider effects on red blood cells, white blood cells and platelets.

Q2. Compare and contrast two automated Haematology cell counters and explain how the instruments determine red cell, white cell and platelet counts.

SHORT ANSWER QUESTIONS

Write brief notes/comments on the following questions and statements. Each question and statement is worth 5 marks. Suggested time allocation is 5 minutes per question.

Q1. List 5 causes of pancytopenia.

Q2. Describe the morphological features on a blood film for the following:

a) Vitamin B12 deficiency

b) Hereditary spherocytosis

c) Liver disease

d) Myelofibrosis

Q3. Describe the principle of operation of an automated cell counter.

Q4. Describe the morphological features on a blood film that help to distinguish the following:

a) Beta Thalassaemia trait from beta Thalassaemia major

b) Iron deficiency from beta thalassaemia minor

c) ABO HDFN from RhD HDFN blood picture

d) CLL from myelofibrosis

Q5. A hospital patient presents with a Hb which is 90 g/L. In blood counts performed two days earlier the Hb was 120g/L. Explain the possible causes of this change in Hb result.

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Q6. Briefly describe the molecular structure of the haemoglobin molecule.

Q7. You are introducing a new test in the haematology laboratory and need to establish a reference range. Explain how you would go about it.

Q8. Compare and contrast the morphology of Plasmodium vivax and Plasmodium falciparum on the blood film.

Q9. List 5 analytical sources of error that may occur when performing full blood counts on an automated cell counter.

Q10. Which clinical condition/s are associated with the following white blood cell morphology

a) Alder-Reilly granules

b) Reed-Sternberg cells

c) Pelger-Huet cells

d) Hyper segmented neutrophils

Q11. Which clinical condition/s are associated with the following red cell morphology.

a) Howell Jolly bodies

b) Schistocytes and Thrombocytopenia

c) Round Macrocytes

d) Target cells

Q12. List the haematological observations in:

a) Severe infection

b) Congenital dyserythropoietic anaemia

c) Severe burn.

d) HbH disease

Q13. A 3-year-old female child is admitted with pallor, hepatosplenomegaly and jaundice. There is a family history of thalassaemia. What are the typical laboratory haematology findings for a patient with thalassaemia intermedia.

Q14. Explain the difference between quality control versus quality assurance in the haematology laboratory.

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Q15. Discuss the application of Westgard rules to the quality control of haematological measurements.

Q16. Compare the laboratory findings in ABO haemolytic disease of the newborn with Rh haemolytic disease of the newborn.

Q17. What is the role of Hepcidin in Iron metabolism?

Q18. You are examining a blood film and notice that the platelet count is 10x109/L. What are the likely reasons for the low platelet count?

Q19. What is a myeloid leukaemoid reaction and how may it be differentiated from Chronic myeloid leukaemia?

Q20. What are the clinical and laboratory features of acute promyelocytic leukaemia (APML). Why is it important to report an accurate diagnosis as quickly as possible?

END OF THE EXAM