1. A monosynaptic reflex has one synapse in the hind-brain from the receptor nerve

connecting to the motor neuron which causes a response.

a. False\*

b. True

2. Pulling your hand away from a hot burner is an example of an autonomic reflex

a. False\*

b. True

3. Anticholinergic drug ingestion causes dilated pupils, elevated heart rate, increased

temperature, and profuse sweating.

a. False\*

b. True

4. A sarcomere is measured from:

a. M line to M line

b. Z disk to Z disk \*

c. H zone to H zone

d. A band to A band

e. The width of the A band

5. Relaxation of muscle fiber is caused by use of \_\_\_ in the cytoplasm

a. Potassium

b. Nebulin

c. Calcium

d. ATP\*

6. Parasympathetic nervous system causes

a. Erections \*

b. Increased heart rate

c. Ejaculation

d. Dilated bronchioles

1. Which of the following is not involved in the process of muscle contraction?

A. Acetylcholine

B. Calcium Ion

C. Magnesium Ion

D. All of the above are involved \*\*

2. What do skeletal muscle and smooth muscle have in common?

A. In both calcium binds to troponin

B. They are both regulated by the autonomic nervous system

C. Their source of calcium is from the sarcoplasmic reticulum \*\*

D. They are both key for the external movement of body parts

3. Which of the following is not controlled by the sympathetic nervous system?

a. Increase in heartbeat

b. Contraction of bladder \*\*

c. Dilatation of pupils

d. Inhibit the activity of the intestines

4. Gait is controlled by the peripheral nervous system

A. True

B. False \*\*

5. Muscle spindles are proprioceptors

A. True \*\*

B. False

6. The knee-jerk reflex is controlled by the white matter of the spinal cord

A. True \*\*

B. False

ROHHAD is an acronym for rapid-onset obesity with hypoglycemic dysregulation, hypoventilation and

autonomic dysregulation. ANS: False (Rapid-onset obesity with hypothalamic dysregulation,

hypoventilation and autonomic dysregulation)

The connective tissue of a muscle consists of epimysium, perimysium, and entromysium. ANS: False

(epimysium, perimysium, and endomysium)

All autonomic reflexes are polysynaptic, with at least one synapse in the CNS and another in the

autonomic ganglion. ANS: True

MULTIPLE CHOICE QUESTIONS

Autonomic pathways consist of:

a. Two neurons that synapse in an autonomic ganglion \*\*

b. Three neurons that synapse in an autonomic ganglion

c. Two neurons that synapse in an autonomic receptor

d. None of the above

Muscle fascicles are composed of individual muscle fibers, which can be further divided into:

a. Sarcoma, T-tubules, Sarcoplasm, and Multiple nuclei

b. Sarcolemma, Sarcoplasm, T-Tubules, and Multiple nuclei \*\*

c. Saprolite, T-tubules, Sarco-plasma, Multiple nuclei

d. None of the above

What is NOT an example of an autonomic reflex:

a. Cold water immersion causing tachycardia

b. Sweating in response to increased body temperature

c. Pupillary reflex-pupil constrictions in response to light

d. None of the above \*\*

Chapter 11

When sympathetic varicosities that innervate the smooth muscle in the eye (controlling the diameter of the pupil) are stimulated they release:

 a. Norepinephrine \*\*
b. Acetylcholine
c. Nicotine
d. Atropine
e. Dopamine

2)T/F Beta blockers help in lowering the blood Pressure-True

Chapter 12

3)Which of the following muscle tissues are non-striated?

a) Cardiac

b) skeletal

c) Smooth \*\*

d) both a&b

4)T/F The fascicle is a loose connective tissue that surrounds the individual muscle fibres-False

Chapter 13

5) What motoneurons cause muscle contractions?

a) Alpha \*

b) Gamma

c)Betta

d) All of the above

6) T/F Gamma motoneurons help maintain muscle tone-True

1.) Which structure is not part of the autonomic control center?

a. Hypothalamus
b. GI Tract \*
c. Pons
d. Medulla
e. None of the above

2.) Which would be an example of an autonomic reflex?

a. Pupillary Reflex-Pupil Constricting in response to light
b. Dilation of Blood vessels as body temperature increases
c. Baroreceptor Reflex- Low BP in carotid sinus results in tachycardia and blood vessel
constriction
d. Cold Water (Whole Body) Immersion causes tachycardia
e. All of the above \*

3.) The myofibrils at the site of contraction that are considered “thick fibers” are:

a. Actin
b. Troponin
c. Myosin \*
d. Nebulin
e. None of the above

4.) The connective tissue of a muscle includes, epimysium, perimysium, endomysium, and
intramysium – FALSE, no such thing as intramysium

5.) In the triad the T-tubule brings action potentials into the interior of the muscle fiber and the
sarcoplasmic reticulum stores Ca2+ - TRUE

6.) Digestion, pancreas secretion, and urination are all inhibitory actions of the parasympathetic
branch – FALSE, is part of the sympathetic branch

Multiple Choice Questions (3):
1. When stimulation of the parasympathetic nervous system occurs, all of the following
actions occur, except?

a. Heartbeat slows
b. Pupils constrict
c. Fat breakdown
d. Bladder contracts
Answer: C

(Chapter 11)

2. Crossbridges are connections formed when mobile myosin heads bind to which
molecules in muscle?

a. Troponin
b. Tropomyosin
c. Titin
d. Actin
Answer: D
(Chapter 12)

3. Which proprioceptor is correctly matched to what it senses?

a. Golgi tendon organ senses stretch
b. Joint receptors sense force
c. Muscle spindle senses pressure
d. Golgi tendon organ senses force
Answer: D

(Chapter 13)

When a muscle increases its length, we are talking about:

a. Excitability

b. Contractility

c. Extensibility \*\*

d. Elasticity

Contraction of smooth muscles are propitiated by the troponin-tropomyosin complex.

True False\*\*

The circular muscles contract through sympathetic stimulation that connects the internal organs

to the brain through the spinal nerves.

True False\*\*

Individuals suffering from ataxia have decreased coordination of voluntary movements.

True\*\* False

1) Which of these hypothalamus functions of the autonomic control center is

incorrect?

A) Respiration- Correct

B) Temperature

C) Hunger

D) Water Balance

E) Shivering

2) Calcium in muscles bind to

A) Troponin - Correct

B) Tropomyosin

C) Actin

D) Myosin

3) For mammals diving Reflex which of these has an opposite phycological reaction

if we compare terrestrial and aquatic

A) Apnea

B) Heart Rate- Correct

C) Vasoconstriction

D) Blood Volume

True of False

When a muscle is not used, or the nerve connected to the muscle is severed. The

muscle is Hypertrophied. F

If situations of danger you have parasympathetic activity. F

Atropine is used to treat patients with high heart rate. F

1. ROHHAD stands for rapid-onset obesity with hypothalamic dysregulation, hypoventilation and

autonomic dysregulation.

True or False

Answer: True

3. What example is known for autonomic reflex?

A. Decreasing blood pressure

B. Exposure of face to cold water

C. Depression

D. Relaxing at the beach

E. Waking up in the morning

Answer: B: exposure cold water to the face releases tachycardia

4. Pick answer that best fits function/s for muscles?

A. Contraction

B. Generate motion

C. Generate force

D. Generate heat

E. All of the above

Answer: E: all the above because muscle needs all these roles for even circulation for blood flow

5. Tetanus toxin is produced when spores germinate and vegetative cells growth before gaining access

to wounds.

Answer: False: Tetanus toxin happens after gaining access to wounds.

6. Autonomic nervous system has both cholinergic fibers which secretes both acetylcholine and

adrenergic fibers.

Answer: True: Acetylcholine and adrenergic fibers are need to secrete norepinephrine.

1. Atropine is a medication used to block acetylcholine, blocking receptors can help

a. Contract smooth muscle

b. Dilate blood vessels

c. Slow heart rate

d. decrease salvation

Answer: d: decrease salvation

2. Sympathetic pathways use norepinephrine and have muscarinic receptors and parasympathetic

pathways use acetylcholine and have androgenic receptors

T/F

answer : F: Sympathetic pathways use norepinephrine and have androgenic receptors and

parasympathetic pathways use acetylcholine and have muscarinic receptors

Chapter 12

1. Myasthenia gravis is an autoimmune disease that attacks \_\_\_ receptors in skeletal muscle

a. Nicotinic

b. Gaba

c. Glutamate

d. Muscarinic

Answer: A: Nicotinic Acetylcholine

2. Smooth muscle is not regulated by troponin, but by calmodulin.

T/F

Answer: T

Chapter 13

1. An ophthalmologist gives a patient medication drops to dilate their pupils. Which of the

following could the doctor have used?

(check off the box type of question or input options “a and b”, “b and d”, etc)

a. Sympathomimetic

b. Parasympathloitic

c. Sympatholytic

d. Parasympaomimetic

Answer: a and b: Sympathomimetic (sympathetic stimulator)

and Parasympathloitic (parasympathetic inhibitor)

2. The vagus nerve carries nerve fiber sympathetic fibers only

T/F

Answer: F: Parasympathetic fibers

1. Where do sympathetic and parasympathetic preganglionic neurons release ACh:

a) Onto muscarinic cholinergic receptors

b) Onto adrenergic receptors

c) Onto nicotinic cholinergic receptors\*\*

d) Onto noradrenergic, noncholinergic receptors

2. Postganglionic automatic neurons open specific monovalent cation channels.

TRUE/FALSE\*\*

Chapter 12

3. Muscle fibers contain everything except:

a) Multiple nuclei

b) T-tubules

c) Myofibrils\*\*

d) Sarcoplasm

4. 𝛽2 receptor contracts muscles in bladder, airways, and blood vessels. TRUE/FALSE

Chapter 13

5. Brain stem sends integrative output to:

a) Cerebellum

b) Brain stem

c) Spinal cord\*\*

d) Cerebral cortex

6. Signals for voluntary movements go through the corticospinal tract from cortex to spinal

cord. TRUE\*/FALSE

Answers:

1. Where do sympathetic and parasympathetic preganglionic neurons release ACh – onto

nicotinic cholinergic receptors.

2. FALSE – postganglionic automatic neurons open nonspecific monovalent cation

channels.

3. Muscle fibers contain everything except – myofibrils.

4. FALSE – 𝛽2 receptor relaxes muscles in bladder, airways, and blood vessels.

5. Brain stem sends integrative output to – spinal cord.

6. TRUE – signals for voluntary movements go through the corticospinal tract from

cortex to spinal cord.

Which of the following examples is NOT Autonomic Reflexes?

A. Cold Water (Whole Body) Immersion causes tachycardia

B. Dilation of Blood vessels as body temperature increases

C. Sweating in response to increased body temperature

D. None one above is Autonomic Reflexes

E. All above are Autonomic Reflexes.\*\*

Which of the following are the Stimulatory Actions of the Sympathetic Branch?

A. Slows heart

B. Salivation \*\*

C. Erections

D. Insulin release

E. None one above

F. All of above

True/False

Muscle strains occur when muscle fibers cannot cope with the demands placed on them

by exercise overload and cause the fibers to tear.

True\*\* or False

Anaerobic exercise (insufficient oxygen intake during exercise) is more likely to

accumulate lactic acid in the muscles.

True\*\* or False

The hypothalamus controls the biological clock (circadian rhythm)

True\*\* or False

1. Which sympathetic receptor is the most common receptor in the sympathetic pathway?

a. B1 receptors

b. B2 receptors

c. B3 receptors

d. Alpha receptors \*\*

2. The adrenal medulla is a neuroendocrine tissue that is associated with the parasympathetic

nervous system

a. False, sympathetic

3. What is myosin?

a. A protein that makes up the thin filaments of the muscle fiber

b. A motor protein with the ability to generate movement \*\*

c. A inelastic giant protein that lies alongside thin filaments and attaches to the Z disk

d. A huge elastic molecule and the largest known protein

4. When the muscle is relaxed, the sarcomere shortens with contraction.

a. True

5. When a patient has Parkinson’s Disease, what hormone is lacking in the brain?

a. Serotonin

b. Creatine

c. Dopamine \*\*

d. Epinephrine

6. Sensory receptors are known as proprioceptors

a. True

1. Sympathetic pathways contain receptors for

a. Norepinephrine  Answer

b. ACh

c. Neither a or b

d. Both a and b

2. Loose connective tissue that surrounds individual muscle fibers is called

a. Epimysium

b. Perimysium

c. Endomysium  Answer

d. Paramysium

3. What is not an example of an Autonomic reflex?

a. Dilation of blood vessels as body temperature increases

b. Increased pressure within or external manipulation of carotid sinus

results in tachycardia  Answer

c. Sweating in response to increased body temperature

d. Pupil constricting in response to light

4. Parasympathetic activity regulates rest-and-digest. Ans: True

5. Smooth muscle attaches to the bones. Ans: False

6. Alpha motoneurons promote muscle contracting. Ans: True