STUDENT NAME: ……..……..

STUDENT NUMBER: ……..

University of Ottawa

ANP 1105C

Midterm #2

Date: November 16, 2010 Duration: 1 hr 20 min

Instructor: Joanna Komorowski

INSTRUCTIONS:

1. **51 multiple choice questions** (1 mark/1 correct answer per question) plus **one comparison question** (2 marks) and **one bonus question** (2 marks).

2. Please answer the multiple choice questions on the on the exam and on the computer sheet that is provided

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4. Please **put your name and student number at the top of this page** and at the top of the final page. **Please do not forget to put your course code (ANP 1105C), your surname (last name) and the initials, on the first page of the scantron sheet!!!**

5. Make sure this exam is complete. This exam contains **11 pages.**

6. The excuse of missing a page will not be accepted after the examination.

Good luck!!!!!

1. Hypersecretion of GH in an adult may produce:

A. gigantism
B. fat mass loss
C. goiter
D. dwarfism
E. exophthalmos

2. Anterior pituitary hormones include all but one of the following:

A. growth hormone (GH)
B. antidiuretic hormone (ADH)
C. thyroid stimulating hormone (TSH)
D. luteinizing hormone (LH)
E. follicle stimulating hormone (FSH

3. An example of a long loop negative feedback control would be:

A. suppression of LH production by testosterone
B. suppression of the corticotropin releasing hormone (CRH) by ACTH
C. regulation of insulin levels by glucose
D. regulation of blood calcium levels

4. The integration and regulation centre for the cardiovascular system is in the:

A. brain cortex
B. hypothalamus
C. spinal cord
D. medulla oblongata

5. Which of the following is TRUE?

A. Thyroid hormone receptors are located on the cellular membrane
B. Hormone receptors become up-regulated by persistently high levels of a specific hormone
C. Protein hormones do not require any receptors to exert their effect on DNA and initiate gene transcription
D. Steroid hormones travel in blood bound to albumin and to specific hormone binding globulins

6. The sympathetic division of the autonomic nervous system:

A. is stimulated during a flight or fight stress response
B. is concerned with resting and digesting
C. is responsible for vasoconstriction of most blood vessels
D. both A) and B)
E. both A) and C)

7. The posterior pituitary:

A. is a site of ADH production
B. is the site of storage of the “hormone of love and trust”
C. is linked to the hypothalamus via the hypophyseal portal system
D. A) and B)
E. B) and C)

8. Insulin secretion can be inhibited by:

A. tropic hormones
B. releasing hormones
C. increasing blood glucose levels
D. decreasing blood glucose levels

9. Which of the following statements is TRUE?

A. Metabolic rate and glucose as well as fat metabolism are regulated by both the sympathetic and parasympathetic nervous system.
B. Under stressful conditions, the sympathetic nervous system dominates over the parasympathetic system.
C. Sympathetic cardiac nerves slow down HR whereas parasympathetic nerves increase it
D. The paraympathetic nervous system has a more widespread effect in the body than does the sympathetic nervous system.

10. Protein hormones influence cellular activities by:

A. entering the target cells and directly activating the enzymes
B. activating the second messenger cyclic AMP
C. binding to DNA and initiating the transcription of a specific gene
D. all of the above

11. Which of the following is TRUE about the autonomic nervous system?

A. The regulatory responses of the autonomic nervous system to homeostatic imbalance are slower than responses of the endocrine system.
B. All cholinergic receptors act via G-protein
C. The sympathetic nervous system is mobilized during a "fight or flight" situation.
D. The parasympathetic nervous system causes an increase in heart rate and blood pressure.

12. Which of the following is TRUE about hormones?

A. Protein and peptide hormones are released to blood via an active transport
B. All hormones are released from the cells producing them via exocytosis.
C. Steroid hormones act via G-protein and a second messenger system.
D. Steroid hormone receptors are located inside the target cells

13. Homeostasis is the condition in which the body maintains:

A. a static state with no deviation from preset limits.
B. the lowest possible energy usage.
C. a relatively stable internal environment, within limits.
D. a dynamic state with an unlimited range.

14. Choose the TRUE statement about endocrine regulation:

A. Endocrine organs secrete hormones into a series of ducts.
B. Releasing hormones from the hypothalamus are delivered directly to the anterior pituitary cells by hypothalamic neurons.
C. An example of humoral stimulation would be increased secretion of the parathyroid hormone in response to a drop in blood calcium levels.
D. Endocrine regulation involves positive feedback to prevent severe changes in the body.

15. Which of the following axons are not myelinated? The axons of the:

A. somatic neurons
B. preganglionic sympathetic neurons
C. preganglionic parasympathetic neurons
D. postganglionic parasympathetic neurons

16. Which of the following is true about erytropoetine?

A. Its level increases at high altitudes
B. It induces proliferation of RBCs
C. Its level is regulated in a negative feedback fashion
D. Both A) and B)
E. All of the above

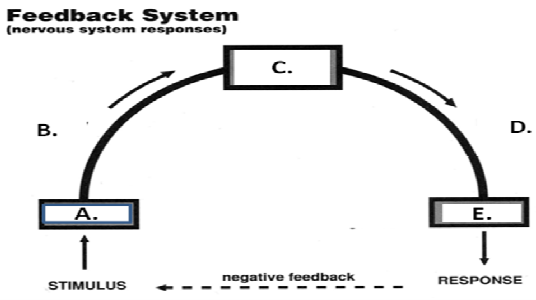
17. Releasing and inhibiting hormones are produced by the ..... to control the .....

A. pineal gland // hypothalamus
B. hypothalamus // posterior pituitary
C. posterior pituitary // hypothalamus
D. hypothalamus // anterior pituitary
E. anterior pituitary // hypothalamus

18. Which of the following is NOT a phase of erythropoiesis?

A. mitosis of RBCs
B. ejection of the nucleus
C. synthesis of hemoglobin molecules
D. all of the above are phases of erythropoiesis
E. production of ribosomes

19. Which of the following (A, B, C, D or E) represents the motor neuron?



20. A type of anemia which affects mainly people of the African origin is called……..anemia.

A. sickle cell
B. iron-deficiency
C. hemorrhagic
D. pernicious

21. Which of the following initiates plug formation?

A. Thromboxan A2
B. VonWilebrand factor
C. release of heparin by the liver
D. the conversion of prothrombin to thrombin
E. the release of tissue factor by damaged tissue cells

22. Which of the following statements is TRUE?

A. Lack of the coagullation factor VIII is the main cause of sickle cell anemia.
B. Hemophilia A and B are the hereditary disorders affecting both men and women
C. Thalassemia is a hereditary disorder affecting structure of the hem part of hemoglobin.
D. Polycythemia vera is a cancer of blood characterized by a high number of RBCs.

23. Which of the following is used in blood vessels for the dissolution of fibrin clot?

A. heparin
B. antitrypsin
C. thrombin
D. plasmin

24. During blood vessel injury, the role of the thrombin is:

A. vonWillebrand factor
B. to release histamine that causes vasoconstriction of the injured vessel
C. to convert plasminogen to plasmin
D. to activate the clotting factor X and initiate the clotting cascade
E. to initiate release of prostacyclin

25. The hormones needed to stimulate tropic hormones production and release are synthesized in the:

A. anterior pituitary
B. posterior pituitary
C. hypothalamus
D. infundibulum
E. none of the above

26. Which of the following might trigger erythropoiesis?

A. decreased tissue demand for oxygen
B. polycythemia
C. moving from a high altitude to a low altitude
D. climbing the Himalaya mountains
E. kidney failure

27. Select the correct statement regarding RBCs:

A. each RBC contains about 250 million haemoglobin molecules
B. the main sites of RBCs formation are the spleen and the liver
C. RBCs live around 120 days
D. Both A) and C) are true
E. Both B) and C) are true

28. Anna has a platelet count of 700,000 per microliter of blood. Which of the following statements is TRUE about Anna's platelets count?

A. it indicates thrombocytopnia
B. it is normal
C. it indicates thrombocytosis
D. none of the above

29. Macrocytic, megaloblastic anemia has been associated with:

A. lack of any animal products in the diet
B. lack of any green vegetables in the diet
C. lack of iron in the diet
D. Both A) and B)
E. all of the above

30. Which of the following statements is FALSE?

A. Blood is considered a type of connective tissue.
B. The only complete cells in blood are the stem cells.
C. Platelets and mature RBCs do not contain nuclei
D. The heme portion of the hemoglobin molecule is capable of binding O2.

31. Which of the following statements is true?

A. The pluripotent red bone marrow stem cells that acquired the erythropoietin receptors can be stimulated by erythropoietin to become the RBCs
B. The pluripotent red bone marrow stem cells that acquired the thrombopoetin receptors can be stimulated by thrombopoetin to become the platelets
C. When folic acid is missing from the diet, RBCs become abnormally small and elongated
D. Both A) and B)
E. All of the above

32. After erythrocytes become old and rigid, they are removed by macrophages found chiefly in the spleen. Which of the haemoglobin breakdown products is/are saved in the body?

A. Iron
B. Bilirubin
C. Amino acids
D. Both A) and C)
E. All of them

33. Which of the following is true about anemia?

A. Pernicious anemia is due to low vitamin B12 content in the diet
B. Iron deficiency without anemia is characterized by low ferritin and low Hb levels
C. Iron deficiency with anemia is characterized by small and pale red blood cells
D. Sports anemia is characterized by low RBC count and can be cured by iron supplements

34. Jack is admitted to the cardiac unit with a diagnosis of pericarditis. He asks you, the nurse, to explain where the pericardium is. You tell him that the pericardium is:

A. a double-walled membranous sac that encloses the heart
B. the outermost muscular layer of the heart
C. the innermost lining of the heart
D. the thick muscular layer of the heart that provides pumping action

35. The right ventricular wall of the heart is thinner than the left ventricular wall because:

A. it pumps blood with greater pressure and against greater resistance
B. it accommodates a smaller volume of blood
C. it pumps blood through a smaller valve
D. it pumps blood against lower resistance

36. Foramen ovale:

A. is a condition in which the heart valves do not completely close
B. connects the two atria in the fetal heart
C. is a connection between the pulmonary trunk and the aorta in the fetus
D. is a shallow depression in the interventricular septum

37. The papillary muscles function to:

A. close the semilunar valves
B. prevent backward expulsion of the semilunar valves
C. prevent backward expulsion of the atrioventricular valves
D. close the atrioventricular valves
E. all of the above

38. Compared to skeletal muscle, cardiac muscle:

A. has tight junctions that prevent cell separation
B. lacks striations
C. has less nuclei per cell
D. cells are larger than skeletal muscle cells

39. Untreated strep throat can lead to calcification of the bicuspid (mitral) valve that can affect blood flow from:

A. the aorta into the left ventricle
B. the left ventricle into the left atrium
C. the right atrium into the inferior vena cava
D. the left atrium into the left ventricle
E. the right ventricle into the pulmonary artery

40. Chose a correct order of blood flow, starting at the superior vena cava: 1) left atrium, 2) right atrium, 3) left ventricle, 4) pulmonary artery, 5) aorta 6) right ventricle

A. 2, 1, 6, 3, 4, 6
B. 1, 3, 4, 2, 6, 5
C. 2, 6, 4, 1, 3, 5

41. Dexygenated blood flows through the:

A. superior vena cava
B. pulmonary veins
C. pulmonary artery
D. coronary veins

42. The coronary artery arises from:

A. right atrium
B. left atrium
C. right ventricle
D. left ventricle
E. aorta

43. The changes in deflection waves of the ECG tracing in a myocardial infarction patient often include:

A. flat P wave
B. elevated or depressed Q-S interval
C. elevated or depressed ST segment
D. smaller than usual Q wave
E. two T waves

44. The cardiac electrical impulse normally begins spontaneously in the SA node because:

A. it depolarizes more rapidly than other autorhythmic cells of the heart
B. it has rich sympathetic innervation via the vagus nerve
C. it is the only area of the heart capable of spontaneous depolarization
D. of its superior location in the right atrium
E. B) and D)

45. The resting heart rate in a healthy person is primarily under control of the:

A. cardioacceleratory center in the medulla oblongata
B. cardioinhibitory center in the medulla oblongata
C. hypothalamus
D. cerebral cortex
E. spinal cord

46. Cardiac muscle cells remain depolarized longer than skeletal muscle fibres because:

A. Ca++ enters the cardiac muscle cells from the extracellular fluid to continue contributing positive charges after the influx of Na+ ions has ceased
B. voltage-gated Na+ channels close more quickly to trap Na+ inside longer
C. voltage-gated K+ channels open at the same time as Na+ channels, allowing more K+ ions to enter the cardiac muscle cells
D. they are smaller cells, so take longer to repolarize
E. it takes longer to reach threshold, and the duration of depolarization is directly proportional to the time it takes to reach threshold

47. When threshold is reached in cardiac pacemaker (autorhythmic) cells, the next event is:

A. opening of fast calcium channels
B. opening of fast potassium channels
C. opening of fast sodium channels
D. opening of slow calcium channels
E. opening of slow sodium channels

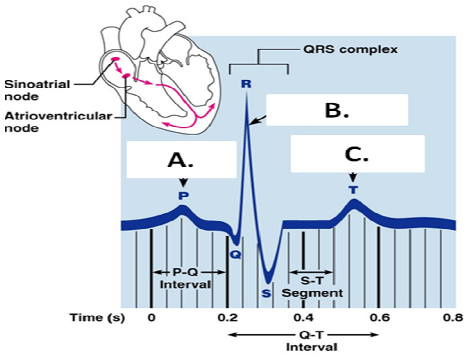
48. Which of the following is true about the autorhythmic cardiac cells?

A. their auto-rhythm can be modulated by the autonomic nervous system
B. their action potentials have a plateau
C. their depolarization is initiated by the influx of calcium through the leaky channels
D. they have stable resting potentials

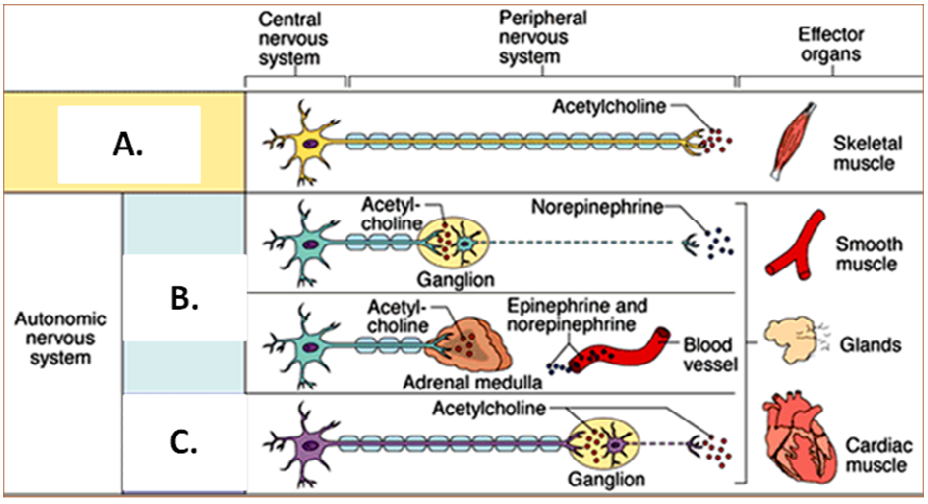
49. Normal heart sounds are caused by which of the following events?

A. excitation of the SA node
B. closure of the heart valves
C. friction of blood against the chamber walls

50. Which of the following waves on the EKG (A, B or C) represents ventricular contraction?



51. Which of the following (A, B or C) represent the parasympathetic stimulation?



52: COMPARE, in a table form, four FUNCTIONAL differences between the skeletal and cardiac muscle cells (2 marks)

53. BONUS Question:

Label the following (0.5 mark each label, 2 marks total)