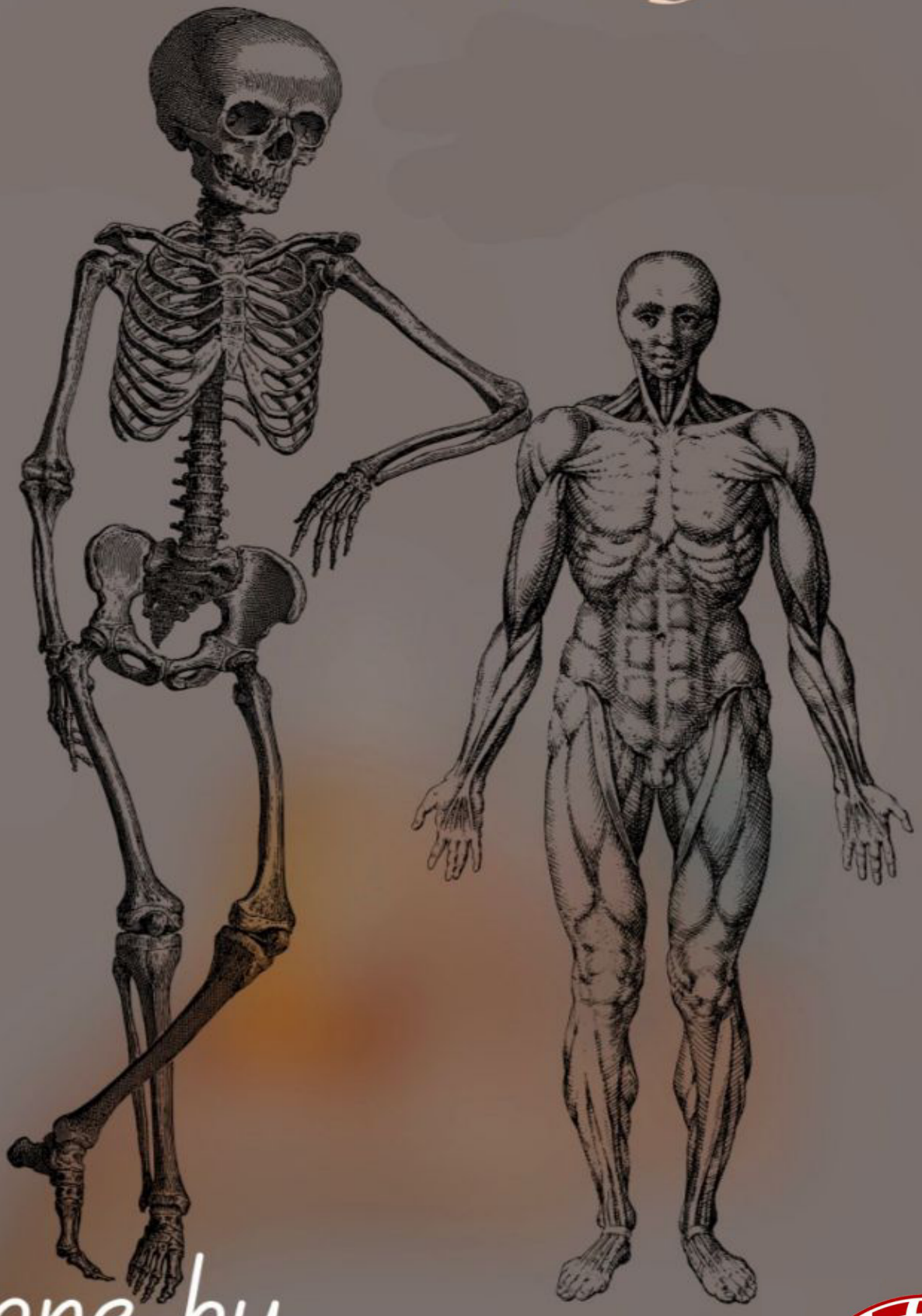
General physiolog



Done by

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Q1) A patient has 15 years history of diabetes mellitus which has been controlled by dietary monitoring and subcutaneous injections of insulin twice a day A recent viral illness has resulted in loss of appetite , fever and vomiting with short of breath Physical examination reveals that the patient is acutely ill and her mucous membrane are dry and decreasing in skin turgor and breaths deeply and rapidly A urine sample contains glucose and ketones
Laboratory test results
Ph=7.07
Pco2=18mmhg
(Hco3)=5 mEq/L
(Na)=132 mEq/L
(Glucose)=650 mg/dL
Which of the following is a motive to these results
1)metabolic acidosis that decreases ph/pco2
2)presence in glucose lead to high concentration of glucose
3)a+b
4) none of the following

Ans: 3)a+b

Q2) Which of the following is correct when increasing H+ concentration in the cytoplasm ?
1) PH = 6.3
2) PH= 5.9
3)PH= 7.4
4)PH=7.5

Ans:2)PH=5.9

Q3) An old beggar was admitted to the emergency department due to shortness of breath, fever, and a productive cough. Upon examination, crackles and wheezes are noted in the lower lobes; he appears to be tachycardic and has a bounding pulse. Measurement of arterial blood gas shows pH 7.2, PaCO2 66 mm Hg, HCO3 27 mmol/L, and PaO2 65 mm Hg. As a knowledgeable nurse, you know that the normal value for pH is:
1)7.20
2)7.30
3)7.40
4)7.50

Ans: 3)7.40

Q4) An old beggar was admitted to the emergency department due to shortness of breath, fever, an Dave, a 6-year-old boy, was rushed to the hospital following her mother's complaint that her son has been vomiting, nauseated and has overall weakness. After a series of tests, the nurse notes the laboratory results: potassium: 2.9 mEq. Which primary acid-base imbalance is this boy at risk for if medical intervention is not carried out?
A. Respiratory Acidosis
B. Respiratory Alkalosis
C. Metabolic Acidosis
D. Metabolic Alkalosis

Ans: D. Metabolic Alkalosis

Q5) The strongest area of reabsorption in the kidney is?
A) Loop of henle
B) Collecting duct
C) Proximal convoluted tubule
D) Distal convoluted tubule
E) 2+3

Ans: D)Distal convoluted tubule

Q6) One of these cases don't cause alveolar ventilation ?
A)Increase H+
B)Increase Co2
C) Decreases PH
D)Decreases O2
E) increases PH

Ans: E) increases PH

Q7) The H+ in the interstitial fluids is ?
A)More than 40nEq/L
B)Less than 40nEq/L
C)Equal 40nEq/L
D)Differ from time to time

Ans:A)More than 40nEq/L

Final Questions

Q8) A person was admitted in a coma. Analysis of the arterial blood gave the following values: PCO2 16 mm Hg, HCO3- 5 mmol/l and pH 7.1. What is the underlying acid-base disorder?
A)Metabolic acidosis
B)Metabolic Alkalosis
C)Respiratory Acidosis
D)Respiratory Alkalosis

Ans:A)Metabolic acidosis

Q9) A student is nervous for a big exam and is breathing rapidly, what do you expect out of the followings
A)Metabolic Acidosis
B)Metabolic Alkalosis
C)Respiratory Acidosis
D)Respiratory Alkalosis

Ans:D) Respiratory Alkalosis

Q10) A 45- year-old female with renal failure, missed her dialysis and was feeling sick, what could be the reason ?
A)Metabolic Acidosis
B)Metabolic Alkalosis
C)Respiratory Acidosis
D)Respiratory Alkalosis

Ans:A)Metabolic acidosis

Q11) The pH of the body fluids is stabilized by buffer systems. Which of the following compounds is the most effective buffer system at physiological pH ?
A)Bicarbonate buffer
B)Phosphate buffer
C)Protein buffer
D)All of the above

Ans:A)Bicarbonate buffer

Q12) Which of the following laboratory results below indicates compensated metabolic alkalosis?
A)Low p CO2, normal bicarbonate and, high PAH+
B)Low p CO2, low bicarbonate, low pAH+
C)High p CO2, normal bicarbonate and, low pAH+
D)High pCO2, high bicarbonate and low pAH+

Ans:D)High pCO2, high bicarbonate and low pAH+

Q13) Which of the following nervous systems can be further subdivided to form the sympathetic and parasympathetic systems?
A)central
B)Somatic
C)Autonomic

Ans:c) autonomic

Q14) Which of the following nerves causes the adrenal medulla to release epinephrine and norepinephrine?
A)Somatic
B)sympathetic
C)parasympathetic
D)Central

Ans:B)sympathetic

Q15) Which of the following nerves generally "speed up" body activities?
A)Somatic
B)sympathetic
C)parasympathetic

Ans:B)sympathetic

Q16) Which of the following consists of nerves that primarily branch from the brain area and the sacral area only?
A)Somatic
B)sympathetic
C)parasympathetic

Ans:C) parasympathetic

Q17) Which of the following consists of nerves that branch off the spinal cord and then innervate a "trunk" (which parallels the spinal cord) and then branch off the trunk?
A)Somatic
B)sympathetic
C)parasympathetic

Ans:C)parasympathetic

Q18) In which fiber the preganglionic fiber is longer ?
A)sympathetic postganglionic
B)parasympathetic postganglionic
C)parasympathetic preganglionic
D)sympacthetic preganglionic

Ans:C)parasympathetic preganglionic

Q19) All of the following are cholinergic neurons excpet:
A)parasympathetic preganglionic
B)parasympathetic postganglionic
C)sympacthetic preganglionic
D)sympacthetic postganglionic to sweat gland
E)sympacthetic postganglionic

Ans:E)sympacthetic postganglionic

Q20) What is the effect of sympathetic stimulation of fat cells
A)contracted
B)lipolysis
C)Ejaculation
D)none

Ans:B)Lipolysis

Q21) If an organ has alpha receptors what is the more effect ?
A)Norepinephrine
B)Epinephrine
C)Acetylcholine

Ans:A)Norepinephrine

Final Questions

Q22) Cord segment T4 are terminate ?
A)Head
B)Neck
C)Abdomen
D)thorax

Ans:D)Thorax

Q23) Which of the following statements regarding the alarm response is false?
A)Contraction of the radial muscle that dilate the pupil
B)Increased urinary excretion of catecholamines
C)Lipolysis in adipose tissue
D)Decreased cholinergic tone in the heart
E)Relaxation of sphincteric smooth muscle in the alimentary tract

Ans:E)Relaxation of sphincteric smooth muscle in the alimentary tract

Q24) When the structures of the body are not innervated by direct sympahetic fibers , the secretion of the ….. in the adrenal medulla will compensate for these areas:
A)Epinephrine
B)Norepinephrine
C)Dopamine
D)Acetylcholine
E)1+2
F)all are true

Ans:E)1+2

Q25) If blood pressure decreases, one of the following processes will not occur:
A)Increase heart rate
B)increase blood vessels resistance
C)increase atria dilation
D)increase myocardial contractility

Ans:C)increase atria dilation

Final Questions

Q26) The autonomic ganglia:
A)Are 5 types
B)Are the sites of relay of afferent neurons
C)Function as distributing centers
D)Are located inside the CNS
E)Are relay stations for all preganglionic fibers passing through them

Ans:C)Function as distributing centers

Q27) Which autonomic receptor is activated by low concentrations of epinephrine released from the adrenal medulla and causes vasodilation?
A)Adrenergic α receptors
B)Adrenergic β1 receptors
C)Adrenergic β2 receptors
D)Cholinergic muscarinic receptors
E)Cholinergic nicotinic receptors

Ans:C)Adrenergic β2 receptors

Q28) Which autonomic receptor mediates secretion of epinephrine by the adrenal medulla?
A)Adrenergic α receptors
B)Adrenergic β2 receptors
C)Cholinergic muscarinic receptors
D)Cholinergic nicotinic receptors

Ans:D)Cholinergic nicotinic receptors

Q29) One of the following is not catecholamines hormone?
A)Epinephrine
B)Norepinephrine
C)Acetylcholine
D)Dopamine

Ans:C)Acetylcholine

Q30) While a person was walking down the street, something frightening appeared to him, and he was surprised and had a heart attack. What is the type of ANS and what is the type of postganglionic fiber in this case?
A)Parasympathetic/Cholinergic fibers
B)Sympathetic/ Cholinergic fibers
C)Parasympathetic/ Adrenergic fibers
D)Sympathetic / Adrenergic fibers

Ans:C)parasympathetic/ Adrenergic fibers

Q31) If you have an exam ,and while you in this exam, you knew that it was very hard and you may fail in this exam what is the main type of Autonomic nervous system and what will happen to the heart rate ?
A)Sympathetic/decrease
B)Sympathetic/ increase
C)Parasympathetic/ decrease
D)Parasympathetic/ increase

Ans:B)Sympathetic/ increase

Q32) Which characteristics or components are shared by skeletal muscle and smooth muscle?
A) Thick and thin filaments arranged in sarcomeres
B)Elevation of intracellular [Ca2+] for excitation–contraction coupling
C)Spontaneous depolarization of the membrane potential
D)High degree of electrical coupling between cells
E)Troponin

Ans:B)Elevation of intracellular [Ca2+] for excitation–contraction coupling

Q33) Which of the following temporal sequences is correct for excitation– contraction coupling in skeletal muscle?
A)Increased intracellular [Ca2+]; action potential in the muscle membrane; cross-bridge formation
B)Action potential in the muscle membrane; depolarization of the T tubules; release of Ca2+ from the sarcoplasmic reticulum (SR)
C)Action potential in the muscle membrane; splitting of adenosine triphosphate (ATP); binding of Ca2+ to troponin C
D)Release of Ca2+ from the SR; depolarization of the T tubules; binding of Ca2+ to troponin C

Ans:B)Action potential in the muscle membrane; depolarization of the T tubules; release of Ca2+ from the sarcoplasmic reticulum (SR)

Q34) In skeletal muscle, which of the following events occurs before depolarization of the T tubules in the mechanism of excitation– contraction coupling?
A)Depolarization of the sarcolemmal membrane
B)Opening of Ca2+ release channels on the sarcoplasmic reticulum (SR)
C)Uptake of Ca2+ into the SR by Ca2+- adenosine triphosphatase (ATPase)
D)Binding of Ca2+ to troponin C
E) Binding of actin and myosin

Ans:A)Depolarization of the sarcolemmal membrane

35) Contraction of many sarcomeres results in shortening of the overall ____ .
A)Thick Filament
B) Myofibril
C) Motor proteins
D)Sarcoplasmic reticulum
E)Receptor

Ans:B)Myofibril

Q36) Each myosin head uses _____ to change shape.
A)1 Ca2+ ion
B)2 ADP molecules
C)2 ATP molecules
D)1 ATP molecules
E) 1 Na+ ion

Ans:D) 1ATP molecule

Q37) ___ heads stay bound to actin until _____
A)troponin, more Ca2+ enters the cell
B)myosin, more Ca2+ enters the cell
C)tropomyosin, mare Ach is released
D)myosin, another ATP binds
E)troponin, another depolarization event occurs

Ans:D)myosin, another ATP binds

Q38) Once myosin binds to actin, __ heads change shape and slide the _____. This is the sliding filament theory.
A)actin, myosin
B)troponin, myosin
C)troponin, actin
D)myosin, actin

Ans:D)myosin, actin

Q39) ____ moves ____ off of the myosin binding sites on actin
A)Ca2+, troponin
B)Troponin, myosin
C)Tropomyosin, troponin
D) Myosin, troponin
E)Troponin, tropomyosin

Ans:E)Troponin, tropomyosin

Q40) Which of the following is in the correct order from large to small?
A) muscle belly -> sarcomere -> myofibril
B)myofibril -> sarcomere -> thin and thick filaments
C)muscle belly -> thin and thick filaments -> sarcomere
D)thick and thin filaments -> sarcomere -> myofilbril

Ans:B)myofibril -> sarcomere -> thin and thick filaments

Q41) What structure stores Ca2+ in the muscle fiber?
A)T Tubules
B)Myofibril
C)Sarcoplasmic reticulum
D)Troponin
E)Sarcomere

Ans:C)Sarcoplasmic reticulum

Q42) The tendency for turbulent flow is greatest in which of the following?
A)Aorta
B)Arterioles
C)Capillaries
D)small arterioles

Ans:A) Aorta

Q43) A decrease in which of the following tends to increase pulse pressure?
A)systolic pressure
B)Stroke volume
C)Arterial Compliance
D)plasma volume

Ans:C) Arterial Compliance

Q44) Which component of the circulatory system contains the largest percentage of the total blood volume?
A)Arteries
B)Capillaries
C)Veins
D)pulmonary circulation

Ans:C)Veins

Q45) A healthy 35-year-old man is running a marathon. During the run, there is an increase in his splanchnic vascular resistance. Which receptor is responsible for the increased resistance?
A)α1 Receptors
B)β1 Receptors
C)β2 Receptors
D)Muscarinic receptors

Ans:A)α1 Receptors

Q46) Cardiac output of the right side of the heart is what percentage of the cardiac output of the left side of the heart?
A)25%
B)50%
C)75%
D)100%

Ans:D)100%

Q47) Compared with the systemic circulation, the pulmonary circulation has a
A)higher blood flow
B)lower resistance
C)higher arterial pressure
D)higher capillary pressure

Ans:B)lower resistance

Q48) Pulse pressure is:
A)determined by stroke volume
B)the highest pressure measured in the arteries
C)the lowest pressure measured in the arteries
D)measured only during diastole

Ans:A)determined by stroke volume

Q49) The tendency for blood flow to be turbulent is increased by:
A)increased hematocrit
B)increased viscosity
C)partial occlusion of a blood vessel
D)decreased velocity of blood flow

Ans:C)partial occlusion of a blood vessel

Q50) Which of the following is not true:
A)in the skeletal muscle if you increase passive stretch the tension will decrease
B)The diastolic pressure of the ventricle is 80
C)in the cardiac muscle if you increase passive stretch the tension will increase
D)In pulmonary there is low pressure and low resistance

Ans:B)The diastolic pressure of the ventricle is 80

Q51) Which of the following is incorrect about the arteries got away from the heart :
A)Resistance increase
B)Elastic fiber decrease
C)Smooth muscle increase
D)Diameter increase
E)blood pressure decrease

Ans:D)Diameter increase

Q52) What is the pulse pressure in the ventricle:
A)120
B)80
C)0
D)40

Ans:A)120

Q53) In smooth muscle contraction, the majority of calcium (Ca2+) needed for contraction enters the cell from the extracellular fluid
True
False

Ans: true

Q54) In smooth muscle, when the cytoplasmic calcium (Ca2+) concentration is elevated, Ca2+ binds to this regulatory protein in order to initiate muscle contraction
A) myosin light chain
B) Calmodulin
C) myosin phosphatase
D)myosin ATPase

Ans:B . . .calmodulin

Q55) Transverse (t) tubules are present in smooth muscle
True
False

Ans: false

Q56) Which of the following muscle proteins plays a critical role in contraction of both smooth and striated muscle?
A)Calmodulin
B)Troponin
C) Tropomyosin
D)Actin
E)Myosin light chains

Ans: D . . .actin

Q57) During the process of excitation-contraction coupling in smooth muscle, intracellular [Ca2+] is increased through all of the following methods except which

A) Ca2+ influx from extracellular stores through voltage-activated Ca2+ channels
B)Ca2+ influx from the sarcoplasmic reticulum through IP3 receptors
C)Ca2+ influx from extracellular stores through ryanodine receptors
D)Ca2+ influx from extracellular stores through ligand-gated Ca2+ channel

Ans: c. . . .Ca2+ influx from extracellular stores through ryanodine receptors

Q58) Which of the following temporal sequences is correct for excitation-contraction coupling in smooth muscle
A)Ca2+ influx through IP3 receptors, cross-bridge cycling, Ca-calmodulin activation of MLCK, Ca2+ removal from SR by SERCA, PMCA, and Na/Ca exchanger
B) Ca2+ influx through RyR in the SR, Ca2+ removal from SR by SERCA, PMCA, and Na/Ca exchanger, Ca-calmodulin activation of MLCK, cross-bridge cycling
C) Ca2+ influx through L-type Ca2+ channels, Ca2+ activated Ca2+ release from RyR in the SR, Ca-calmodulin activation of MLCK, cross-bridge cycling, Ca2+ removal from SR by SERCA, PMCA, and Na/Ca exchanger
D)Ca2+ influx through store-operated Ca2+ sensitive channels, cross-bridge cycling, Ca2+ removal from SR by SERCA, PMCA, and Na/Ca exchanger, Ca-calmodulin activation of MLC

Ans:c....Ca2+ influx through L-type Ca2+ channels, Ca2+ activated Ca2+ release from RyR in the SR, Ca-calmodulin activation of MLCK, cross-bridge cycling, Ca2+ removal from SR by SERCA, PMCA, and Na/Ca exchanger

Q59) Which of the following enzymes is responsible for dephosphorylating myosin light chains, thereby causing smooth muscle relaxation?
A)Calmodulin
B)Protein kinase A
C)Myosin light chain kinase
D)Myosin light chain phosphatase
E)Phospholipase C
F)Actomyosin ATPase

Ans: D....Myosin light chain phosphatase

Q60) The role of myosin light-chain protein in smooth muscle is what?
A)Dephosphorylate myosin light-chains of the cross-bridge, thus relaxing the muscle
B)Split ATP to provide the energy for the power stroke of the cross-bridge cycle
C)Phosphorylate cross-bridges, thus driving them to bind with the thin filament
D)Pump calcium from the cytosol back into the sarcoplasmic reticulum

Ans: c....Phosphorylate cross-bridges, thus driving them to bind with the thin filament

Q61) Single-unit smooth muscle differs from multiunit smooth muscles how?
A)Single-unit muscle produces action potentials spontaneously that spreads to neighboring cells, while multiunit does not
B)Single-unit muscles are not innervated by autonomic nerves
C)Single-unit muscle has T-tubules, while multiunit does not
D)Single-unit muscle contraction speed is slow, while multiunit is fast

Ans:A.....Single-unit muscle produces action potentials spontaneously that spreads to neighboring cells, while multiunit does not

Q62) Which of the following enzymes is responsible for phosphorylating myosin light chains in order to activate smooth muscle contraction?
A)Calmodulin
B)Protein kinase A
C)Myosin light chain kinase
D)Phospholipase C
E)Actomyosin ATPase

Ans: C.....Myosin light chain kinase

Q63) Which characteristic or component is shared by skeletal muscle and smooth muscle
A)Troponin
B)Thick and thin filaments arranged in sarcomeres
C)High degree of electrical coupling between cells
D)Elevation of intracellular [Ca2+] for excitation-contraction coupling

Ans:D.....Elevation of intracellular [Ca2+] for excitation-contraction coupling

Q64) What is the example on continuous capillaries ?
A)Spleen
B)Liver
C)Bone marrow
D) Blood brain barrier

Ans:D)BBB

Final Questions

Q65) Continuous capillaries that have gaps and fenestrated between cells:
A)True
B)False

Ans:B)False

Q66) Fenestrated capillary are essential for:
A)separated compartment
B)prevent passage molecule
C)receiving and release peptides

Ans:C)receiving and release peptides

Q67) What molecule can passage through continuous capillaries ?
A)NH3
B)CO2/Glucose
C)H2O/O2
D)Peptides

Ans:C)H2O/O2

Q68) Sinusoidal capillaries are found in all following except:
A)Liver
B)Spleen
C)Brain
D)Bone marrow

Ans:C)Brain

Q69) The interstitial fluid have main role in all following except:
A)delivering nutrients to the cell
B)carrying away waste,
C)maintaining a stable extracellular environment,
D)separat organ

Ans:D)separat organ

Final Questions

Q70) Exchange of Substances Across the Capillary Wall all following except ?
A)Vesicular transport
B)Simple diffusion
C)Bulk flow
D)Co-transport

Ans:D)Co-transport

Q71) All of these filter features except:
A)Fluid and small solutes move out of the capillary and into the interstitial space
B)hydrostatic pressure
C)venous end of the capillary
D)arterial end of a capillary

Ans:C)venous end of the capillary

Q72) The balance between diffusion and perfusion is known as:
A)Starling's Law
B)Bulk flow
C)hydrostatic pressure
D)receiving and release peptides

Ans:A)Starling's Law

Q73) The tendency for edema to occur will be increased by:
A)arteriolar constriction
B)increased venous pressure
C)increased plasma protein concentration
D)muscular activity

Ans:B)increased venous pressure

Q74) Which of the following conditions decreases the likelihood of edema formation?
A)Arteriolar constriction
B)Venous constriction
C)Standing
D)Nephrotic syndrome
E)Inflammation

Ans:A)Arteriolar constriction

Q75) Which of these is not a lymphatic organ?
A)Spleen
B)Kidney
C)Tonsils
D)Thymus

Ans:B)Kidney

Q76) Which of these doesn't affect capillary permeability?
A)Inflammation
B)Burns
C)Starvation
D)Toxic chemicals

Ans:C)Starvation

Q77) Which of these increase hydrostatic pressure:
A)Kidney retaining salt and water
B)Decreased blood pressure
C)Release of histamine
D)Liver cirrhosis

Ans:A)Kidney retaining salt and water

Q78) Which of these is true:
A)Lymphatic vessels don't have closed ends
B)Backflow can occur in lymphatic vessels
C)A function of the lymphatic system is immunity
D)None of the above

Ans:C)A function of the lymphatic system is immunity

Q79) One of the following statements is true:
A)Thermoreceptors in the skin relay information about environmental temperature,and anterior hypothalamus realy information about core temperature
B)Thermoreceptors in the skin relay information about core temperature, and anterior hypothalamus realy information about environmental temperature
C)Each Thermoreceptors in the skin And anterior hypothalamus relay information about environmental temperature and core temperature
D)none of the above

Ans:A)Thermoreceptors in the skin relay information about environmental temperature,and anterior hypothalamus realy information about core temperature

Q80) The following events occurred during the course of a fever in a 12-year-old boy: (1) cutaneous vasodilation and sweating; (2) a return of the set-point temperature to normal; (3) an increase in the set-point temperature to 103°F; and (4) shivering, chills, and cutaneous vaso-constriction. Which of the following best describes the correct temporal order of events during the course of the fever in this boy?
A)1,2,3,4
B)4,3,2,1
C)3,4,2,1
D)2,1,4,3
E)1,3,2,4

Ans:C)3,4,2,1

Q81) The core temperature is:
A)37°F
B)89.6°F
C)98.6°F
D)3.67°F

Ans:C)98.6°F

Q82) A 70-year-old man is found sitting in his yard, vomiting on a hot summer day with the lawnmower running.
The man is confused and dizzy. He is admitted to the hospital as an emergency patient. His body temperature is 105°F, his heart rate is 110 beats/min, and his skin turgor is poor. Which symptom is main likely in this man?
A)Headache
B)Hot skin
C)Hypotension
D)Nausea
E)Heat stroke

Ans:E)Heat stroke

Q83) One of the following major functions of thyroid hormones is false:
A)stimulating Na+-K+ ATPase
B)increasing O2 consumption
C)Decreasing heat production
D)increasing metabolic rate
E)increasing heat production

Ans:C)Decreasing heat production

Q84) The sympathetic nervous system stimulates..... receptor in the vascular smooth muscle of skin blood vessels that generate heat:
A)a1
B)b1
C)a2
D)b2

Ans:A)a1

Q85) One of the following is a type of mechanisms for generating heat:
A)Shivering
B)Convection
C)Radiation
D)Sweating

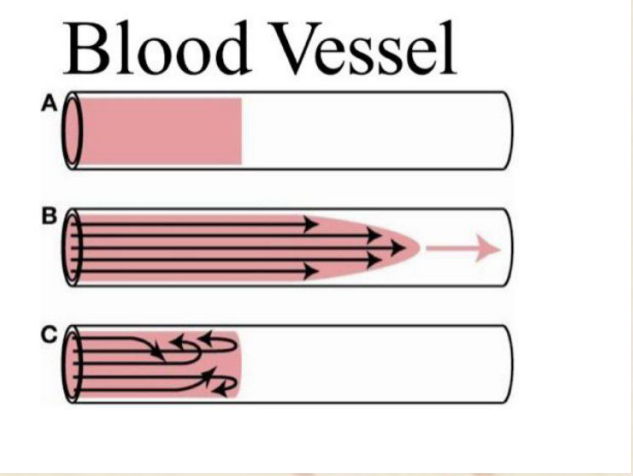
Ans:A)Shivering

Q86) Temperature regulation mechanisms work as :
A)Negative feedback loops
B)Positive feedback loops
C)1+2
D)none of the above

Ans:A)Negative feedback loops

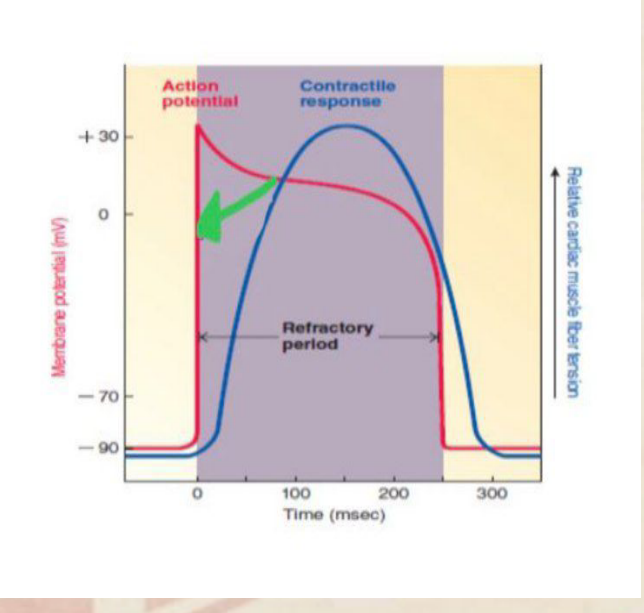
Q87) Which one of the following may be Anemia?
A
B
C
B+C

Ans: C

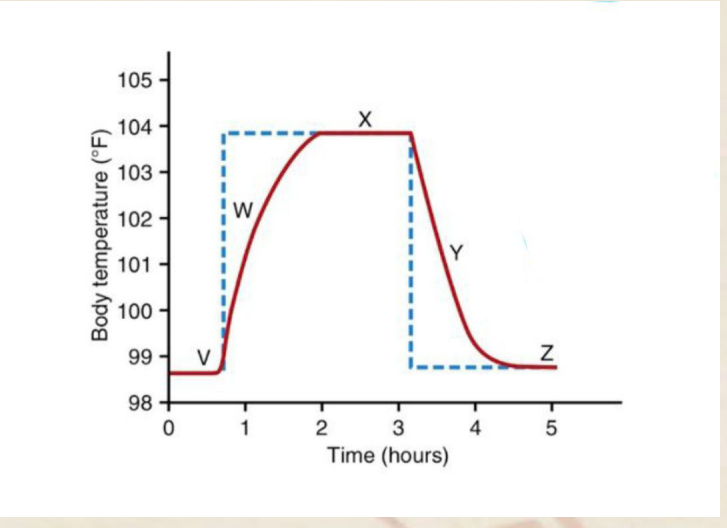


Q88) What is the name of the phase marked by the green arrow and what is the ion that causes it to occur,respectively ?
A) 0/Ca++
B) 1/Na+
C) 0/Na+
D) 1/Ca++

Ans: C) 0/Na+



Q89) The diagram shows the effects of changing the set point of the hypothalamic temperature controller. The red line indi- cates the body temperature, and the blue line represents the hypothalamic set-point temperature. One of the following statements is false



A) In Y: Sweating and Vasodilation operate , but Shivering and Vasoconstriction don't
B) In Z: Sweating and Vasodilation operate , but Shivering and Vasoconstriction don't
C) In X: Shivering, Vasoconstriction,Sweating and Vasodilation don't operate
D) In W: Shivering and Vasoconstriction operate , but Sweating and Vasodilation don't

Ans: B) Z