ANP1105 – Midterm 1

1. The part of a neuron that conducts impulses away from its cell body is called a(n):
a. Axon
b. Dendrite
c. Neurolemma
d. Schwann cell

2. Which of the following is a characteristic of a graded potential
a. Produced at axon hillock
b. All-or-none
c. Current decreases with distance travelled
d. Always induces membrane hyperpolarization

3. Osmosis is a special case of diffusion in which
a. Water moves down its concentration gradient
b. Water is moving against its concentration gradient
c. Water is moving from an are of high solute concentration to an area of low solute concentration
d. B and C

4. In the contraction of skeletal muscles, calcium apparently acts to
a. Increase the action potential transmitted along the sarcolemma
b. Release the inhibition on Z discs
c. Remove the blocking action of tropomyosin
d. Cause ATP binding to actin

5. The electrochemical gradient for _____ is enhanced by the resting membrane potential of a neuron
a. Na
b. K
c. Ca
d. None of the above

6. The Na+/K+ ATPase
a. Pumps 3 Na+ ions outside the cell and 2 K+ ions inside
b. Pumps 3 Na+ ions outside the cell and 3 K+ ions inside
c. Pumps 3 Na+ ions inside the cell and 2 K+ ions outside
d. Pumps 2 Na+ ions inside the cell and 3 K+ ions outside

7. Which of the following statements concerning the resting membrane potential is TRUE?
a. Na+ tends to diffuse out of the cell
b. The resting membrane potential exists because the cell membrane is more permeable to Cl- than it is to K+
c. K+ tends to diffuse out of the cell
d. The cell membrane is more permeable to Na+ than to K+

8. Because of this type of tissue is so thin, it is concerned primarily with the movement of various substances across the membrane from one body compartment to another:
a. Simple cuboidal epithelium
b. Loose fibrous connective tissue
c. Simple squamous epithelium
d. Translational epithelium

9. There is one-way conduction at a synapse because
a. Only post synaptic dendrites contain synaptic vesicles
b. Acetelycholine prevents nerve impulses from traveling in both directions
c. Only the postsynaptic dendrites possess neurotransmitters receptors
d. Only postsynaptic dendrites releases neurotransmitters

10. What is the main type of fiber in dense connective tissue
a. Glia
b. Elastin
c. Collagen
d. Reticular

11. Which of the following statements is TRUE?
a. Simple cuboidal epithelial are usually associated with secretion and absorption
b. Endocrine glands are often called ducted glands
c. Connective tissues that possess a large quantity of collage fibers often provide the framework for organs such as the spleen and lymph nodes
d. Cartilage tissues tends to heal more rapidly than bone

12. Mitochondria
a. Are single membrane structures involved in the breakdown of ATP
b. Contain some DNA and RNA
c. Synthesize proteins for use outside of the cell
d. Are found only in muscle cells

13. Multicellular exocrine glands can be classified:
a. Structurally, into alveolar and acinar types
b. Strcturally, into ductless and ducted types
c. Functionally, into memrocrine, holocrine, and apocrine divisions
d. Al of the above are correct

14. Fine branching fibers that construct a supportive network are
a. Collagen fibers
b. Osteoblasts
c. Reticular fibers
d. Chondrocytes

15. Which of the following sequence organizes these structures from the simplest to the most complex
a. Molecules – atoms – tissues – cells –organ
b. Atoms – molecules – cells – tissues – organ
c. Atoms – molecules – tissues – cells –organ
d. Molecules – atoms – tissues – cells – organ

16. Which type of junction is an anchoring junction that is linked to the cytoskeleton and designed to provide strength to cell-to-cell attachment?
a. Tight junction
b. Desmosome
c. Glycocalyx
d. Gap junction

17. The plasma membrane presents a(n) _____ barrier to free diffusion
a. Hydrophilic
b. Impermeable
c. Hydrophobic
d. Water-soluble

18. Which of the following does NOT transverse the plasma membrane by simple diffusion
a. Alcohol
b. O_2
c. Amino acids
d. CO_2

19. Active transport
a. Is specific
b. Involves a carrier
c. Moves substances against a concentration gradient
d. A, B, and C

20. During the repolarizing phase of an action potential
a. K+ gates are open
b. Na+ gates are open
c. The membrane potential is becoming less negative
d. A and C

21. Impulse propagation is associated with
a. Graded potential
b. Chemically gated ion channels
c. Hyperpolarization
d. Voltage-gated sodium channels

22. The term saltatory conduction refers to the
a. Leaping of an action potential across the synapse
b. Movement of sodium ions into the cell during depolarization
c. One-way conduction of a nerve impulse across a synapse
d. Propagation of a nerve impulse along a myelinated axon

23. Muscle tone is
a. Also called treppe
b. The feeling of well-being following exercise
c. A state of sustained partial muscle contraction
d. The condition of athletes after intense training

24. In facilitated diffusion
a. Solute molecules are moved from areas of low concentration to areas of high concentration
b. Transport proteins move solutes through cellular membranes without expending metabolic energy
c. Energy generated by the cell is always required
d. Clathrin-coated vesicles are formed

25. A cluster of neuron cell bodies in the peripheral nervous system is known as
a. Nissel body
b. Axon hillock
c. Ganglion
d. Node of Ranvier

26. What kind of connective tissue acts as a sponge, soaking up fluid when edema occurs?
a. Areolar connective tissue
b. Dense irregular connective tissue
c. Reticular connective tissue
d. Vascular connective tissue

27. The major function of the sarcoplasmic reticulum in muscle contraction is to
a. Make and store creatine phosphate
b. Synthesize actin and myosin myofilaments
c. Provide a source of myosin of the contraction process
d. Regulate intracellular calcium concentrations

28. Which of the following is the major positive ion INSIDE cells?
a. Nitrogen
b. Hydrogen
c. Potassium
d. Sodium

29. Crenation (cell shrinking) occurs when a blood cell is placed in a(n) _____ solution
a. Isotonic
b. Hypertonic
c. Hypotonic
d. Merotonic

30. The sarcolemma is the
a. Storage site for calcium ions in muscle fibers
b. Plasma membrane of a muscle fiber
c. Compound that binds oxygen for use in slow oxidative muscle cells
d. Separation between sarcomeres in a muscle fiber

31. Calcium ions bind to the _____ molecule in skeletal muscle cells
a. Tropomyosin
b. Troponin
c. Actin
d. Myosin

32. Which of the following statements regarding a resting neuron is FALSE?
a. Its inside is negative relative to its outside
b. The cytoplasm contains more sodium and less potassium than does the extracellular fluid
c. The membrane is more permeable to potassium than sodium
d. A and C

33. One functional unit of skeletal muscle is
a. A sarcomere
b. A myofilament
c. A myofibril
d. The sarcoplasmic reticulum

34. In a skeletal muscle fiber, which of the following best describes the composition of the structure known as a triad
a. Action, troponin, and tropomyosin
b. Sarcolemma, sarcoplasm, and sarcoplasmic reticulum
c. Terminal cisterna, transverse tubule, and terminal cisterna
d. A band, I band, and H band

35. The threshold of the neuron is
a. Voltage at which the inflow of sodium ions causes the spike of an action potential
b. Total number of sodium ions that enters the cell before the sodium inactivation gates close
c. Total amount of neurotransmitter it takes to cause an action potential
d. Voltage across the resting cell membrane

36. Dendrites
a. Conduct action potentials away from the cell body
b. Are the site of neurotransmitter release
c. Are generally long and unbranched
d. Only produce graded potentials

37. Which of the following will occur when an excitatory postsynaptic potential (EPSP) is being generated on the dendritic membrane?
a. Specific sodium gates will open
b. Specific potassium gates will open
c. Sodium gates will open first, then close as potassium gates open
d. A single type of channel will open, permitting simultaneous flow of sodium and potassium

38. The are of the axon between 2 Schwann cell sheaths is the
a. Nissel body
b. Soma
c. Node of Ranvier
d. Axon hillock

39. Which cell organelle is the site of fatty acid, phospholipid, and steroid synthesis?
a. Golgi complex
b. Lysosome
c. Rough endoplasmic reticulum
d. Smooth endoplasmic reticulum

40. Creatine phosphate functions in the muscle cell by
a. Forming a temporary chemical compound with myosin
b. Forming a chemical compound with actin
c. Storing energy that will be transferred to ADP to resynthesize ATP
d. Inducing a conformational change in myofilaments

41. What is the role of acetylcholinesterase
a. Amplify or enhance the effect of ACh
b. Act as a transmitter agent
c. Destroy ACh a brief period after its release by the axon ending
d. Stimulate the production of ACh

42. What is the role of tropomyosin in skeletal muscles
a. Tropomyosin serves as a contraction inhibitor by blocking the myosin binding site on the actin molecules
b. Tropomyosin serves as a contraction inhibitor by blocking the actin binding site on the myosin molecule
c. Tropomyosin is the chemical that activates the myosin head
d. Tropomyosin is the receptor for the motor neuron transmitters

43. Which is not a function of astrocyte
a. Support and embrace neurons
b. Provide the defense for the CNS
c. Anchor blood vessels
d. Control the chemical environment around neurons

44. The most abundant chemical substance in the body accounting for 60% - 80% of body weight is
a. Protein
b. Water
c. Oxygen
d. Hydrogen

45. Which of the following is not characteristic of neurons
a. They have extreme longevity
b. They are mitotic
c. They conduct action potentials
d. They have an exceptionally high metabolic rate

46. Muscle tissues has all the properties except
a. Secretion
b. Excitability
c. Contractility
d. Extensibility

47. What moves cell organelles from one location to another within the cell
a. Motor proteins
b. Microfilaments
c. Microtubules
d. Intermediate filaments

48. The function of myoglobin is to
a. Bind oxygen for aerobic respiration
b. Bind actin to shorten myofibrils
c. Block the myosin binding site on thin filaments
d. Store ATP

49. After acetylcholine attaches to its receptors at the neuromuscular junction, the next step is
a. Potassium-gated channels open
b. The T-tubule depolarize
c. Cross bridges attach
d. ATP is hydrolyzed

50. Which of the following is **not** a characteristic of neurons?
a. extreme longevity
b. they are mitotic
c. conduct action potentials
d. have an exceptionally high metabolic rate

51. You have a 2.0 molar solution of NaCl. You want to make a solution of glucose that has the same osmolarity as this NaCl solution. What concentration (molar) should this glucose solution be?
a. 0.5
b. 1.0
c. 2.0
d. 4.0

52. Glands, such as the thyroid, that secrete their products directly into the blood rather than through ducts are classified as:
a. exocrine
b. endocrine
c. sebaceous
d. apocrine

For questions 53-58, please write your answers in the table.

#	DESCRIPTION	ANSWER
53	I am the protein in thin filaments.	
54	I am the muscle filament protein that has ATPase activity.	
55	While I can also be rough, when I am smooth I am involved in lipid biosynthesis.	
56	I am the part of the sarcolemma that penetrates deep into muscle cells.	
57	I am the cell that is able to build bone.	
58	I am a bundle of nerve processes in the CNS.	