



# TECHNICAL UNIVERSITY OF MOMBASA

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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:**AUGUST2019

**TIME:**2HOURS

**DATE:**Pick Date Aug2019

## 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.**

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## Section A

1. The following is false concerning lectins
  - a. Lectins are agglutinogens
  - b. Lectins are agglutinins
  - c. Lectins are majorly used during elution techniques
  - d. 'a' and 'b' are false
2. The following antigens do not exhibit dosage effect
  - a. K
  - b. Jk<sup>a</sup>
  - c. D
  - d. E

3. When the mother is blood group A<sub>2</sub> and the father blood group O the following blood types are not possible
  - a. A<sub>1</sub>
  - b. A<sub>2</sub>
  - c. O
  - d. A<sub>2</sub>B
4. Titration of anti-D may be done so as to?
  - a. To obtain anti-D for serum grouping
  - b. Determine anti-D in foetal serum
  - c. Obtain anti-C for *trans* detection
  - d. Use antihuman globulin
5. To make 2% Red cell suspension we need \_\_\_mls of saline and \_\_\_\_mls of packed cells
  - a. 5 and 0.1
  - b. 4.9 and 0.2
  - c. 2.8 and 0.2
  - d. 9.8 and 0.2
6. The reaction of IgM in different media is as follows; which statement is false?
  - a. Immune IgM reacts more strongly in saline
  - b. Natural IgM reacts strongly in saline
  - c. Immune IgM reacts more strongly in serum
  - d. Natural IgM reacts strongly in serum and saline
7. The electric potential that pushes red cells apart is also known as
  - a. Theta potential
  - b. Isoelectric point
  - c. Zeta potential
  - d. Ionic strength
8. The following are known Rh blood group antigens except
  - a. c
  - b. d
  - c. D
  - d. E

9. The following is characteristic of IgG
- Have a J-chain
  - Have a molecular weight of 220000
  - Cannot be transferred through the placenta
  - They resist denaturization at 56<sup>0</sup>C
10. In blood grouping the following may cause false positive results except
- Dirty and cloudy tubes
  - Cold autoantibodies
  - Impotent sera
  - Rouleaux factors
11. The elution technique employing heat as the elution agent attempts to recover the following antibodies
- IgA anti-A or anti-B in Hemolytic disease of the newborn
  - IgM anti-A in transfusion reactions
  - IgG anti-D during Rhesus grouping
  - IgG anti-A,B in blood group O mothers
12. The following solvents have been used for elution except?
- Digitonin
  - Xylene
  - Cold acid
  - Benzene
13. Serum purification methods include the following except?
- Filtration
  - Absorption
  - Reverse osmosis
  - Centrifugation
14. The following is true in testing for avidity
- This is time taken for antibody to cause visible agglutination
  - Avid sera react after 15minutes
  - Avid sera react within 15seconds
  - Centrifugation is used in determining avidity

15. During titration, dilution refers to?
- Mixing known serum and saline volumes
  - Mixing known serum and albumin volumes
  - Mixing known cell volumes with saline
  - Mixing known serum volumes with Cells
16. Sera may be refrigerated so as to avoid the following
- Thawing
  - Deterioration
  - Usage
  - Mishandling
17. To Warming of ABO blood group antibodies to 37°C results in?
- Good results
  - False positive results
  - False negative results
  - Good agglutination
18. The presence of free hemoglobin in supernatant serum during grouping means that?
- There was antigen-antibody reaction
  - There was contamination in the Red Cells
  - There was no reaction
  - The serum used was inappropriate
19. The following statements are true concerning subgroups of A except?
- A<sub>1</sub> is the most reactive of all the subgroups
  - 20% of all A blood is A<sub>1</sub>
  - Subgroups of A other than A<sub>1</sub> show weak agglutination
  - A<sub>1</sub> genotypes include A<sub>1</sub>A<sub>1</sub>, A<sub>1</sub>O and A<sub>1</sub>A<sub>2</sub>
20. Potent cold autoagglutinins are predominantly
- IgM anti-I
  - IgM anti-P
  - Donath Landsteiner
  - Complement fixing

21. The following statement is false concerning storage of sera
- Sodium azide is used as a preservative
  - Freezing of sera is not recommended
  - Potency of sera cannot exceed two years
  - Constant thawing affects potency of sera
22. The following statements are true concerning storage of sera
- Sodium azide is used as a preservative
  - Freezing of sera is recommended
  - Potency of sera do not exceed two years
  - Constant thawing affects potency of sera
23. The following is true about cold autoantibodies except?
- Both anti-I and anti-i have been implicated
  - The harm caused is relative to temperature
  - There are no harmful cold autoagglutinins
  - Harmless cold autoagglutinins are reactive only up to 10<sup>0</sup>C to 15<sup>0</sup>C
24. The following bonds formed during antigen-antibody binding
- Hydrophobic bonds
  - Van der waal forces
  - Covalent bonds
  - Hydrophilic bonds
25. The following are properties of anti-D antibody except
- Predominantly IgG
  - They may not cause HDN
  - They may cause HDN
  - It is an immune antibody
26. The ABO antibody found in blood group "O" mothers is
- Predominantly IgG
  - Always IgG
  - Is never anti-A
  - Is never anti-B
27. Factors leading to false agglutination in serum grouping include?

- a. Correct labelling
  - b. Strong Rouleaux factors
  - c. Fresh patient serum
  - d. Forgetting to add known cells
28. The sequence of separation in the ether tube is as follows (from top to bottom)
- a. Deposits, Ether, Stroma, Hb stained eluate
  - b. Ether, Stroma, Hb stained eluate, Deposits
  - c. Ether, Deposits, Stroma, Hb stained eluate
  - d. Hb stained eluate Ether, Stroma, , Deposits
29. Thawing conditions during the freeze thaw technique include the following
- a. Running water at 0<sup>0</sup>C
  - b. Running water at 37<sup>0</sup>C
  - c. Water bath at 37<sup>0</sup>C
  - d. Water bath at 0<sup>0</sup>C
30. Preparation of sera entails the following except?
- a. Donor Identification and screening
  - b. Tests for suitability of sera
  - c. Cell grouping
  - d. Sera purification
31. It is important to use different sell strengths according to the mode of performing the test.  
Therefore,
- a. 40% cell suspensions are used for tile techniques
  - b. 4% cell suspensions are used for tube techniques
  - c. 4% cell suspensions are used for slide techniques
  - d. 40% cell suspensions are used for tube techniques
32. False results during titration maybe encountered as a result of the following except?
- a. Transferring bubbles
  - b. Saline diluent' carry over
  - c. Correct incubation conditions
  - d. Incorrect cell suspension concentrations

33. Anti-sera are dispensed into small bottles after preparation for the following reason
- Specificity may be maintained
  - Potency may be guarded
  - Prolong the shelf life of a given batch
  - It may be easily frozen
34. Anti-sera that have lost potency as a result of inappropriate storage temperatures maybe categorized as?
- Clerical error
  - Clinical error
  - Storage error
  - Random error
35. The effect of hard centrifugation during grouping include the following
- False negative results
  - Difficulty in re-suspending cells
  - Strengthening of weak bonds
  - Removal of labels
36. The albumin tube in Rh-D grouping is used as?
- A positive control
  - A negative control
  - A false positive tube
  - Show rouleaux
37. The following statements are true of the DU test
- It is a direct antiglobulin test
  - It is an Indirect antiglobulin test
  - Antibodies are coated in-vivo
  - Cells are never washed
38. Immune antibody titration may be employed in the following conditions except?
- To obtain anti-D for cell grouping
  - To determine anti-D titre in Rh D negative mothers
  - ABO blood grouping
  - Testing for specificity

39. The purpose of performing the cell and serum grouping together is?

- a. To check for the storage errors
- b. Detect the presence of weak agglutinogens
- c. Remove unwanted antibodies
- d. To check for technician errors

40. In serology, which of the following refers to normal errors?

- a. Inherent errors
- b. Extrinsic errors
- c. Equipment malfunction
- d. Non conformity to the Standard Operating Procedures

#### Section B

41.

- a. List down five elution methods used in blood transfusion techniques 5marks
- b. Outline the heat elution technique 7 marks
- c. Describe 4 factors that are associated with errors during elution 8 marks

42.

- a. Outline the procedure for indirect antiglobulin testing 12 marks
- b. Discuss the four categories of error in blood group serology 8 marks

43. Discuss the preparation of sera for blood grouping 20mks