

Put your name on the front and on the back

Name _____

Section _____

Put all answers on the scan sheet. Only those answers will be considered.

1. Associated with the sympathetic nervous system

- A. X cranial nerve
- B. Short pre-ganglionic fiber
- C. Terminal ganglia
- D. All of these
- E. Two of these

2. Associated with the sympathetic nervous system

- A. MAO
- B. Adrenergic
- C. Increases the amount to trigger calcium that enters cardiac muscle fibers during the pre-potential
- D. All of these
- E. Two of these

3. Associated with one neuron in the pathway

- A. Somatic afferent
- B. Sympathetic afferent
- C. Parasympathetic afferent
- D. All of these
- E. Two of these

In questions 4-10 use the following choices

- A. Somatic afferent
- B. Somatic efferent
- C. Sympathetic afferent
- D. Sympathetic efferent
- E. Parasympathetic afferent
- F. Parasympathetic efferent
- G. None of these

4. Perceives hunger

- A. B
- B. C
- C. E
- D. D
- E. F

5. Inferior cervical ganglion

- A. C
- B. D
- C. F
- D. E
- E. G

6. T-4 spinal nerve

- A. A & B
- B. E & F
- C. A,B,C,D
- D. A,B,E,F
- E. C & D

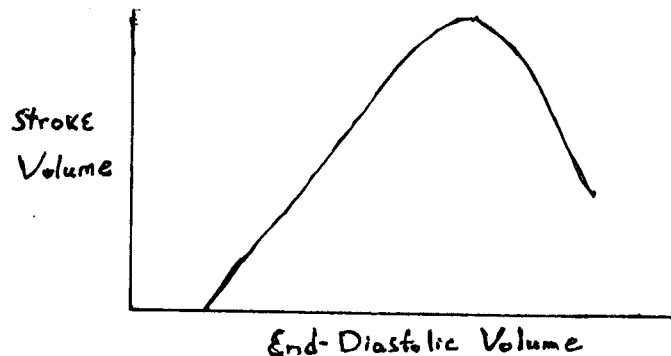
7. Carries information from the baroreceptors to the medulla
 A. A
 B. C & D
 C. E
 D. C
 E. G
8. Innervates the pre-capillary sphincters
 A. B
 B. C
 C. D
 D. F
 E. G
9. N-1 receptors
 A. A, C, E
 B. C & D
 C. D & F
 D. B & E
 E. G
10. Muscarinic receptors
 A. F
 B. D & F
 C. D
 D. C & D
 E. A & B
11. Sacral spinal nerves (the neurons comprising them)
 A. May have N-2 receptors on their effectors
 B. May have muscarinic receptors on their effectors
 C. May innervate terminal ganglia
 D. All of these
 E. Two of these
12. The superior cervical ganglion
 A. Is innervated by a cervical spinal nerve
 B. Has alpha receptors on it
 C. Has muscarinic receptors on it
 D. None of these
 E. Two of these
13. A pre-ganglionic sympathetic fiber may innervate
 A. A paravertebral ganglion
 B. A basal ganglion
 C. The adrenal medulla
 D. None of these
 E. Two of these
14. A pre-ganglionic sympathetic fiber
 A. May be adrenergic
 B. May directly innervate an arteriole
 C. May perceive visceral pain
 D. None of these
 E. Two of these
15. May contain choline acetyltransferase
 A. Somatic efferent fibers
 B. Post-ganglionic sympathetic fibers
 C. Pre-ganglionic parasympathetic fibers
 D. All of these
 E. Two of these

16. Nicotinic receptors
- A. Are always excitatory
 - B. Can be excited by nicotine
 - C. Can be inhibited by nicotine
 - D. All of these
 - E. Two of these
17. Adrenergic neurons are “turned off” by
- A. Uptake-1 into the pre-ganglionic sympathetic neuron
 - B. By uptake-2 into the post-ganglionic sympathetic neuron
 - C. By stimulating alpha-2 receptors
 - D. All of these
 - E. Two of these
18. The following are adrenergic
- A. The adrenal medulla
 - B. Certain post-ganglionic parasympathetic neurons
 - C. Certain pre-ganglionic parasympathetic neurons
 - D. All of these
 - E. Two of these
19. The following receptors are found on visceral effectors
- A. Alpha-2
 - B. Beta-1
 - C. N-1
 - D. All of these
 - E. Two of these
20. The following are associated with sympathetic efferent function
- A. The feeling of angina
 - B. Urination
 - C. Dilation of the pupils
 - D. All of these
 - E. Two of these
21. Sympathetic afferent pathways
- A. Have pseudounipolar neurons in them
 - B. Prepare a person for an emergency
 - C. Are found in S-2 spinal nerves
 - D. None of these
 - E. Two of these
22. Alpha receptors
- A. Are found on the nerve cell bodies of post-ganglionic sympathetic neurons
 - B. On the axonal branches of post-ganglionic sympathetic neurons
 - C. On skeletal muscle
 - D. None of these
 - E. Two of these
23. ATP
- A. Is needed to establish the resting membrane potential
 - B. Is needed for carrier-facilitated diffusion
 - C. May be secreted by some post-ganglionic sympathetic neurons
 - D. All of these
 - E. Two of these

24. Arterioles
- A. Have M-2 receptors on them
 - B. Are typically innervated by neurons found in thoracic spinal nerves
 - C. May be directly innervated by long pre-ganglionic sympathetic neurons which secrete ACH
 - D. All of these
 - E. Two of these
25. The following drugs could effectively be used to treat hypertension
- A. A beta-1 antagonist
 - B. An alpha-2 agonist
 - C. An alpha-1 antagonist
 - D. All of these
 - E. Two of these
26. The following drugs could be effectively be used to treat hypertension
- A. RESERPINE
 - B. Ephedrine
 - C. Cardizem
 - D. All of these
 - E. Two of these
27. The following drugs could be effectively used to treat glaucoma
- A. A muscarinic blocker
 - B. An N-2 agonist
 - C. DIGOXIN
 - D. None of these
 - E. Two of these
28. The following drugs are antihypertensive agents
- A. DEMSER
 - B. CATAPRES
 - C. INDERAL
 - D. All of these
 - E. Two of these
29. Cardiac muscle cells
- A. Have intercalated discs
 - B. Lack mitochondria
 - C. Exhibit a pre-potential
 - D. All of these
 - E. Two of these
30. During the plateau phase of an action potential recorded from structure of the heart
- A. Trigger calcium is entering the cardiac muscle cells
 - B. Potassium permeability is progressively decreasing
 - C. Potassium permeability is progressively increasing
 - D. None of these
 - E. Two of these
31. Beta-1 receptors in the heart
- A. Are blocked by Procardia
 - B. Cause an increase in the entry of trigger calcium when stimulated
 - C. Cause an increase in the rate at which potassium permeability decreases during the pre-potential.
 - D. All of these
 - E. Two of these

32. Not part of the heart
 A. Epicardium
 B. Serous pericardium
 C. Bundle of His
 D. None of these (all are parts the heart)
 E. Two of these
33. During ventricular systole
 A. The atria are in diastole
 B. The QRS complex occurs
 C. The mitral valve closes
 D. All of these
 E. Two of these
34. The following are pathologies associated with the heart
 A. Congestive heart failure
 B. Stokes-Adams Syndrome
 C. Wolff-Parkinson-White Syndrome
 D. All of these
 E. Two of these
35. Stimulating the vagus nerve
 A. Would decrease the amount of trigger calcium entering the cardiac muscle fibers
 B. Would have no effect on the heart if it had been pre-treated (under the influence) of TENORMIN
 C. Would stimulate M-2 receptors
 D. All of these
 E. Two of these
36. The perfusion (blood flow) of the ventricles is greater during diastole than during systole because
 A. The entrance of the coronary arteries is partially blocked by the mitral valve during ventricular systole
 B. The coronary arteries are partially collapsed during ventricular contraction
 C. Of the elasticity of the arteries
 D. All of these
 E. Two of these

Questions 37-39 require the use of the following figure:



37. The figure above illustrates
 A. Starling's Law
 B. Homeometric autoregulation
 C. Congestive heart failure
 D. None of these
 E. Two of these

38. The X axis could correctly also be labeled

- A. Preload
- B. Afterload
- C. Ejection fraction

- D. None of these
- E. Two of these

39. The Y axis could correctly be labeled

- A. Cardiac output
- B. Ejection fraction
- C. End systolic volume

- D. All of these
- E. Two of these

Not
Graded

40. The following drugs should NOT appropriately be used to treat hypertension in a person also suffering from congestive heart failure

- A. CARDIZEM
- B. HYTRIN
- C. An A.C.E. inhibitor

- D. None of these (all are appropriate)
- E. Two of these

41. Blood pressure is lowest in the

- A. Coronary artery
- B. Pulmonary artery
- C. Vena cava

- D. Systemic capillary
- E. Iliac vein (found in the leg)

42. A pathology of the cardiovascular system

- A. Reynaud's syndrome
- B. Aneurysm
- C. Hemorrhoids

- D. All of these
- E. Two of these

43. People with congestive heart failure often have pulmonary edema because

- A. Their end systolic volume is too great
- B. Their ejection fraction is too low
- C. Their pulmonary capillary blood pressure is too high
- D. All of these
- E. Two of these

44. A person with a blood pressure of 135/95

- A. Would be pre-hypertensive
- B. Would most likely have secondary hypertension
- C. Could be appropriately treated with Lanoxin

- D. None of these
- E. Two of these

45. At a connexin

- A. There is typically a paracrine secretion
- B. There is typically an autocrine secretion
- C. There is typically an integrin

- D. None of these
- E. Two of these

46. The spinal cord

- A. Is surrounded by meninges
- B. Contains the dorsal horn (afferent horn) of the white matter
- C. Has the dorsal root ganglion in it
- D. All of these
- E. Two of these

47. The frequency of impulses in an afferent neuron
- A. Dictates the modality of sensation
 - B** Is linearly related to the magnitude of the receptor potential
 - C. Decreases more rapidly in those neurons servicing tonic receptors than it does in those neurons servicing phasic receptors
 - D. None of these
 - E. Two of these

A= Increase or greater than

B=Decrease or less than

C= No effect or equal to

- B** 48. The number of pre-ganglionic sympathetic fibers as compared to the number of post-ganglionic sympathetic fibers
- C** 49. The length of a pre-ganglionic parasympathetic fiber as compared to the length of the pre-ganglionic fiber associated with third sacral spinal nerve
- C** 50. The likelihood of a beta-1 receptor to be excitatory as compared to the likelihood of an N-2 receptor to be excitatory
- C** 51. The likelihood of a pre-ganglionic sympathetic neuron being multi-polar as compared to the likelihood of a post-ganglionic neuron being multi-polar

In questions 52 through 63 assume isolated preparations

- C** 52. The effect of DOBUTREX on the contraction of skeletal muscle
- C** 53. The effect of NEOSYNEPHRINE on heart rate
- A** 54. The effect of DEMSER on gastrointestinal motility
- C** 55. The effect of TOPROL-XL on the diameter of the bronchi
- A** 56. The effect of HYTRIN on the diameter of blood vessels
- C** 57. The effect of BENTYL plus DUVOID on lacrimal secretions
- C** 58. The effect of atropine on the activity of the apocrine sweat glands
- A** 59. The effect of physostigmine plus atropine on the diameter of the bronchi
- A** 60. The effect CARDURA plus epinephrine on heart rate
- B** 61. The effect of SERPASIL on piloerection
- A** 62. The effect of COREG on the diameter of blood vessels
- C** 63. The effect of VASOTEC on the diameter of the arterioles

END ISOLATED PREPARATIONS

- A 64. The effect of increasing the hematocrit on total peripheral resistance
- B 65. The effect of increasing the activity of the N.T.S. on the subsequent heart rate
- A 66. The effect of stimulating the baroreceptors in the arch of the aorta on the subsequent number of afferent impulses in the vagus nerve
- B 67. The likelihood of tetanizing cardiac muscle as compared to the likelihood of tetanizing skeletal muscle
- C 68. The likelihood of finding myosin in skeletal muscle as compared to the likelihood of finding myosin in cardiac muscle
- A 69. The frequency of depolarization of the S.A. node as compared to the frequency of depolarization of the A.V. node
- A 70. The effect of LANOXIN on the ejection fraction
- B 71. Increasing the stroke volume _____ the end systolic volume
- A 72. The effect of increasing the preload on heart rate
- C 73. The length of the R-T interval in someone suffering from first degree heart block as compared to the R-T interval in a normal person
- B 74. The appropriateness of prescribing a beta-1 agonist for angina as compared to the appropriateness of prescribing a calcium channel blocker for angina
- C 75. The amount of blood pumped by the left side of the heart as compared to the amount of blood pumped by the right side of the heart
- C 76. The effect of increasing interstitial fluid pressure on the rate of filtration at a systemic capillary
- B 77. The number of synapses in a neuron supplying a motor unit of the fingers as compared to the number of synapses in a neuron supplying a motor unit of the buttocks