



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY

HMP 120: PHYSIOLOGY I

DATE: Monday 2nd April, 2012

TIME: 2.00 p.m. – 4.00 p.m.

INSTRUCTIONS

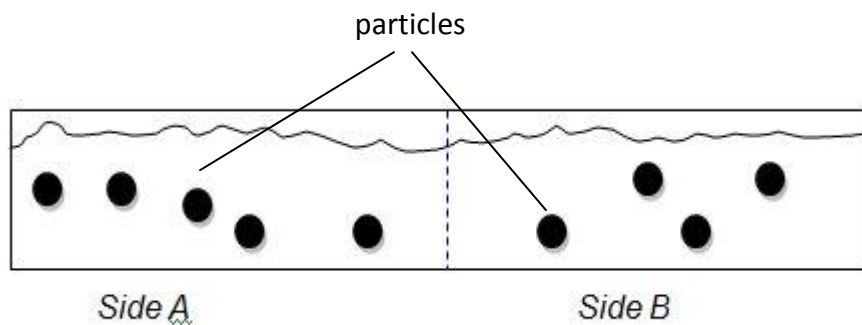
Answer all questions

Answer each section in a separate booklet

SECTION A

1. A (n) _____ is composed of 2 or more tissues with a defined anatomical boundary.
 - A. Organ system
 - B. Organ
 - C. Tissue Complex
 - D. Membrane
2. The smallest structure capable of carrying out all life processes is the
 - A. Gland
 - B. Organ
 - C. Cell
 - D. tissue
3. Homeostasis is maintained primarily via _____ feedback mechanisms.
 - A. Positive
 - B. Negative
 - C. Controlled
 - D. Body

4. Memory, decision making, and issuing commands are functions of _____ tissue.
- Connective
 - Immune
 - Muscle
 - Nervous
5. Which one of the following is true of Myasthenia gravis?
- Antibodies destroy ACH receptors.
 - Hypersensitivity reaction due to circulatory antibodies.
 - It involves the axons supplying the muscle fibers.
 - It is a result of electrical chemical disturbing of the synapse.
6. Oxygen and carbon dioxide are exchanged in the lungs and through all cell membranes by _____.
- osmosis
 - diffusion
 - filtration
 - active transport
7. The diagram below illustrates two aqueous liquids separated by a semipermeable membrane that confines particles but not water. Which one of these statements is true?



- Side A has greater osmotic pressure and water will flow from side A to side B.
 - Side A has greater osmotic pressure and water will flow from side B to side A.
 - Side B has greater osmotic pressure and water will flow from side A to side B.
 - Side B has greater osmotic pressure and water will flow from side B to side A.
8. Which of the following is TRUE?
- The number of negative feedback systems in the body is much less than the number of positive feedback systems in the body
 - Positive feedback is ALWAYS detrimental to one's health
 - Maintenance of blood glucose concentration at homeostatic levels is an example of negative feedback
 - All of the above are TRUE

9. Homeostasis can be considered:
- A. The maintenance of a dynamically stable internal environment
 - B. The maintenance of a static yet stable internal environment
 - C. An internal environment that changes as the external environment changes
 - D. A situation where the degree of internal change is proportional to the square of the degree of external change
10. _____ prevents fluids from seeping between epithelial cells.
- A. Desmosomes
 - B. Hemi-desmosomes
 - C. Glycosaminoglycans
 - D. Tight junctions
11. The following are responsible for membrane potential
- A. Uneven distribution of Na⁺, H⁺ ions.
 - B. Large intracellular proteins anions between ICF and ECF.
 - C. Uneven distribution of Na⁺, K⁺ ions.
 - D. Differential permeability to different ions.
12. Multiple sclerosis occurs when?
- A. Nerve fibers become short.
 - B. Nerve fibers become sclerotic and short.
 - C. Nerve fibers lose myelin.
 - D. Nerve fibers in many locations have more myelin than is required.
13. Which of these can dissolve a blood clot?
- A. Plasmin
 - B. Plasminogen
 - C. Heparin
 - D. Vitamin K
14. What converts fibrinogen to fibrin?
- A. Calcium
 - B. Thromboplastin
 - C. Thrombin
 - D. Prothrombin
15. What is the most important factor that helps maintain blood osmotic pressure?
- A. Electrolytes
 - B. Albumin
 - C. Globulins
 - D. Clotting proteins

16. Which one of these components is a source of serotonin?
- A. Platelets
 - B. Lymphocytes
 - C. Basophils
 - D. Neutrophils
17. What is the most common cancerous condition in children?
- A. Acute myeloid leukemia
 - B. Acute lymphoid leukemia
 - C. Chronic myeloid leukemia
 - D. Chronic lymphoid leukemia
18. is the process that could explain how a red blood cell can be found in urine.
- A. Phagocytosis
 - B. Amoeboid movement
 - C. Diapedesis
 - D. Chemotaxis
19. Iron is stored in the liver in the form of
- A. transferrin
 - B. ferritin
 - C. haemoglobin
 - D. porphyrin
20. A decrease in mean corpuscular volume(MCV) and haemoglobin content (MCH) may be an indication of.....
- A. Megaloblastic anemia
 - B. Microcytic anemia
 - C. Iron deficiency anemia
 - D. Sickle cell anemia

SECTION B

1. Outline the steps involved in protein synthesis (3 marks)
2. Describe briefly the structure and function of the following molecules;
 - a) Deoxyribonucleic acid (DNA) (5 marks)
 - b) Ribonucleic acid (RNA) (5 marks)

3. Outline 4 physiological activities caused by contraction of the muscles in the body. (4 marks)
4. List the phases of action potential of a cardiac muscle fibre. (4 marks)
5. Define the following terms (4 marks)
 - a) Mitosis
 - b) Meiosis
 - c) Euploid
 - d) Aneuploidy
6. Discuss the sequence of events that occurs during the contraction and relaxation of skeletal muscles. (15 marks)
7. Apoptosis is a normal process that involves programmed cell death.
 - a) Give examples of physiological processes in the body that you would attribute to apoptosis. (5 marks)
 - b) What disease conditions can be attributed to abnormal apoptosis processes? (3 marks)
 - c) Define necrosis and elaborate how it differs from apoptosis (2 marks)

SECTION C

1. Discuss the mechanism that regulates erythropoiesis. (5 marks)
2. Anna is a rhesus negative pregnant mother of one. Her first child has blood group B+ve and her husband is rhesus positive. What advice would you give Anna in her second pregnancy? (5 marks)
3. List the various types of immunoglobulins and outline the function of each. (5 marks)
4. What do you understand by the term, 'universal donor' and Universal recipient'? (5 marks)
5. Compare and contrast the intrinsic and extrinsic pathways of the blood coagulation cascade. (10 marks)