



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL LABORATORY SCIENCES

AML 2211: BLOOD TRANSFUSION TECHNIQUES

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: Pick Date Aug 2019

Instructions to Candidates

You should have the following for this examination

Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

Circle the correct answer in section A.

Section A

1. Low ionic strength solutions may be used for the following reasons
 - a. Lower the Isoelectric point of the medium
 - b. Increase the ionic concentration of the medium
 - c. Increase the distance between red cells
 - d. Increase the surface of shear
2. The following are characteristic of IgG except
 - a. Have a J-chain
 - b. Have a molecular weight of 180000
 - c. Can be transferred through the placenta
 - d. They resist denaturation at 56⁰C

3. Partial D occurs due to?
 - a. Expression of altered D proteins
 - b. Position effect especially when C is in trans to D
 - c. Missing D epitopes
 - d. Lack of gene D
4. Rh Anti-D may cause haemolytic disease of the newborn in one of the following
 - a. Maternal anti-D titre falls below 6
 - b. Maternal anti-D titre rises to 16
 - c. Foetal cells are D negative
 - d. Foetal cells are ABO incompatible with maternal sera
5. The following statement is are true of naturally occurring antibodies
 - a. Occur in persons having come into contact with relative antigen
 - b. Does not occur in persons having specific antigen
 - c. May occur without prior antigenic stimulus
 - d. Occurs in persons seemingly not having come into contact with specific antigen
6. The following temperature conditions are favorable for naturally occurring antibodies
 - a. 37°C
 - b. 25°C
 - c. 0°C
 - d. 12°C
7. In applying the law of mass action, the equilibrium constant of antigen antibody reactions depends on?
 - a. Ionic strength of the antibody
 - b. Ionic strength of the medium
 - c. The pH of the medium
 - d. The pH of the antigen
8. The following statements are true of naturally occurring antibodies
 - a. Act weakly at 4°C
 - b. Act strongly at 4°C
 - c. They are predominantly IgM
 - d. may not be anti-M or anti-N

9. *Dolichos bifloras* is well known due to
- Its ability to react with red cell antigens
 - Its specificity to anti-A
 - Its specificity to anti-A₁
 - Its reaction with anti-H
10. The process by which antibodies coated onto the red blood cells are re-suspended back into solution is referred to as?
- Eluate
 - Elution
 - Diluent
 - Solvency
11. Non-specific results during elution may be as a result of?
- Development of potency of solvents upon storage
 - Deterioration of solvents upon storage
 - Analytical grade solvents
 - Use of 6% bovine serum albumin
12. The use of bubbling air into the eluate is mainly in order to?
- Aerate the elute
 - Aerate the antibodies to normal
 - Remove the residual ether
 - Remove the deposits
13. During the heat ether technique, the first heat incubation phase should be for how long?
- 2 minutes without agitation
 - 15minutes without agitation
 - 15 minutes with periodic agitation
 - 2 minutes with vigorous agitation
14. Blood group antibodies may be classified in the following ways
- Artificial
 - Pure
 - Natural
 - Immune

15. Serum donor exclusions_____.
- Are different from other blood donors
 - Are the same as other blood donor exclusion criteria
 - Are determined by the clinicians
 - May be ignored from time to time
16. Suitability of sera is determined using especially three tests that include some of the following
- Test for avidity
 - Test for blood groups
 - Test for specificity
 - Test for Rh
17. The purpose of titrating Natural antibodies is to?
- Find antibody concentration in grouping sera
 - Determine the type of antibody present in a given sample
 - Determine severity of Hemolytic disease of the newborn/foetus
 - Check for Chimerism
18. Information that should appear on adhesive labels should include the following except?
- Manufacture and expiry dates
 - Type of antibody class included
 - Donor description
 - Type of antigen present
19. remedy a situation of error involving rouleaux, the following is done.
- Repeat the grouping immediately
 - Wash the cells three times in saline and repeat the test
 - Use a higher concentration of cells
 - Add albumin to the test tube
20. Weak reacting antigen A has the following characters
- They agglutinate slowly
 - They show a weak reaction
 - They agglutinate strongly at room temperature
 - Agglutinate strongly in saline

21. False positive results in blood group serology may be due to?
- Dirty glassware
 - Failure to incubate
 - Shaking tubes too hard
 - Auto immune antibodies
22. The puncture of arteries during donation may result in the following except?
- Severe blood leakage
 - Extensive bleeding
 - Slow filling of the Bag
 - Marked cyanosis and nausea
23. Avid sera fit for use in blood grouping will show visible agglutination within the following time range
- Within 15minutes
 - Between 2 and 15minutes of exposure
 - At 2 – 15 seconds of exposure
 - In albumin only
24. The following statements are true in Rh D grouping
- Albumin tube checks for anti-D
 - Reverse grouping is not done
 - Reverse grouping checks for other rhesus antibodies
 - The albumin tube is a negative control
25. The term avidity refers to?
- The number of binding sites
 - The specificity of the antibody
 - The amount of antibody
 - The amount of antigen
26. Preparation of sera for blood grouping includes the following processes except
- Donor identification and screening
 - Sera collection and preparation
 - Antigen screening
 - Tests for sera suitability

27. Useful recovery of these antibodies are important in the following processes except?
- Antibody Identification
 - Antigenic stimulation
 - Confirmation of antibody specificity
 - Separation of Antibody mixtures
28. The bonds formed during antigen antibody binding are never?
- Ionic
 - Covalent
 - Hydrophobic
 - Hydrogen
29. Due to the volatility of ether, the tube contents may boil during the heating phase. The remedy to this is?
- Remove tube from water bath until boiling stops
 - Continue stirring
 - Continue bubbling air through the eluate
 - Stop the elution technique
30. Which of the following is a major reason for preparation of standard sera?
- Test for presence of specific antibodies
 - Test for the presence of specific antigens
 - Identify presence of autoantibodies
 - Describe autoimmune disease
31. Immune antibodies are obtained from?
- All individuals at any given time
 - Sensitized individuals
 - Secretors only
 - All non-secretors
32. The following is true concerning titre for anti-D
- Includes the Anti Human Globulin reaction
 - Does not exceed 1:64
 - Is important in Rh negative mothers
 - Is not important in pregnancy

33. Labeling of sera may be attained in any of the following except?
- Use of coloured bottles
 - Use of coloured dyes
 - Use of adhesive labels
 - Use of indelible ink
34. During titration of anti-D the best results may be obtained by?
- Testing to room temperature
 - Warming to 37°C
 - Using 22% albumin
 - Refrigeration of the samples
35. High titred anti-D sera in Rh D Negative mothers may result in the following except
- Severe HDNB
 - Normal birth
 - Induced Labour
 - Exchange transfusion for neonates
36. Factors leading to false results in serum grouping include the following except?
- Haemolyzed A or B cells
 - Fresh patients serum
 - Forgetting to add patients serum
 - Strong rouleaux factors
37. The presence of the A₁ antigen may be detected by the use of?
- Primed serum
 - Anti-A serum
 - Anti-A₁ Lectin
 - Ulex europaeus.
38. A most significant limitation of crossmatch is that
- It is able to prevent sensitization
 - It will detect antibodies in serum in the donor
 - Most antibodies are detected in the many phases
 - It is not able to prevent sensitization of the recipient

39. Categories of errors in blood group serology includes the following except?

- a. Clerical errors
- b. Clinical errors
- c. Random errors
- d. Technician errors

40. Red cells for serology maybe suspended in?

- a. Sugars
- b. Saline
- c. Blood group O serum
- d. Blood group A serum

Section B

41.

- a. List down five blood group system antibodies reacting at 37⁰C 5marks
- b. Outline the direct antiglobulin technique 7 marks
- c. Describe labels used to identify prepared sera 8 marks

42.

- a. Outline the procedure for ABO reverse grouping 12 marks
- b. Discuss the process of identification of antibodies using cell panels 8 marks

43. Discuss crossmatch 20mks