KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES
FIRST SEMESTER, 2016/2017
(JANUARY - APRIL, 2017)

MELS 243: BLOOD TRANSFUSION SCIENCES I

STREAM: Y2 S1 **TIME: 3 HOURS**

DAY: FRIDAY, 9.00-12.00 PM **DATE: 12/05/2017**

INSTRUCTIONS

1. ***Do not write anything on this question paper.***

SECTION A (ANSWER ALL QUESTIONS)-20 MARKS

1. Which one of the following is the anticoagulant of choice for the storage of whole blood at a temperature of 3°c-6°c for up to 30 days for transfusion purposes?
   A. Calcium oxalate
   B. Heparine
   C. EDTA
   D. CPDA
   E. Ammonium phosphate
2. Who among the following discovered the Rhesus blood group system?
   A. Hisfield
   B. Castello
   C. Carl Landsteiner and Weiner
   D. Marcacus
   E. Fisher Race and Castello
3. Which of the following describes forward grouping technique?
   A. Known antibodies are used to detect antigen on red blood cell
   B. Known cells are used to detect antibodies in the serum
   C. Washing cell using large volume of saline
   D. Mixing cell and physiological saline in a test tube.
   E. Reacting cell with AHG
4. Which of the following is NOT a phase in cross-match?
   A. Saline room temperature
   B. Saline at 37°c phase.
   C. Coombs at37°c phase.
   D. Albumin at 37°c phase
   E. Albumin at room temperature phase
5. The following are classes of immunoglobulin except?
   A. Ig A
   B. Ig E
   C. Ig F
   D. Ig G
   E. Ig M
6. In Kenya, donated blood should be screened for the following transmissible diseases except?

A. HIV
B. Syphylis
C. Hepatitis B
D. Hepatitis C
E. Malaria

7. Which one of the following is NOT a source of error in Rhesus typing?
   A. Use of high cell concentration.
   B. Centrifugation at a very low speed for a short time.
   C. Excessive centrifugation.
   D. Use of very low cell concentration.
   E. Use of impotent or contaminated reagent
8. Which of the following is NOT true about the Rhesus Null phenotype?
   A. Their RBCs are devoid of all Rhesus antigens
   B. The phenotype is denoted as _ _ _
   C. The can receive blood from Rhesus negative donors
   D. They can only receive blood from fellow Rhesus Null phenotypes
   E. They have cell membrane defects.
9. What is the appropriate volume of donated blood?
   A. 450 ml.
   B. 1 litre.
   C. 200 ml.
   D. 225 ml.
   E. 350 ml.
10. The role of albumin in blood transfusion science techniques is to?
   A. Enhance antibody antigen reaction.
   B. Increase antibody titre.
   C. Increase antigen titre.
   D. Neutralise antgen antibody reaction.
   E. To provide optimum pH for the reaction.
11. Which of the following antibody belong to IgG class of immunoglobulin?
   A. Anti D
   B. Anti A.
   C. Anti B
   D. Anti AB
   E. Anti C.
12. Which of the following is the possible genotypes is for the phenotype A?
   A. AA and OO.
   B. AA and AO.
   C. BB and BO.
   D. AB.
   E. AB and OO.
13. Which of the following alleles are co-dominant
   A. A/O
   B. B/O
   C. A/B
   D. A/A.
   E. B/B
14. Which of the following transfusion techniques can be used to determine the strength of an offending antibody responsible for a transfusion reaction?
   A. Antibody screening

B. Antibody titration
C. Antibody identification
D. Indirect Coombs test.
E. Direct Coombs test.

15. Which of the following special techniques used in blood transfusion refers to the removal of antibodies that had been adsorbed onto red cells either invitro or invivo?
    A. Elution
    B. Absorption
    C. Adsorption
    D. Suspension
    E. Precipitation
16. Which of the following is true about lectin A_1?
    A. It agglutinate cells with A_1
    B. It agglutinate all A cells
    C. It agglutinate all B cells
    D. It agglutinate all AB cells
    E. It agglutinate all O cells
17. ABO genes are found on chromosome number?
    A. 9
    B. 23
    C. 46
    D. 2
    E. 7
18. Which of the following is not a Bombay phenotype?
    A. A_1
    B. A_1B
    C. A_2
    D. A_2B
    E. AB
19. Which of the following enzymes is used in transfusion science?
    A. Amylase
    B. alanine aminotransferase
    C. Papain
    D. Aspartate aminotransferase
    E. Alkaline phosphatase
20. Which of the following gene is an amorph?
    A. O
    B. A
    C. B
    D. H
    E. Se

SECTION B-STRUCTURED QUESTIONS (ANSWER ALL QUESTIONS)-20 MARKS

1) Using a well labelled diagram, briefly describe the structure of the antibody molecule [5 marks]
2) Briefly discuss the Rhesus antigens [5 marks]
3) Outline the purpose and principle involved in determining secretor status [5 marks]
4) Write short notes on AHG [5 marks]

SECTION C (QUESTION ONE IS COMPULSORY THEN CHOOSE ANY OTHER QUESTION)-30 MARKS

1) Describe the sequence of events involved in the synthesis of red cell antigens ,beginning wi the precursor substance [15 marks]
2) Briefly discuss the preparation and storage of packed red cell, fresh frozen plasma and plate concentrates giving two indications of each blood product. [15 marks]
3) Compare and contrast natural and immune antibodies [15 marks]