

Q.1. The Ror genes are equivalent to the following Fisher-race genes:

- a) Dce/dce
- b) dce/dce
- c) Dce/Dce
- d) dce/Dce
- e) DCE/Dce

Q.2. The 1gG is:

- a) Monomeric immunoglobulin
- b) Pentameric immunoglobulin
- c) A Basic structure of an immunoglobulin
- d) Dimeric immunoglobulin
- e) Trimeric immunoglobulin

Q.3. The zone where there is complete agglutination of both antigens and antibodies and neither any is in excess is called:

- a) Zone of antibody excess
- b) Zone of equivalence
- c) Zone of antigen excess
- d) Zone of antibody antigen excess
- e) Zone of low antigen site

Q.4. The antibodies that cause haemolysis are called:

- a) Agglutinins
- b) Haemolysins
- c) Haemolysinogen
- d) Agglutinogen
- e) Precipitanogen

Q.5. The blood grouping whereby A cells and B cells are used is also known as:

- a) Reverse typing
- b) Back typing
- c) Front typing
- d) Forward typing
- e) Direct typing

Q.6. A₂ cells react with which of the following anti-serum?

- a) Anti A
- b) Anti A₁
- c) Anti A₂ B
- d) Anti B
- e) Anti A₁ B

- Q.7. When universal donor is mated with a universal recipient, what are the possible phenotypes?
- a) O^{+ve}
 - b) AB^{-ve}
 - c) A^{+ve}
 - d) B^{+ve}
 - e) AB^{+ve}
- Q.8. When allelic genes on the same locus of the chromosome are not alike, they (genes) are said to be:
- a) Recessive
 - b) Co-dominant
 - c) Homozygous
 - d) Heterozygous
 - e) Dominant
- Q.9. The specificity of the antigen is determined by:
- a) Polysaccharide portion
 - b) Amino-acid portion
 - c) Carboxyle-group
 - d) Galactosamine
 - e) Oligosaccharide
- Q.10. The A_1 cells react with which of the following antisera strongly?
- a) Anti A_1
 - b) Dolichous biflorus
 - c) Anti B
 - d) Anti $A_2 B$
 - e) A_1 serum
- Q.11. The blood group B persons consist of two antibodies:
- a) Anti A and anti B
 - b) Anti A and anti A_1
 - c) Anti A and anti H
 - d) Anti B and anti A_x
 - e) Anti A and anti A_3
- Q.12. The phenotype A_1 has specificity to the following antibodies:
- a) Anti B
 - b) Anti A_1
 - c) Anti A
 - d) Anti A_2
 - e) Anti A_x

Q.13. The symbol triangle represents which of the following sugars?

- a) N-acetylgalactosamine
- b) N - acetyl glucosamine
- c) L-fucose
- d) D-galactose
- e) Oligosaccharide

Q.14. A person of phenotype A_2 has either of the following genotypes:

- a) $A_1 A_1$
- b) $A_2 A_2$
- c) $A_2 O$
- d) $A_1 O$
- e) $A_2 B$

Q.15. Blood group AB is determined by the following sugars:

- a) D- galactose
- b) N-acetyl-glucosamine
- c) L-fucose
- d) Oligosaccharide
- e) N-acetyl galactose

Q.16. The ABO sub-groups are separated by use of:

- a) Anti A
- b) Anti B
- c) Anti A_1
- d) Anti H
- e) Anti - A_x

Q.17. The father of blood group B^{-ve} is mated with the mother of blood group O^{-ve} . What are the possible phenotypes of the offspring?

- a) A^{-ve}
- b) B^{-ve}
- c) B^{+ve}
- d) O^{-ve}
- e) O^{+ve}

Q.18. The ABO blood group system was discovered by:

- a) Karl Landsteiner
- b) Fisher-race
- c) Weiner
- d) Von-decastello and Hisozfield
- e) Von-Dungein

Q.19. Enzymes are used in blood transfusion to:

- a) Demonstrate ABO antibodies
- b) To increase the speed of antigen-antibody reaction
- c) To increase the avidity of antibodies especially 1gla class
- d) Neutralize antibodies in ABO blood group system
- e) Demonstrate sensitising antibodies

Q.20. ABO tube method grouping:

- a) Uses 10% cells suspension
- b) Uses 4% cells suspension
- c) Uses 6% cells suspension
- d) Uses 30% cells suspension
- e) Uses 20% cells suspension

Q.21. The papain enzyme is extracted from:

- a) Pineapples
- b) Fig tree
- c) Paw – paw fruits
- d) Pancreas
- e) Pig stomach

Q.22. The following genes control Rhesus blood group:

- a) A
- b) B
- c) O
- d) D
- e) C

Q.23. Mating of homozygous A and heterozygous B will result with an offspring of the following genotype:

- a) AB
- b) BO
- c) BB
- d) AA
- e) AO

Q.24. Which of the following blood groups have two agglutinogens?

- a) O
- b) A₁
- c) AB
- d) B
- e) A₂

Q.25. The following Fisher-race complex antigen DCE and Dce are equivalent to which of the following Weiner antigens?

- a) Rh_z
- b) R_z
- c) rh₂
- d) r₂
- e) Rh_o

Q.26. The following Fisher-race genotype CDE/CdE and Cde/CdE are equivalent to the following Weiner genotype:

- a) R_z ry
- b) R₁ ry
- c) Ro r¹
- d) R_z R_z
- e) R_o R₁

Q.27. The following are buffer solutions used in the Enzyme techniques:

- a) Hendry's buffer solution
- b) Sorensen's phosphate buffer solution
- c) Barbitone buffer solution
- d) Citrate saline buffer solution
- e) Trio-buffer solution

Q.28. If blood group O serum is mixed with AB cell there will be:

- a) No agglutination
- b) Agglutination with antibody A and antigen A
- c) Agglutination with antibody B and antigen B
- d) Agglutination with antibody A and antigen B
- e) Antibody A is neutralised by A cells

SECTION TWO

Q.1. Describe in detail the differences between immune antibodies and natural antibodies (20 marks)

Q.2. Write short notes on the following:

- a) Variants of D-antigen
 - b) Agglutination
 - c) Haemolysis
 - d) Antigenicity
- (20 marks)

Q.3. Write briefly on the following:

- a) Serum
 - b) Hapten
 - c) 22% bovine albumin
 - d) Coombs reagents
- (20 marks)