

**DR. SHIHAB AL-MASHHADANI'S**  
**QUESTIONS**

## NOTE:

Answers in below questions are underlined and displayed in **Red Colour** bold letters

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1. A blood donor who want to donate blood should be (Mark one false).
  - a. 17-65 years old.
  - b. Above 50 kgs body weight
  - c. His haemoglobin level (male donor) is 14.5 g/dl.
  - d. Her haemoglobin level (female donor) is 11.0 g/dl.**
  - e. Blood pressure is 120/80 mm Hg.
  
2. A blood donor who want to denote blood should be rejected if he/she (Mark one true answer).
  - a. Diabetic on insulin injection.
  - b. Severely hypertensive.
  - c. Had jaundice 6 months ago.
  - d. Short stature.**
  - e. Had malaria one year ago.
  
3. A blood donor should be not accepted for donating blood if he/she (Mark one true answer)
  - a. Hepatitis B surface antigen positive.
  - b. Hepatitis C positive.
  - c. Hepatitis B anti-S-antibody positive but S antigen negative.**
  - d. HIV positive.
  - e. Had brucellosis 2 years ago.
  
4. A blood donor should be rejected from donating blood if he/she is (mark one true answer).
  - a. VDRL positive.
  - b. Had vaccination for hepatitis B virus one year ago.**
  - c. HTLV positive.
  - d. Hepatitis B core antigen positive.
  - e. Had pulmonary tuberculosis 4 months ago and still on anti T.B. treatment.

5. The commonest red cells antigens in human are (Mark one true answer).
- A, B and H antigens.**
  - Rh E and C antigens.
  - K and P antigens.
  - Fy<sup>a</sup> and Fy<sup>b</sup> antigens.
  - Kidd and kell antigens.
6. The following red cell antigens are present on human red cells (Mark one answer true). (1 = Big I antigen) (i = small i antigen)
- I antigen present on red cells of normal adult person.**
  - i antigen present on adult red cells of normal person.
  - I antigen present on cord blood red cells (New-born).
  - Both I and i red cells antigens present on adult normal red cells.
  - i antigen only present on red cell of a child after the age of 5 years.
7. The following are true statement regarding the ABO blood group system (Mark one false):
- H substance is product of H gene on chromosome 19.
  - H antigen present on all red cells with exception of (Bombay red cell).
  - A and B antigens on the red cells of fetus are weaker than those of adult red cells.
  - A and B antigens on the red cells of fetus are stronger than adult red cells.**
  - ABH antigens are present on red cells, WBC and platelets.
8. The following are true statements regarding the A B O blood group system except one (Mark one false):
- 20% of group A are group A2.
  - Antigen become stronger in patient with leukaemia.**
  - Acquired B antigen can be aquired by group A patient who are suffering from bowel infections, carcinoma or stricture of large bowel.
  - Anti-A1 antibody can be seen in 25-30% of A2B group individuals.
  - B group persons have Anti A + Anti A<sub>1</sub>, in their sera.
9. The following statements are true except one (Mark one false):
- Group A1 persons have anti B antibodies in their sera.
  - Group O persons have anti A + anti-B in their sera.
  - Group AB persons have anti AB and anti H in their sera.**
  - Group A2 persons occasionally (1-2%) have anti A1 in their sera.
  - Group A2B persons (25-30%) have anti A1 in their sera.

10. The antibodies of the A B O group system are: (Mark one false):
- Anti-A and anti-B are naturally occurring antibodies.
  - They are IgG in type.**
  - They are cold antibodies but can react at 37°C.
  - Immune anti-A and anti-B can develop in response to transfusion or pregnancy.
  - They are potentially dangerous. They can cause severe haemolytic transfusion reaction.
11. The following are true statement regarding the Rh system (Mark one false).
- RhD antigen is the most common antigen.
  - Rh positive person means RhD positive.
  - Rh negative person means RhD negative.
  - RhD positive persons in Saudi Arabia form only 50% of all the population.**
  - Anti D antibodies is the most common cause of haemolytic disease of the new-born in Rh negative mothers.
12. The most common Rh genotype is
- $R^1R^1$  (CDe/CDe).
  - $R^1r$  (CDe/ c de).**
  - $rr$  (cde/ cde)
  - $R^2R^2$  (cDE/cDE)
  - $R^2r$  (cDE/cde)
13. For a patient requiring blood transfusion the following compatibility tests should be done on the blood units which will be transfused to the patient. (Mark one false).
- A B O grouping of patient and donor units.
  - Rh typing of patient and donor units.
  - Cross-matching of donor units with the patient serum.
  - DCT (Direct Coomb's Test) on patient red cells only.**
  - Haemolysin test (For group O donors).
14. The following blood products can be prepared from one unit of whole blood donated in your hospital blood bank (Mark one false):
- Packed red cells.
  - Fresh frozen plasma (FFP).
  - Platelets concentrate.
  - Cryoprecipitate.
  - Factor VIII concentrate.**

15. The optimal temperature for storing packed red cells in the blood bank refrigerator (Mark one true):
- Between 10-15 °C
  - Between 5-10 °C
  - Between 2-6 °C**
  - Between 0-5 °C
  - Between 15-20 °C
16. The optimal conditions for storing the platelets concentrate at the blood bank are (Mark one true):
- Below 10°C in the blood bank refrigerator.
  - At room temperature (20-25°C) with continuous agitation.**
  - In the cold room below 4°C and with continuous agitation.
  - Kept at room temperature without continuous agitation.
  - Kept in the deep freezer.
17. For patients requiring multiple blood transfusions (Multi-transfused patients). The following measures should be taken (Mark one false):
- Full red cells typing of the patient who developed red cell antibodies.
  - Leukocytes depleted blood.
  - Packed red cells transfusion and not whole blood transfusion.
  - Fresh red cells less than 5 days old blood.
  - CMV (Cytomegalo-virus) negative blood for all multi-transfused patients.**
18. The following are indications for platelets concentrate transfusion (Mark one false):
- Acute leukaemia.
  - Aplastic anaemia.
  - Auto-immune thrombocytopenia.**
  - Massive blood transfusion.
  - Glanzmann's thrombasthenia.
19. Packed red cells for transfusion of neonates, infants and immuno-suppressed patients) should be (Mark one false)
- Hepatitis B negative and hepatitis C negative.
  - HIV and HTLV negative.
  - CMV negative.
  - Sickle cell test negative.
  - 10 days old blood.**

20. Fresh frozen plasma transfusion is indicated in the following conditions except one:
- Bleeding liver diseases.
  - Severe haemophilia A (Factor VIII deficiency).**
  - Bleeding in patients with congenital factor I, V, XI and factor XIII.
  - Acquired bleeding disorders such as disseminated intravascular coagulation. (DIC).
  - Bleeding patients due to overdose with oral anticoagulants.
21. Immediate transfusion reaction include the following (Mark one false):
- Febrile reaction.
  - Haemosiderosis.**
  - Allergic reaction.
  - Acute haemolytic transfusion reaction.
  - Hypervolaemic transfusion (Circulatory overload).
22. Delayed transfusion reaction include the following (Mark one false).
- Graft-versus host disease (GVHD).
  - Hepatitis B and C infection.
  - Hypocalcaemia.**
  - Delayed haemolytic transfusion reaction.
  - HIV and HTLV infection.
23. The blood bank workup of suspected transfusion reaction should include the following (Mark one false).
- Checking paper work to ensure correct blood component was transfused to the right patient.
  - Perform direct antiglobulin test (DCT) on the patient red cells and the units transfused.
  - Repeat A B O and Rh blood grouping.
  - Repeat cross-match on pre-transfusion samples only.**
  - Analyze urine for haemoglobin urea.
24. The following are the features of acute transfusion reaction (Mark one false):
- ABO incompatibility is usually associated with severe haemolytic transfusion reaction.
  - Antibodies to leukocytes or platelets can cause extravascular haemolytic transfusion reaction.**
  - Transfusion related acute lung injury (TRALI) can be due to anti-HLA antibody which lead to dyspnea and pulmonary edema.
  - Bacterial sepsis due to transfusion of contaminated blood products can lead to shock, fever and chills.
  - Hypervolemic transfusion complication is due to rapid or excessive transfusion.

25. In warm auto-immune haemolytic anaemia, the following are true except one: (mark one false).
- a. Spleen plays a major role in the destruction of red cells.
  - b. Liver plays the major role in the destruction of red cells.**
  - c. The haemolysis is extra-vascular hemolysis.
  - d. IgG coated red cells are destroyed by the macrophages.
  - e. It is associated with splenomegaly in the majority of patients.
26. The laboratory features of warm auto-immune haemolytic anaemia are the following except one:
- a. Spherocytes in the peripheral blood film.
  - b. Negative direct antiglobulin test (Coomb's test).**
  - c. High reticulocyte count.
  - d. Bone marrow erythroid hyperplasia.
  - e. Hyperbilirubinaemia (Indirect type).
27. Warm auto-immune haemolytic anaemia can be (Mark one false):
- a. Idiopathic in 30% of cases (Primary).
  - b. Associated with auto-immune diseases.
  - c. Associated with ovarian carcinoma.
  - d. Secondary to myeloproliferative disorders.**
  - e. Post viral infections.
28. In cold agglutinin disease the antibody characteristics are (Mark one false):
- a. Usually IgG.**
  - b. React with RBCs on cooling.
  - c. Complement mediated.
  - d. Specificity for RBCs surface antigen (group) can be anti I associated with mycoplasma pneumonia.
  - e. Specificity for RBCs surface antigen can be anti-i associated with infectious mononucleosis.
29. Serological characteristics of cold agglutinins in the cold agglutinin syndromes (Mark one false):
- a. Polyclonal anti I in primary idiopathic cold agglutinin disease (CHAD).**
  - b. Monoclonal anti-I secondary to lymphoproliferative disorders.
  - c. Monoclonal anti-i secondary to B cell lymphoma.
  - d. Polyclonal anti-I antibodies secondary to mycoplasma pneumonia infection.
  - e. Polyclonal anti-i secondary to infectious mononucleosis.

30. A positive direct Coomb's test is found in auto-immune haemolytic anaemia due to: (Mark one false):
- Primaquine induced haemolysis in G6PD deficiency.**
  - Prolonged treatment with methyldopa treatment.
  - Chronic lymphocytic leukaemia.
  - B-Cell lymphoma.
  - Systemic lupus erythematosus. (SLE).
31. The laboratory findings in cold agglutinin disease are (Mark one false):
- Low haemoglobin level (Anaemia).
  - Agglutination of RBCs (clumping) seen in the blood film or in the tube.
  - Normal MCV and normal MCHC.**
  - Coomb's test is positive for complement.
  - Antibody screen for specificity is anti-I or anti-i.
32. Reticulocytes are (Mark one true).
- Stain with 1% new methylene blue.
  - Are nucleated cells.**
  - Are increased in the peripheral blood in aplastic anaemia.
  - Are reduced in the peripheral blood in haemolytic anaemia.
  - Contain DNA, RNA and mitochondria.
33. A specimen of blood collected in EDTA (Mark one true).
- Is suitable for prothrombin time measurement.
  - Is suitable for osmotic fragility test.
  - Is suitable for coagulation factors assay.
  - Is not suitable for WBC count and platelet count.
  - Is suitable for haemoglobin estimation, WBC count and platelets count.**
34. Raised MCV (Mean Corpuscular Volume) is seen in the following conditions except one:
- Hypochromic anaemia.**
  - Vit B12 deficiency.
  - Aplastic anaemia.
  - Folate deficiency.
  - Haemolytic anaemia.
35. Spherocytes are seen in the following condition except one:
- Auto-immune haemolytic anaemia.
  - Hereditary spherocytosis.
  - G-6-P-D deficiency during the attack of haemolysis.
  - Vit B12 deficiency.**
  - Blood film from a patient with severe burn.

36. Normocytic normochromic anaemia is found in the following (Mark one true).
- Acute blood loss.**
  - Iron deficiency.
  - Folate deficiency.
  - Haemolytic disease of the newborn.
  - Pregnancy.
37. Increased serum iron is found in the following except one:
- Perinicious anaemia.
  - Haemochromatosis.
  - Sidereblastic anaemia.
  - Beta-thalassaemia major.
  - Pregnancy.**
38. Megaloblastic changes in the bone marrow are found in the following conditions except one:
- Strict vegetarians.
  - Diseases of the terminal ileum.
  - Five years after gastrectomy.
  - Pernicious anaemia.
  - G-6-P-D deficiency.**
39. Homozygous sickle cell disease (Hb ss) can usually be differentiated from sickle cell trait (Hb AS) by (Mark one true).
- Sickle cell test.
  - Haemoglobin electrophoresis.**
  - Osmotic fragility test.
  - Reticulocyte count.
  - Alkali denaturation test.
40. A differential WBC count is essential in the following circumstances (Mark one false).
- Marked leukocytosis.
  - Normal blood donor before donation.**
  - In a patient admitted with fever.
  - In a patient with a generalised lymphadenopathy.
  - Pancytopenia.
41. Dietary iron is best absorbed from (Mark one true).
- Distal jejunum.
  - Ileum.
  - Colon.
  - Duodenum.**
  - Stomach.

42. The following are causes of hypochromic microcytic anaemia (Except one).
- Alpha-Thalassaemia.
  - Sideroblastic anaemia.
  - Iron deficiency anaemia.
  - Chronic infection.
  - Vitamin B12 deficiency.**
43. In pernicious anaemia the following abnormalities can be seen in the peripheral blood (Except one).
- Hypersegmented neutrophils.
  - Neutropenia.
  - Normal MCV (Mean cell volume).**
  - Thrombocytopenia.
  - Macrocytosis
44. In the laboratory diagnosis of megaloblastic anaemia which of the following would be most useful (mark one true).
- Examination of bone marrow sample.**
  - Estimation of serum iron level.
  - Estimation of urinary bilirubin.
  - Measurement of liver function tests.
  - Measurement of serum ferritin level.
45. The following are criteria for severe aplastic anaemia (**Except one**):
- Granulocytes less than  $0.5 \times 10^9/L$
  - Platelets above  $50 \times 10^9/L$ .**
  - Reticulocytes less than 1%
  - Marrow cellularity less than 25% of normal cellularity.
  - Severe anaemia (Haemoglobin usually below 7g/dL).
46. These are causes of aplastic anaemia **except one**:
- Fanconi's anaemia.
  - Cytotoxic drugs.
  - Vit B12 deficiency**
  - Infection (postviral hepatitis).
  - Ionizing radiation.
47. The following are causes of macrocytosis **except one**:
- Alcoholism.
  - Pregnancy.
  - Chronic haemolytic anaemia.
  - Hyperthyroidism.**
  - Newborn.

48. In Beta-thalassaemia minor the following are true (**Mark one false**):
- High red cell count.
  - Hypochromia
  - Low haemoglobin A2 level.**
  - Microcytosis
  - Basophilic stippled red cells.
49. In alpha-thalassaemia syndrome the following are true statements **except one**:
- Haemoglobin H disease is due to absence of 2 alpha genes.**
  - Silent alpha thalassaemia is due to absence of 1 alpha genes.
  - Alpha-thalassaemia trait is due to absence of two genes.
  - Hydrops fetalis is due to absence of 4 alpha genes.
  - Hydrops fetalis is incompatible with life.
50. The laboratory features of Beta thalassaemia major are (**Mark one false**):
- Hypochromia.
  - Microcytosis.
  - Presence of many nucleated RBCs.
  - Low reticulocyte count.**
  - Presence of many target red cells.
51. The parents of haemoglobin H disease are (**Mark one true**).
- One parent is silent alpha thalassaemia carrier and the other is alpha thalassaemia trait.**
  - Both parents are silent alpha thalassaemia carrier
  - Both parents are alpha thalassaemia trait.
  - Both parents are haemoglobin H disease.
  - One parent is haemoglobin H and the other is silent carrier.
52. The following haemoglobins are composed of structural globin chains (**Mark one false**).
- Haemoglobin A is composed of 2 alpha and 2 beta chains.
  - Haemoglobin A2 is composed of 2 alpha and 2 delta chains.
  - Haemoglobin F is composed of 2 alpha and 2 gamma chains.
  - Haemoglobin Barts is composed of 4 alpha chains.**
  - Haemoglobin H is composed of 4 beta chains.
53. Quantitative measurements of the normal human haemoglobins at 1 year of age are as follows: (Mark one false)
- Haemoglobin A (95-97%).
  - Haemoglobin A2=(2.5-3.5%).
  - Haemoglobin F = (less than 1.5%),
  - Haemoglobin Barts = (4-5%).**
  - Haemoglobin H = Not measurable.

54. In glucose-6-phosphate dehydrogenase deficiency (**Mark one false**):
- It is a common red cell enzyme deficiency in Saudi Arabia.
  - The main function of the enzyme is reduction of NADP to NADPH in the pentose phosphate pathway.
  - The gene for G-6-PD is located on the X chromosome.
  - It is a disease usually affecting females.**
  - Severe haemolysis can be induced by drugs or eating Fava Beans.
55. The following are laboratory features of G6PD deficiency due to haemolytic attack (**Mark one false**):
- Haemoglobinaemia.
  - Haemoglobinuria.
  - High reticulocyte count.
  - Normal haptoglobin level.**
  - Presence of typical blister like red cells in the peripheral blood film.
56. 5 years old child presented with bleeding. The coagulation screening tests showed prolonged PT (Prothrombin Time) and normal APTT (Activated Partial Thromboplastin Time). The most likely cause of bleeding is deficiency of one of the following coagulation factors (**Mark one true**):
- Factor VIII deficiency.
  - Factor IX deficiency.
  - Factor X deficiency.
  - Factor XI deficiency.
  - Factor VII deficiency.**
57. If the APTT is prolonged and the PT is normal in a male child with bleeding in the joints. The most common cause of coagulation factor deficiency is (**Mark one true**):
- Factor VIII deficiency.**
  - Factor XIII deficiency.
  - Factor X deficiency.
  - Factor VII deficiency.
  - Factor XII deficiency.
58. These are laboratory features of infectious mononucleosis except one (Mark one false).
- Lymphocytosis.
  - Anaemia.
  - Thrombocytopenia.
  - Positive Paul Bunnell test.
  - Negative monospot test.**

59. The following are correct in relation to the morphological FAB classification of acute myeloid leukaemia **except one**:
- a. M1 is acute myeloblastic leukaemia without differentiation.
  - b. M3 is acute megakaryoblastic leukaemia.**
  - c. M5 is acute monoblastic leukaemia.
  - d. M6 is erythroleukaemia.
  - e. M2 is acute myeloid leukaemia with differentiation.
60. The laboratory features of chronic lymphocytic leukaemia are (Mark one false)
- a. Absolute lymphocytosis.
  - b. Presence of smear cells in the peripheral blood film.
  - c. Bone marrow infiltration with mature lymphocytes.
  - d. Presence of 30% blast cells in the bone marrow.**
  - e. Anaemia and thrombocytopenia in advanced stage.