



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL LABORATORY SCIENCE

AML 2206 : BLOOD TRANSFUSION TECHNIQUES

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

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. Potent cold autoagglutinins are predominantly
 - a. IgM anti-I
 - b. IgM anti-P
 - c. Donath Landsteiner
 - d. Complement fixing
2. The puncture of arteries during donation may result in the following except?
 - a. Severe blood leakage
 - b. Extensive bleeding
 - c. Slow filling of the Bag
 - d. Marked cyanosis and nausea

3. The following statement is false concerning storage of sera
 - a. Sodium azide is used as a preservative
 - b. Freezing of sera is not recommended
 - c. Potency of sera cannot exceed two years
 - d. Constant thawing affects potency of sera
4. Avid sera fit for use in blood grouping will show visible agglutination within the following time range
 - a. Within 15minutes
 - b. Between 2 and 15minutes of exposure
 - c. At 2 – 15 seconds of exposure
 - d. In albumin only
5. The following statements are true concerning storage of sera
 - a. Sodium azide is used as a preservative
 - b. Freezing of sera is recommended
 - c. Potency of sera do not exceed two years
 - d. Constant thawing affects potency of sera
6. The following statement is false
 - a. Reverse D-grouping is done to check for Rh antibodies
 - b. Anti-D gives a strong agglutination at 37⁰C
 - c. Albumin is used as a negative control in Rh typing
 - d. Auto-antibodies may give false positive results in Rh typing
7. The following is true about cold autoantibodies except?
 - a. Both anti-I and anti-i have been implicated
 - b. The harm caused is relative to temperature
 - c. There are no harmful cold autoagglutinins
 - d. Harmless cold autoagglutinins are reactive only up to 10⁰C to 15⁰C
8. The following statements are true in Rh D grouping
 - a. Albumin tube checks for anti-D
 - b. Reverse grouping is not done
 - c. Reverse grouping checks for other rhesus antibodies
 - d. The albumin tube is a negative control
9. The following bonds formed during antigen-antibody binding
 - a. Hydrophobic bonds

- b. Van der waal forces
 - c. Covalent bonds
 - d. Hydrophilic bonds
10. The term avidity refers to?
- a. The number of binding sites
 - b. The specificity of the antibody
 - c. The amount of antibody
 - d. The amount of antigen
11. The following are properties of anti-D antibody except
- a. Predominantly IgG
 - b. They may not cause HDN
 - c. They may cause HDN
 - d. It is an immune antibody
12. The ABO antibody found in blood group “O” mothers is
- a. Predominantly IgG
 - b. Always IgG
 - c. Is never anti-A
 - d. Is never anti-B
13. Preparation of sera for blood grouping includes the following processes except
- a. Donor identification and screening
 - b. Sera collection and preparation
 - c. Antigen screening
 - d. Tests for sera suitability
14. 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
15. Useful recovery of these antibodies are important in the following processes except?
- a. Antibody Identification
 - b. Antigenic stimulation
 - c. Confirmation of antibody specificity
 - d. Separation of Antibody mixtures

16. The bonds formed during antigen antibody binding are never?
- Ionic
 - Covalent
 - Hydrophobic
 - Hydrogen
17. The sequence of separation in the ether tube is as follows (from top to bottom)
- Deposits, Ether, Stroma, Hb stained eluate
 - Ether, Stroma, Hb stained eluate, Deposits
 - Ether, Deposits, Stroma, Hb stained eluate
 - Hb stained eluate Ether, Stroma, , Deposits
18. 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
19. Thawing conditions during the freeze thaw technique include the following
- Running water at 0°C
 - Running water at 37°C
 - Water bath at 37°C
 - Water bath at 0°C
20. 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
21. Preparation of sera entails the following except?
- Donor Identification and screening
 - Tests for suitability of sera
 - Cell grouping
 - Sera purification
22. Immune antibodies are obtained from?
- All individuals at any given time
 - Sensitized individuals

- c. Secretors only
 - d. All non-secretors
23. 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
24. The following is true concerning titre for anti-D
- a. Includes the Anti Human Globulin reaction
 - b. Does not exceed 1:64
 - c. Is important in Rh negative mothers
 - d. Is not important in pregnancy
25. 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
26. Labeling of sera may be attained in any of the following except?
- a. Use of coloured bottles
 - b. Use of coloured dyes
 - c. Use of adhesive labels
 - d. Use of indelible ink
27. Anti-sera are dispensed into small bottles after preparation for the following reason
- a. Specificity may be maintained
 - b. Potency may be guarded
 - c. Prolong the shelf life of a given batch
 - d. It may be easily frozen
28. During titration of anti-D the best results may be obtained by?
- a. Testing to room temperature
 - b. Warming to 37⁰C
 - c. Using 22% albumin
 - d. Refrigeration of the samples
29. High titred anti-D sera in Rh D Negative mothers may result in the following except

- a. Severe HDNB
 - b. Normal birth
 - c. Induced Labour
 - d. Exchange transfusion for neonates
30. Anti-sera that have lost potency as a result of inappropriate storage temperatures maybe categorized as?
- a. Clerical error
 - b. Clinical error
 - c. Storage error
 - d. Random error
31. The effect of hard centrifugation during grouping include the following
- a. False negative results
 - b. Difficulty in re-suspending cells
 - c. Strengthening of weak bonds
 - d. Removal of labels
32. Factors leading to false results in serum grouping include the following except?
- a. Haemolyzed A or B cells
 - b. Fresh patients serum
 - c. Forgetting to add patients serum
 - d. Strong rouleaux factors
33. The albumin tube in Rh-D grouping is used as?
- a. A positive control
 - b. A negative control
 - c. A false positive tube
 - d. Show rouleaux
34. The following statements are true of the DU test
- a. It is a direct antiglobulin test
 - b. It is an Indirect antiglobulin test
 - c. Antibodies are coated in-vivo
 - d. Cells are never washed
35. The presence of the A₁ antigen may be detected by the use of?
- a. Primed serum
 - b. Anti-A serum
 - c. Anti-A₁ Lectin

- d. *Ulex europaeus*.
36. A most significant limitation of crossmatch is that
- a. It is able to prevent sensitization
 - b. It will detect antibodies in serum in the donor
 - c. Most antibodies are detected in the many phases
 - d. It is not able to prevent sensitization of the recipient
37. Immune antibody titration may be employed in the following conditions except?
- a. To obtain anti-D for cell grouping
 - b. To determine anti-D titre in Rh D negative mothers
 - c. ABO blood grouping
 - d. Testing for specificity
38. Categories of errors in blood group serology includes the following except?
- a. Clerical errors
 - b. Clinical errors
 - c. Random errors
 - d. Technician errors
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. Red cells for serology maybe suspended in?
- a. Sugars
 - b. Saline
 - c. Blood group O serum
 - d. Blood group A serum

Section B

41. Using the chart below identify the antibodies present in the given serum (show identification steps/pattern)
(20mks)

Cell Number	D	C	E	c	e	f	M	N	S	s	P1	Lea	Leb	K	k	Fya	Fyb	Jka	Jkb	IS	37	AHG
1	0	+	0	+	+	+	+	+	+	+	+	+	0	0	+	+	+	+	0	0	0	0
2	+	+	0	0	+	0	+	+	0	+	+	0	+	0	+	0	+	+	0	0	0	0
3	+	+	0	0	+	0	+	0	+	+	+	0	+	+	+	+	+	0	+	0	0	1+
4	+	0	+	+	0	+	+	+	0	+	+	+	0	0	+	0	+	+	+	0	0	0
5	0	0	+	+	+	+	0	+	+	0	+	0	+	0	+	0	+	+	+	0	0	0
6	0	0	0	+	+	+	+	0	0	+	+	0	+	0	+	+	0	+	+	0	0	0
7	0	0	0	+	+	+	+	+	+	+	+	+	0	0	+	0	+	0	+	0	0	0
8	0	0	0	+	+	+	+	+	0	+	+	0	0	+	+	0	0	+	0	0	0	1+
9	0	0	0	+	+	+	+	0	+	0	0	+	0	0	+	0	+	+	+	0	0	0
10	0	0	0	+	+	+	+	0	0	+	0	0	+	+	+	+	0	+	0	0	0	1+
11	0	0	0	+	+	+	0	+	0	+	0	0	+	0	+	+	+	+	+	0	0	0
Patient Typing																				0	0	0
INTERPRETATION:																						

42. Discuss the following

- a. Factors contributing to false negative results in serology 10mks
- b. The neutralization test 10mks

43. Answer the following questions on blood transfusion techniques

- a. List down types of elution techniques 5mks
- b. Describe the procedure for subgrouping of A₁ 10mks
- c. Outline the procedure for avidity 5mks