Australian Institute of
Medical and Clinical Scientists (AIMS)

FELLOWSHIP EXAMINATION example paper

Name:

Candidate No:

General

Compulsory Module GEN III
Example questions
(Patient Based Transfusion Science)

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.

THE EXAMINATION PAPER MAY NOT BE REMOVED FROM THE EXAMINATION ROOM

ESSAY ANSWER QUESTIONS

2 Questions - each question is worth 35 marks. Time allocated to each question should not exceed 35 minutes. All questions should be attempted

1. Describe how you would set up a haemovigilance programme in a (Regional Hospital) hospital setting. What is haemovigilance and what is its role? Include the activities to be monitored, the strategies you would employ to introduce the system and ensure compliance, and the system of ongoing management you would introduce.

2. Describe how you would evaluate and validate new transfusion software for a hospital-based computer system. Indicate the functions to be evaluated and the validation processes you would adopt for the various functions.

SHORT ANSWER QUESTIONS

20 Questions - each question is worth 5 marks. Time allocated to each question should not exceed 5 minutes. All questions should be attempted

1. What are the functions of the protein products of the following genes:
   a. JK
   b. RHAG
   c. CO

2. List five (5) factors that may influence antigen antibody reactions in blood group serology.

3. Briefly outline the mechanisms for the development of autoimmunity to red cells.

4. What is the frequency of the following phenotypes in a Caucasian population?
   a) Jk(a-b+)
   b) Fy(a+b+)
   c) Le(a+b-)
   d) Rh1Rh2
   e) Lu(a+b+)

5. Briefly outline the reasons why a positive direct antiglobulin test may produce a non-reactive eluate.

6. What is the role of complement during the transfusion of incompatible red cells?

7. What are the requirements for reagent red cells used for antibody screening stipulated by The NPAAC Requirements for Transfusion Laboratory Practice?

8. Outline the principles of operation of three (3) technologies currently available for automated pretransfusion testing.

9. Indicate whether the following statements are true or false:
   a) IgG1 is the most effective IgG subclass for binding complement.
   b) The FUT2 gene controls the secretor status of an individual.
   c) Anti-M may cause haemolytic disease of the newborn.
   d) The P antigen is a receptor for parvovirus B19.
   e) Anti-Jka commonly binds complement in serological testing.

10. What are the common symptoms associated with the occurrence of TRALI?

11. How does Haemolytic Disease of the Newborn due to anti – K differ from that caused by anti-D?

12. What are compound antigens? Briefly outline the genetic basis for their occurrence and give three (3) examples.

13. Outline the appropriate membership and functions of a tertiary hospital transfusion committee.

14. Write brief notes on delayed haemolytic transfusion reactions.

15. List five (5) factors that play a role in determining the clinical significance of red cell antibodies.

16. What is the most important receptor on monocytes responsible for the in vivo binding and phagocytic removal of IgG antibody coated red cells?

17. The genes for which major blood group systems are located on chromosome 19?

18. What are the typical serological properties of the following antibodies?
   a) Anti- P
   b) Anti- HI
   c) Anti- Lua
   d) Anti- S
   e) Anti- Leb

19. What pretransfusion testing is necessary for an infant less than 4 months old requiring transfusion?

20. List five (5) clinical or laboratory situations where elution techniques may be useful in resolving serological problems.

END OF EXAMINATION