

**POSTGRADUATE INSTITUTE OF MEDICINE**  
**UNIVERSITY OF COLOMBO**

**POSTGRADUATE DIPLOMA IN TRANSFUSION MEDICINE**  
**EXAMINATION - FEBRUARY 2021**

**Date:-** 22<sup>nd</sup> February 2021

**Time:-** 1.00 p.m. – 4.00 p.m.

**PAPER I**

**Answer all eight (08) questions.**

**Answer each question in a separate book.**

1. A 36-year old lady is brought to the hospital with multiple trauma following a road traffic accident. The patient needs an emergency transfusion and the consultant informs the blood bank that a massive transfusion will be needed.
  - 1.1. Give three (03) definitions for a massive blood loss. (15 marks)
  - 1.2. Briefly discuss the three (03) main factors that can cause death in this patient. (25 marks)
  - 1.3. The Medical Officer at the accident service informs you over the phone that blood is needed immediately.
    - 1.3.1. What is your advice and how would you proceed? (10 marks)
    - 1.3.2. What are the complications that could possibly occur? (10 marks)
  - 1.4. Briefly state the protocol to provide blood and blood products if the patient continues to bleed heavily. (40 marks)
2. A one-month old baby weighing 1.5kg requires a blood transfusion for anaemia of prematurity. The mother's blood group is A Rh D Positive and the baby's blood group is O Rh D Positive.
  - 2.1. What are the routine pretransfusion compatibility tests that you would undertake for this patient? (30 marks)
  - 2.2. What are the special criteria you would consider when selecting blood and blood components for this baby? (40 marks)
  - 2.3. What is the volume of RCC that you would recommend? (10 marks)
  - 2.4. What are the suggested red cell and platelet transfusion thresholds for this baby? (20 marks)

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- 3.
- 3.1. Discuss the factors which affect the shelf life of a red cell unit. (30 marks)
- 3.2. As a Medical Officer in charge of a blood centre, what measures would you take to minimize collecting under-volume blood units in a donor clinic?  
(40 marks)
- 3.3. The quality of blood and blood components depend on many variables that occur during donor bleeding and component preparation. Enumerate these variables. (30 marks)
4. As a MOIC of a blood bank what will your advice be for the following scenarios.
- 4.1. An organizer of regular blood donation campaigns is planning to arrange a campaign during COVID-19 pandemic and inquires from you about additional measures that he should take. (40 marks)
- 4.2. A blood donor, after 3 days of his donation, informs you that he is infected with COVID-19. (20 marks)
- 4.3. You are informed by a house officer of a medical ward that a patient positive for COVID-19 needs a red cell transfusion. (40 marks)
- 5.
- 5.1. Compare and contrast the mechanisms causing anaemia in the following three (03) patient categories. (60 marks)
- A - Anaemia in pregnancy
- B - Anemia in patients with end stage renal disease.
- C - Anaemia in patients with haematological malignancies.
- 5.2. Give measures you would take to minimize red cell transfusions in the above three (03) patient categories. (40 marks)

6. A 61-year old patient with acute myeloid leukaemia (AML) had a platelet count of  $7 \times 10^9/L$  and was transfused four units of buffy coat derived platelet concentrates. 20 minutes after completing the platelet transfusion, patient complained of difficulty in breathing. His respiratory rate was 28/minute, blood pressure 130/85 mmHg and pulse rate was 104/minute. His temperature was  $37^\circ C$  and  $SaO_2$  was 82%. He was started on oxygen via face mask.
- 6.1. What are your differential diagnoses? (10 marks)
- 6.2. What information would you ask for and investigations would you do to arrive at a diagnosis? (40 marks)
- 6.3. Patient's urgent chest x-ray shows bilateral lung infiltrates, Jugular Venous Pressure (JVP) and B-type Natriuretic Peptide (BNP) levels were within normal range and there was no evidence of infection. He did not have urticaria.  
What is the most likely diagnosis? (10 marks)
- 6.4. What confirmatory tests would you do in this patient? (20 marks)
- 6.5. Briefly discuss the measures that can be implemented to prevent this type of transfusion reaction. (20 marks)
7. You have been appointed as a registrar in transfusion medicine of a blood bank which is in a remote area, 3 hours away from the cluster centre.  
Briefly discuss the points that you will address under the following topics when you are conducting a staff meeting at your blood bank.
- 7.1. Blood stock management. (50 marks)
- 7.2. Parameters that can be used to measure the efficiency of inventory management. (20 marks)
- 7.3. Advise to your staff on transportation of whole blood from the mobile blood donation campaigns and platelets/FFP/RCC for stocks from the cluster centre. (30 marks)

8. Clinician of the oncology unit request single donor platelets (SDP) due to poor response to random donor platelets (RDP) in several patients.

8.1. How would you investigate the above incident? (60 marks)

8.2. Briefly explain the different levels of HLA match to select blood donors in platelet refractoriness. (10 marks)

8.3. A 40-year old female patient with haematological malignancy who was on repeated transfusions has been given 5 units of platelets after chemotherapy.

Body weight 56 kg, Height 140 cm, body surface area (BSA)  $1.4 \text{ m}^2$

Pre transfusion platelet count  $4000 \times 10^9/\text{L}$

Post transfusion platelet count  $12,500 \times 10^9/\text{L}$  after 1 hour

Average platelet count of the transfused platelets  $50 \times 10^9/\text{L}$  per pack.

Comment on

8.3.1. the response to platelet transfusion. (15 marks)

8.3.2. the transfusion support given (15 marks)