



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACEUTICAL SCIENCES WITH INFORMATION TECHNOLOGY

MAIN CAMPUS

PMT 319: BLOOD TRANSFUSION SCIENCE

Date: 6th March, 2018

Time: 12.00 - 3.00pm

INSTRUCTIONS:

- Answer ALL Questions in Section A and B
- Answer Question ONE and any ONE in Section C



SECTION A (ANSWER ALL QUESTIONS)-40 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 at 37°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. Syphilis
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 shows the correct composition of the H-active substance?
A. The precursor substance and L-Fucose
B. The precursor substance and D-Galactose
C. The precursor substance and N-Acetylgalactosamine
D. The precursor substance and D-Fucose
E. The precursor substance and L-Galactose
9. What is the Once a baby affected with severe Haemolytic Disease of the newborn (HDNB), the greatest concern is?
A. Built-up of unconjugated bilirubin in the brain
B. Built-up of conjugated bilirubin in the brain
C. The presence of positive direct antiglobulin test
D. Presence of a positive antibody screen.
E. None of the above
10. Development of anaemiaThe 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 antigen 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 A₁?
- A. It agglutinate cells with A₁
 - 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. Direct globulin test is routinely used to investigate all the following EXCEPT?
- A. Haemolytic transfusion reaction
 - B. Autoimmune haemolytic anaemia
 - C. Unexpected serum alloantibody
 - D. Haemolytic disease of the newborn
 - E. To predict the occurrence of HDN
18. Which of the following is the terminal end sugar in the formation of blood group O?
- A. Fructose
 - B. L-Fucose
 - C. D-Galactose
 - D. N-Acetylgalactosamine
 - E. L-Galactose
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) List 5 differences between intravascular and extravascular haemolytic transfusion reactions
[5 marks]
- 2) Briefly discuss the Rhesus antigens
[5 marks]
- 3) Outline the sources of error in forward ABO grouping
[6 marks]
- 4) Outline 4 applications of antihuman globulin (AHG) test
[4 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 with the precursor substance
[15 marks]
- 2) Briefly discuss the preparation and storage of packed red cell, fresh frozen plasma, platelet concentrates and cryoprecipitate giving two indications of each blood product.
[15 marks]
- 3) Compare and contrast Haemolytic Disease of the Newborn (HDN) due to ABO and Rhesus antibodies
[15 marks]