Question Bank (practical Animal Physiology) by Naz Shwan

Osmosis and Cell Membranes

1. What is osmosis?

A) Movement of water from low to high concentration

B) Movement of solutes from high to low concentration

C) Movement of water from high to low concentration

D) Movement of solutes from low to high concentration

Answer: C

2. Osmosis occurs through which type of membrane?

A) Permeable membrane

B) Semipermeable membrane

C) Impermeable membrane

D) None of the above

Answer: B

3. What is osmotic pressure?

A) Pressure needed to stop osmosis

B) Pressure generated by solutes

C) Atmospheric pressure

D) Pressure generated by diffusion of solutes

Answer: A

4. Which solution causes a cell to shrivel?

A) Hypotonic solution

B) Isotonic solution

C) Hypertonic solution

D) None of the above

Answer: C

5. Which of the following best describes a hypotonic solution?

A) Higher solute concentration than the cell

B) Lower solute concentration than the cell

C) Equal solute concentration as the cell

D) No solutes present

Answer: B

6. What happens to a red blood cell in a hypotonic solution?

A) It shrivels

B) It remains the same

C) It swells and bursts

D) It divides

Answer: C

7. Which type of membrane allows only certain substances to pass through it?

A) Permeable membrane

B) Semipermeable membrane

C) Selectively permeable membrane

D) Impermeable membrane

Answer: C

8. Which organ regulates the concentration of blood to prevent red blood cells from bursting?

A) Heart

B) Liver

C) Kidneys

D) Lungs

Answer: C

9. What is the primary role of osmoregulation?

A) Regulating solute concentration in the environment

B) Regulating water balance within cells

C) Regulating temperature within cells

D) Regulating pH within cells

Answer: B

10. In which part of the nephron does reabsorption of water mainly occur through osmosis?

A) Bowman's capsule

B) Proximal convoluted tubule

C) Loop of Henle

D) Collecting duct

Answer: B

Blood Groups and Blood Typing

11. Who discovered the ABO blood group system?

A) Alexander Fleming

B) Karl Landsteiner

C) Louis Pasteur

D) Gregor Mendel

Answer: B

12. What are the antigens present on the surface of red blood cells in blood group AB?

A) Only A antigens

B) Only B antigens

C) Both A and B antigens

D) Neither A nor B antigens

Answer: C

13. Which blood group has no A or B antibodies in the plasma?

A) Blood group A

B) Blood group B

C) Blood group AB

D) Blood group O

Answer: C

14. What antibodies are found in the plasma of blood group O?

A) A antibodies

B) B antibodies

C) Both A and B antibodies

D) No antibodies

Answer: C

15. What blood group can a person with blood type A safely receive?

A) A and O

B) A and B

C) AB and O

D) B and AB

Answer: A

16. What happens when a person with Rh blood receives Rh+ blood?

A) No reaction occurs

B) The Rh blood attacks the Rh+ blood

C) The Rh blood becomes Rh+

D) The Rh+ blood attacks the Rh blood

Answer: B

17. What is the Rh factor?

A) A protein molecule in plasma

B) An antigen present on red blood cells

C) An antibody in plasma

D) A type of white blood cell

Answer: B

18. How many major blood group systems are primarily used for blood transfusions?

A) One

B) Two

C) Three

D) Four

Answer: B

19. Which blood group is known as the universal donor?

A) A

B) B

C) AB

D) O

Answer: D

20. Which blood group is known as the universal recipient?

A) A

B) B

C) AB

D) O

Answer: C

21. What is the genotype of a person with blood group O?

A) AA

B) AO

C) BB

D) OO

Answer: D

22. Which antibodies are present in the serum of blood group A individuals?

A) AntiA

B) AntiB

C) AntiAB

D) None

Answer: B

23. What antigen is present on the red blood cells of individuals with blood group B?

A) A antigen

B) B antigen

C) Both A and B antigens

D) Neither A nor B antigens

Answer: B

24. What type of reaction occurs when incompatible blood groups are mixed?

A) Hemolysis

B) Coagulation

C) Agglutination

D) Fibrinolysis

Answer: C

25. What is Rhogam used for?

A) To treat anemia

B) To prevent Rh disease in newborns

C) To increase Rh antibodies

D) To decrease blood pressure

Answer: B

26. Which blood group has neither A nor B antigens?

A) A

B) B

C) AB

D) O

Answer: D

27. Which blood group can receive blood from any other group?

A) A

B) B

C) AB

D) O

Answer: C

28. What is the function of antibodies in the blood?

A) To transport oxygen

B) To fight foreign substances

C) To clot the blood

D) To carry nutrients

Answer: B

29. Which blood group can donate to all other blood groups?

A) A

B) B

C) AB

D) O

Answer: D

30. What is the risk of Rh incompatibility during pregnancy?

A) Erythroblastosis fetalis

B) Hemophilia

C) Leukemia

D) Thalassemia

Answer: A

Red Blood Cells and White Blood Cells

31. What is the primary function of red blood cells (RBCs)?

A) Transporting nutrients

B) Fighting infections

C) Carrying oxygen

D) Clotting the blood

Answer: C

32. Which factor increases the fragility of red blood cells?

A) High pH

B) Low temperature

C) High temperature

D) High humidity

Answer: C

33. What is the consequence of placing RBCs in a hypertonic solution?

A) Cells swell

B) Cells remain unchanged

C) Cells shrivel

D) Cells burst

Answer: C

34. What type of membrane do red blood cells have?

A) Permeable

B) Semipermeable

C) Selectively permeable

D) Impermeable

Answer: C

35. What happens to RBCs in a hypotonic solution?

A) They shrink

B) They remain the same

C) They swell and may burst

D) They divide

Answer: C

36. Which of the following is a

major function of white blood cells (WBCs)?

A) Transporting oxygen

B) Producing antibodies

C) Carrying nutrients

D) Forming blood clots

Answer: B

37. What type of WBC is primarily involved in phagocytosis?

A) Lymphocytes

B) Monocytes

C) Neutrophils

D) Basophils

Answer: C

38. Which WBC type is the least abundant in the blood?

A) Neutrophils

B) Eosinophils

C) Basophils

D) Lymphocytes

Answer: C

39. What is the main role of lymphocytes?

A) Phagocytosis

B) Antibody production

C) Histamine release

D) Blood clotting

Answer: B

40. Which WBC releases histamine during allergic reactions?

A) Neutrophils

B) Basophils

C) Monocytes

D) Eosinophils

Answer: B

41. Which cell type gives rise to platelets?

A) Erythrocytes

B) Megakaryocytes

C) Lymphocytes

D) Monocytes

Answer: B

42. What is the lifespan of a typical red blood cell?

A) 7 days

B) 30 days

C) 60 days

D) 120 days

Answer: D

43. Which of the following increases RBC production?

A) Erythropoietin

B) Insulin

C) Glucagon

D) Cortisol

Answer: A

44. Which WBC is involved in combating parasitic infections?

A) Neutrophils

B) Eosinophils

C) Lymphocytes

D) Monocytes

Answer: B

45. Which blood cell type is primarily involved in clotting?

A) Erythrocytes

B) Leukocytes

C) Platelets

D) Lymphocytes

Answer: C

46. What is the primary function of hemoglobin?

A) Blood clotting

B) Oxygen transport

C) Immune response

D) Nutrient absorption

Answer: B

47. Which organ is primarily responsible for recycling old red blood cells?

A) Liver

B) Kidney

C) Spleen

D) Pancreas

Answer: C

48. What does a high white blood cell count indicate?

A) Anemia

B) Infection or inflammation

C) Dehydration

D) Blood clotting disorder

Answer: B

49. What is the typical shape of a red blood cell?

A) Spherical

B) Biconcave

C) Flat

D) Cuboidal

Answer: B

50. Which component of blood is involved in immune responses and producing antibodies?

A) Erythrocytes

B) Platelets

C) Leukocytes

D) Plasma

Answer: C