17446

BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Sc.(MLT)-2023
Course Name – Immunohematology & Blood Banking
Course Code - MMTC04001
(Semester IV)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Which of the following test is performed for weak D (Du) Typing ?
- a) Cross matching
- b) Rh typing test
- c) Indirect antiglobulin test
- d) Direct antiglobulin test

(ii) Type 1, 2, 3, or 4 glycan chains are biosynthetic precursors to the H antigen. Identify the correct sequence of Type 1 chains from the following
- a) Galb(1,4)GlcNAcb(1,3)-R
- b) Galb(1,3)GlcNAcb(1,3)-R
- c) GlcNAcb(1,3)Galb(1,3)-R
- d) Galb(1,3)GlcNAcb(1,3)GAlb(1,4)-R

(iii) A positive Direct Antiglobulin test is seen in
- a) Haemolytic disease of newborn
- b) Microcytic hypochromic anaemia
- c) Megaloblastic anaemia
- d) All of the these

(iv) If O Negative FFP is not available in Blood Bank your next choice FFP is of group
- a) O positive
- b) A Negative
- c) B Negative
- d) None of the these

(v) What is the purpose for the addition of adenine in the CPD anticoagulant ?
- a) To increase the stability of stored blood
- b) To provide the proper pH condition in stored blood
- c) To reduce the RBC agglutination
- d) To improve the synthesis of ATP in the stored blood

(vi) In which transfusion reaction does hemolysis of donor RBCs occur due to recipient antibodies targeting transfused RBC antigens?
- a) Febrile non-hemolytic transfusion reaction
- b) Delayed hemolytic transfusion reaction
- c) Acute hemolytic transfusion reaction
- d) Allergic transfusion reaction

(vii) Differentiate between Random Donor Platelets (RDP) and Single Donor Platelets (SDP).
- a) RDP is obtained from apheresis, while SDP is pooled from multiple donors
- b) RDP is prepared from whole blood, while SDP is obtained from a single donor via apheresis

c) RDP contains more platelets than SDP
d) RDP is used for plasma transfusion, while SDP is used for red blood cell transfusion

(viii) Why is CPDA-1 preferred over CPD for blood storage?

a) It prevents bacterial contamination
b) It improves the viability of red blood cells for a longer period
c) It enhances platelet aggregation
d) It decreases plasma volume

(ix) Which of the following statements about the Rh system is TRUE?

a) The Rh factor was discovered before the ABO system
b) Rh-negative individuals always have anti-D antibodies
c) The presence of the D antigen determines Rh positivity
d) The Rh system has only one antigen

(x) The blue colour of antisera A is due to_____.

a) Trypan blue
b) Brilliant blue
c) Acriflavin
d) Egyptian blue

(xi) During blood donation, the removal of blood components is called

a) cytapheresis
b) plasmapheresis
c) Apheresis
d) Leukapheresis

(xii) A pregnant woman is Rh-negative, and her husband is Rh-positive. Interpret the potential risk for their child?

a) No risk, as Rh factor is not inherited
b) The child may develop hemolytic disease of the newborn (HDN)
c) The mother will develop antibodies against the ABO system
d) The child will definitely be Rh-negative

(xiii) Identify the test that is carried out before a blood transfusion to confirm the compatibility of the donor and recipient.

a) Coomb's test
b) Cross-matching
c) ELISA
d) Bleeding time test

(xiv) Which Coomb's test is used to detect antibodies already bound to red blood cells?

a) Indirect Coomb's test
b) Major cross-matching
c) Direct Coomb's test
d) Minor cross-matching

(xv) In the blood bank, which of the following activities falls under the scope of quality assurance?

a) Daily cleaning of the blood collection equipment
b) Ensuring the blood bags are sterile
c) Validation of proper storage conditions for blood products
d) Performing routine maintenance on centrifuges

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Provide a concise overview of the utilization of CPD and CPDA as anticoagulants within the blood bank setting. (3)
3. Explain the rationale behind the utilization of Intermittent Flow Centrifugation and Continuous Flow Centrifugation (CFC) in apheresis procedures. (3)
4. Explain the concept of a mobile blood camp and its significance in increasing blood donation rates. (3)
5. Assess the effectiveness of FFP transfusion in achieving desired clinical outcomes. (3)
6. Examine the effectiveness of diverse screening tests aimed at identifying transmissible diseases in blood that has been donated. (3)

OR

Analyze the clinical implications of the Bombay blood group for the process of blood transfusion. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Analyze the Fisher-Race nomenclature in relation to the Wiener nomenclature for antigens within the Rh system. (5)
8. Explain the pathophysiology of Transfusion-associated Graft-vs-Host Disease (TA-GVHD). (5)
9. Describe the step-by-step procedures involved in conducting Weak D testing, emphasizing the critical techniques and considerations for accurate and reliable results in blood typing. (5)
10. Explain the process of forward blood grouping using the tube method by outlining its principle, necessary materials, and step-by-step procedure. (5)
11. Describe the clinical presentation of an anaphylactic transfusion reaction. (5)
12. Investigate the Laboratory Findings related to Hemolytic transfusion reaction. (5)

OR

In the event that a patient experiences TRALI symptoms during a blood transfusion, what procedures should be followed to effectively manage the reaction and ensure the patient's safety? (5)

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