Makeup simulation exam

بعض الملاحظات قبل البدء:
تقريبًا كل أسئلة هذا الامتحان هي أسئلة سنوات "معدلة" بحيث يتم الإبقاء على فكرة السؤال والمعلومة التي يتم السؤال عنها، بطريقة عرض مختلفة لا تخرج عن نسق وهيكلة أسئلة السنوات العامة، ولكن بتغيير طفيف في السؤال بحيث يصبح سؤال جديد لتمكن الطالب من اختبار نفسه

الهدف من هذا هو عرض أسئلة جديدة لم يقم الطالب بحلها من قبل، بحيث يستطيع الطالب اختبار نفسه منها بشكل حقيقي، وفي نفس الوقت يبقى الامتحان محافظا على نفس معيار الصعوبة الخاصة باختبارات الجامعة، ومحافظا كذلك على نفس طبيعة الأسئلة

عدد اسئلة هذا الاختبار 85 سؤال
مدة الاختبار: ساعتين

1) Calculate the Gain of a system where it reduced the blood pressure to 180 after it raised from 140 to 200, and determine whether if the process of this system is positive or negative feedback?
a) -20 and negative feedback
b) – 0.5 and positive feedback
c) 0.5 and negative feedback
d) 20 and positive feedback
e) None of the above

2) Solutions A and B are separated by a membrane that is permeable to glucose. Solution A is 10 mM glucose, and solution B is 5 mM glucose. If the concentration of glucose in solution A is multiplied by 4, the flux of glucose across the membrane will be
a) increased by X2
b) increased by X3
c) increased by X4
d) increased by X5
e) increased by X7

3) The osmolarity of a solution of 75 mmol/L $(NH_4)Cl$ is closest to the osmolarity of which of the following:
A. 50 mmol/L NaCl
B. 100 mmol/L urea
C. 150 mmol/L NaCl
D. 150 mmol/L urea
e. None of the above

4) Omeprazole which is proton pump inhibitor is used to treat gastritis; it blocks H^+ secretion in gastric parietal cells. Which of the following transport processes is being inhibited?
A. Simple diffusion
B. Facilitated diffusion
C. Primary active transport
D. Cotransport
e. None of the above

5) What is the major difference between simple diffusion and facilitated diffusion?
A. Simple diffusion does not require energy but facilitated diffusion requires energy.
B. Simple diffusion only operates across a cell membrane.
C. Simple diffusion only moves substances inside a cell.
D. Simple diffusion requires energy but facilitated diffusion does not requires energy.
E. Facilitated transport requires a specific carrier

6) The engulfment of large particles inside a cell is considered:
a) vesicular transport
b) phagocytosis
c) Active transport
d) all of the above
e) None of the above

7) Which of the following needs hydrolysis of ATP:
a) transporting through carriers
b) Movement of water through aquaporins
c) Using Na+ glucose co-transporting
d) Using of k+/H+ transporter
e) Diffusion through plasma membrane

8) As osmolarity increases, water concentration …… and osmotic pressure ……
A. decreases: increases
B. decreases: decreases
C. increases: decreases
D. increases: increases
E. None of the above

9) Which of the following factors will increase the diffusive clearance of solutes across the semipermeable membrane?
A. Area of the membrane increases
B. Concentration gradient for the solutes decreases
C. Lipid solubility of the solutes decreases
D. Size of the solute molecules increases
E. Thickness of the membrane increases

10) Which of the following statements is true:
a) Osmolality of water is calculated by dividing the molarity by the volume
b) hypertonic solutions cause cells to lyse
c) Secondary active transport required ATP lysis
d) inhibition of Na+ -K+ ATPase will stop some types of secondary active transport from working
e) None of the above

11) Na+ -K+ ATPase transports ……
a) 3 sodium inside and 2 potassium outside
b) 3 sodium outside and 2 potassium inside
c) 2 sodium outside and 3 potassium inside
d) 2 sodium inside and 3 potassium outside
e) None of the above

12) Select the molecule that should have the least permeability through a lipid bilayer:
A. ATP
B. amino acid
C. cholesterol
D. glucose
E. potassium

13) Positive feedback is best described in which of the following?
a) uterus contraction
b) shivering from heat
c) antagonist skeletal muscle contraction
d) producing parathyroid hormone is response to Ca++ decrease
e) none of the above

14) Which of the following is true
a) constitutive secretion requires a trigger
b) lysozymes digest bacteria
c) symptoms of a disease: are objective changes such as fever
d) Tay-Sachs disease is a lysosomal enzyme deficiency
e) None of the above

15) One of the followings with regard to refractory periods during an action potential is false:
A) The membrane can generate a new action potential by suprathreshold stimuli in relative refractory period
B) The relative refractory period follows the absolute refractory period
C) Na+ voltage gated channels are closed and capable for opening
D) Before reaching threshold, the membrane is out of refractory period
E) Highest Na+ diffusion is during absolute refractory period

16) One of the followings with regard to electrical activity along nerve fibers (axons) is true:
A)Nodes of Ranvier refer to the parts of neurons that are covered with myelin sheath
B)Conduction is continuous in myelinated fibers
C)Saltatory conduction refers to jumping of impulse from Schwann cell to the next Schwann
D)Local currents are depolarizing axonal membrane to reach the threshold potentials
E)Activation of Ca++ at the axon hillock is important for generation of action potentials at motor neurons

17) One of the followings is NOT true with regard to summation:
A)Summation can have place between IPSPs and EPSPs
B)Temporal summation refers to summation of potentials from the same presynaptic neurons
C)Spatial summation refers to summation of potentials from different presynaptic neurons
D)The duration of postsynaptic potentials is less than the duration of action potentials at the presynaptic axons
E)High frequency of action potentials by inhibitory presynaptic neurons can reduce generation of action potentials at the postsynaptic neurons

18) Resting membrane potential at excitable cells is:
A)Positive inside with regard to outside
B)Established by high permeability of membrane to CL- ion
C)Determined mainly by the activity of adenylate cyclase
D)Generated by high protein content inside cells
E)Established just across the membrane

19) At which phase the K+ conductance is the highest?
a) Firing phase
b) falling phase
c) Resting phase
d) plateau phase
e) None of the above

20) Na+ channels are in the state of closed and NOT capable for opening during :
A)Resting membrane potential
B)Depolarization and before reaching threshold
C)Firing stage of an action potential
D)Falling phase of an action potential
E)Positive after potentials

21) Depolarization occurs because:
A) more K+ diffuse into the cell than Na+ diffuse out of it.
B) more K+ diffuse out of the cell than Na+ diffuse into it.
C) more Na+ diffuse into the cell than K+ diffuse out of it.
D)more Na+ diffuse out of the cell than K+ diffuse into it.
E) both Na+ and K+ diffuse into the cell

22) Choose the wrong statement:
a) Temporal summation occurs when two action potentials arrives at the same time
b) IPSP is caused by Cl- influx
c) The action potential is transmitted through synapse chemically
d) decreasing in membrane potential is achieved during firing state
e) EPSP is caused by Na+ efflux

23) the sum of all recorded action potential generated by all nerve cell at a certain point is called:
a) reverberatory circuit
b) biphasic action potential
c) compound action potential
d) IPSP
e) EPSP

24) If ion X^{1+}has a nestren potential of +60, choose the correct statement
a) The nestren potential of this ion will increase if it was X^{2+}
b) The nestren potential of this ion will increase if it's concentration increases inside
c) The nestren potential of this ion will decrease if it was X^{2-}
d) A + C
e) None of the above

25) A membrane was forced to have a potential of -92 mv, which of the following processes will occur:
a) K+ influx
b) Cl- efflux
c) Na+ efflux
d) None of the above

26) Generation of action potentials by post synaptic neurons can be reduced by all the followings EXCEPT:
A) Inhibition of Ca++ channels at presynaptic terminals releasing excitatory neurotransmitters.
B) Activation of chemical gated Cl- channels at the post synaptic membranes.
C) inhibition of Na+ channels at the post synaptic membranes.
D) Generation of more IPSPs (Inhibitory of post synaptic potentials)
E) Inhibition of K+ channels at the postsynaptic membranes.

27) One of the followings describes CORRECTLY the saltatory conduction:
A. It refers to jumping of impulse from a node of Ranvier to the next node.
B. It refers to saltation of impulse from presynaptic to postsynaptic neuron.
C. It is slower than continuous condition.
D.It appears in unmyelinated fibers.
E. It involves jumping of impulse from one Schwan cell to adjacent Schwan cell.

28) Regarding action potentials, which of the following pairs are NOT related to each other?
A. Resting potential: High conductance for K+.
B. Relative refractory period: Highest conductance of K+.
C. Threshold potential: Activation of voltage gated Na+ channels.
D. Overshoot: Highest electrical driving force for Na+.
E. Hyperpolarization: More diffusion for K+.

29) By muscarinic intoxication, all the followings are taking place EXCEPT:
A) Vomiting and diarrhea
B) Dilation of pupil(mydriasis)
C) Hypersalivation
D) High sweating
E) Decrease heart rate

30) Atropine increases:
a) Parasympathetic activation
b) Salivation
c) Heart rate
d) Digestion
e) Urination

31) Which of the following receptors increases IP3?
a) M2
b) Alpha 2
c) Beta 2
d) M3
e) Beta 1

32) Choose the correct statement:
a) Meiosis is caused by SNS
b) PSNS has a thoracic origin
c) Presynaptic neurons are long usually in SNS
d) superior mesenteric ganglia is considered as a SNS ganglia
e) None of the above

33) Which substance activates muscarinic receptors?
A. Acetylcholine (ACh)
B. Atropine
C. Norepinephrine (NEpi)
D. Epinephrine (Epi)
E. More than one of the above

34) Which of the following is NOT typically associated with the parasympathetic nervous system?
A. Increased salivation
B. Decreased heart rate
c. Promotion of digestion
D. Stimulation of sweat glands
E. None of the above

35) Cholesterol in the cell membrane most likely serves which of the following functions?
A. Increases membrane permeability
B. Increases membrane turnover
C. Decreases membrane fluidity
D. Decreases membrane stability
E. None of the above

36) Which of the following best describes the glycocalyx of a cell?
A. Negatively charged carbohydrate chains that protrude into cytosol
B. Negatively charged carbohydrate layer on cell surface
C. Layer of anions aligned on the cytosolic surface of plasma membrane
D. Large glycogen stores found in "fast" muscles
E. A mechanism of cell-cell attachment

37) Which of the following statements concerning autonomic nervous system is TRUE:
a. In the synaptic organization, more divergence and convergence are found in parasympathetic system than in sympathetic.
b. Norepinephrine is secreted by preganglionic neurons of sympathetic.
c. Smooth muscle cells of blood vessels are controlled directly only by sympathetic.
d. Parasympathetic fibres that originate in the brain are under the voluntary control.
e. Sympathetic fibres that innervate suprarenal glands are releasing norepinephrine.

38) Activation of adrenergic receptors will result in all the following EXCEPT :
a. Decreased salivation.
b. Bronchodilation
c. Sweating
d. Increase heart rate.
e. Constriction of blood vessels

39) The SA node is the pacemaker of the heart because.
a. Leakier to K+ than other cells
b. It is the only cells leaky to Na+ in the heart.
c. Its membrane property (reach threshold faster than any other cell)
d. Its location in the right atrium between the venae cava
e. It is connected to autonomic nervous system.

40) If the ventricular Purkinje fibers become the pacemaker of the heart, what is the expected heart rate?
A-30/min
B-65/min
C-75/min
D-50/min
E-85/min

41) Intracellular calcium homeostasis in cardiac muscle cell is characterized by:
A- Na+/Ca++ exchanger is found in cardiac as well as in skeletal muscle
B- Mitochondrial Na+/Ca++ exchanger works in pathological states
C-Na+/Ca++ exchanger exchanges one sodium for one calcium ions
D-Ca++ pump in the cardiac muscle sarcolemma is low affinity but high capacity pump
E-Ca++ pump of the sarcoplasmic reticulum is not found in the cardiac muscle cells

42) Which of the following structures will have the slowest rate of conduction of the cardiac action potential?
A) Atrial muscle
B) Anterior internodal pathway
C) A-V bundle fibers
D) Purkinje fibers
E) Ventricular muscle

43) Which condition at the A-V node will cause a decrease in heart rate?
A) Increased sodium permeability
B) Decreased acetylcholine levels
C) Increased norepinephrine levels
D) Increased potassium permeability
E) Increased calcium permeability

44) Which statement best explains how sympathetic stimulation affects the heart?
A) The permeability of the S-A node to sodium decreases
B) The permeability of the A-V node to sodium decreases
C) The permeability of the S-A node to potassium increases
D) There is an increased rate of upward drift of the resting membrane potential of the S-A node
E) The permeability of the cardiac muscle to calcium Decreases

45) About the absolute refractory (A.R.P) period in the heart, all the following is true EXCEPT:
a. It is longer than the A.R.P of neurons.
b. It lasts approximately as long as the cardiac contraction.
c. It is due mainly to phase 2 (plateau) of the contractile cardiac muscle action potential.
d. During it, the heart cannot be stimulated.
e. It corresponds in time with the whole duration of the action potential.

46) Which of the above phases is due to leakiness of the cells to Na+ ions in the slow response potential of S.A node:
a. Phase 4
b. Phase 0
c. Phase 3
d. Phase 4 and 0
e. None of the above

47) About the cardiac conductivity, all the following are true EXCEPT:
a. It is increased by sympathetic stimulation.
b. It is slowest in the A-V node.
c. It is slowest in the ventricular muscle.
d. It is decreased by vagal stimulation.
e. It is maximal in the Purkinje fibres.

48) Slow response action potential (pacemaker potential) is characterized by?
A) During phase 4 the transmembrane potential is closer to Ca++ equilibrium
B) potential rather than to Na+ equilibrium potential
C) It has longer plateau phase than fast response potential of ventricular cells
D) dV/dT (change in voltage per unit change in time)of phase 0 is much slower than ventricular cell potential phase 0
E) Ca++ ions is responsible for phase 2

49) Which of the following are caused by acetylcholine ?
a. Increased permeability of the cardiac muscle to calcium ions
b. Depolarization of the atrioventricular node
c. Decreased permeability of the sinoatrial node to potassium ions.
d. Hyperpolarization of the sinoatrial node
e. Increased heart rate

50) A drug that increases the permeability of cardiac cells to Na+ and Ca++ but decreases its permeability to K+ and Cl- would cause:
A) Negative chronotropic and negative inotropic effect on the heart
B) No effect since the effect of Ca++ and Na+ would be counterbalanced by the effect of Cl- and K+
C) Positive chronotropic and negative inotropic effect on the heart
D) Positive inotropic and Positive chronotropic effect on the heart
e) Positive inotropic and negative chronotropic effect on the heart

51) All of the following turn off G Protein Coupled Receptor GPCR signal EXCEPT:
A. Phosphodiesterase
B. activation Phosphatases
C. activation Phospholipases
D. activation Ga hydrolyses GTP
E. Beta-Arrestin binding to receptor

52) Deficiency of the following vitamin will affect thyroid hormones (T3 and T4) intracellular signalling?
A. Vitamin K
B. Vitamin C
C. Vitamin A
D. Vitamin D
E. Vitamin B12

53) An experimental drug was designed to inhibit phosphodiesterase hormone. What do you expect to occur intracellularly?
A. Increase in DAG.
B. increase in cAMP.
C. Increase in STAT.
D. Decrease in inositol triphosphate IP3.
E. Decrease in intracellular Ca levels

54)

55) Which of the following is a derivative of Tyrosine ?
A. Insulin.
B. Acetyl choline.
C. Thyroid stimulating hormone (TSH).
D. Growth hormone
E. Norepinephrine

56) ……. refers to very strong binding (large negative ΔGo and a very small Kd).it is also referred to the association or dissociation constant which is often referred to as the “binding” constant.
A. Specificity
B. Affinity
C. Desensitization
D. Priming effect
E. Half-life

57) The type of signaling when the cell that secretes the signal is also the target is called:
A. Contact-dependent.
B. Endocrine.
C. Paracrine.
D. Autocrine.
E. Synaptic.

58) TGF beta (transforming growth factor) receptor is an example of:
A. G Protein Coupled Receptor (GPCR).
B. Voltage gated channel
C. Enzyme linked receptor.
D. Ionotropic receptors.
E. Metabotropic receptors

59) The protein (ligand) associated with leptin receptor;
A. Serine Kinase
B. Janus Kinase (JAK)
C. Guanylyl cyclase
D. Insulin
E. None of the above

60) Low kd (dissociation) constant for a hormone to a certain receptor means:
A. Clearance rate of that hormone is low.
B. Half life of that hormone is short.
C. Concentration of the hormone needed to bind the receptors is high.
D. Binding percentage to plasma protein is low.
E. Affinity of the hormone to the receptor is high.

61) Which of the following hormones has intracellular receptors ?
a. Thyroid hormone (T3)
b. Glucagon
c. Insulin
d. Growth hormone
e. Thyroid stimulating hormone (TSH)

62) All of the following must have plasma membrane receptors to transduce their effects EXCEPT:
a. Aldosterone
b. Glucagon
c. Growth hormone
d. Follicle stimulating hormone.
e. ACTH

63) Prolonged high levels of glucose and sustained release of insulin on the long term will cause Diabetes Type II due to:
A. Decreased metabolism of insulin.
B. Increased clearance of insulin.
c. Death of insulin secreting cells.
D. Desensitization of insulin receptors.
E. Upregulation of insulin receptors

64) Which of the following is NOT a way neurotransmitter inactivation?
A) Re-uptake by surrounding glial cells
B) Re-uptake into the postsynaptic terminal
C) Enzymatic degradation
D) Diffusion
E) Re-uptake into presynaptic terminals.

65) Which channel membrane protein is specifically important in the process of neurotransmitter release?
A) Voltage – dependent (gated) potassium channels
B) Voltage – dependent (gated) chloride channels
C) Neurotransmitter receptor sodium channels
D) Voltage-dependent (gated)calcium channels
E) Neurotransmitter receptor potassium channels.

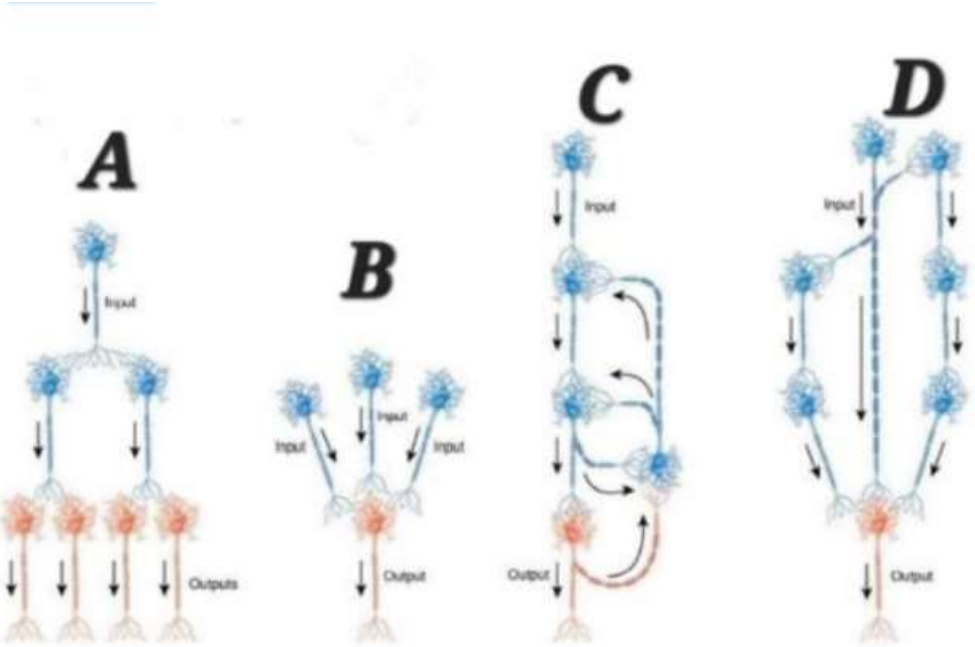
66) Which of the following receptors are least adaptive?
A)Touch
B)Pressure
C)Taste
D)Pain
E)Position

67) Pain is to ____ as cold is to _____.
A) Baroreceptor; chemoreceptors
B) Chemoreceptors; nociceptors
C) Baroreceptors; thermoreceptors
D) Mechnoreceptors; nociceptors
E) Nociceptors; thermoreceptor

68) Receptors in the muscles, tendons, and joints that inform the brain of the position and movements of the body parts are functionally known as:
A) Interoceptors B) Nocioceptors C) Cutaneous receptors D) Exteroreceptors E) Proprioceptors

69) Which one represents parallel after discharge circuit:

A. A. B. B. C. C. D. D e. None of the above

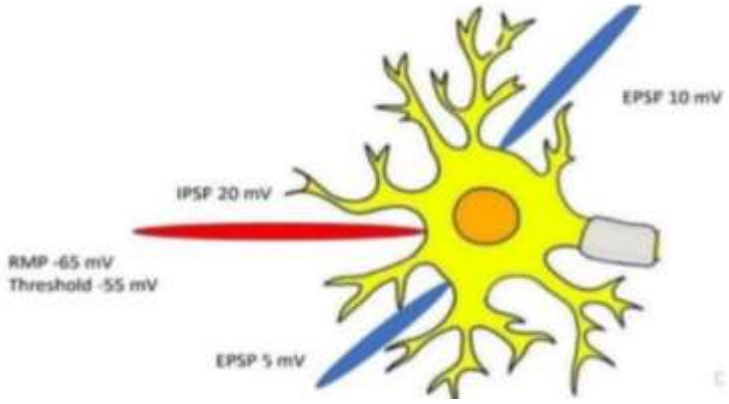


70) _____is the conscious awareness of changes in the external or internal environment.

A. sensation.
B. perception.
C. processing.
D. integrative function.
E. motor function

71) Find the Summation and the State of excitation

A. -70, inhibitory.
B. -70, excitatory .
C. -65, inhibitory .
D. -5, excitatory



72) Which One of the following is usually an excitatory neurotransmitter:
a. Acetylcholine
b. Dopamine
c. Glycine
d. GABA
e. NO

73) Action potential occurs in axon hillock because:
A. It's a connection between the cell body and axon
B. It has no Ca++ channels
C. It has many voltages gated Na+ channels
D. It's permeability for anions is high
E. It has no K+ channels

74) One of the following does NOT describe metabolic receptors:
A. Fast.
B. Prolonged.
C. Amplified.
D. Slow.
e. None of the above

75) Which type of neurotransmitter cannot be stored?
A. Acetylcholine
B. Dopamine
C. Glycine
D. GABA
E. NO

76) One of the following is NOT expected during fatigue of synapses
A. Decrease in the number of receptors.
B. Neurotransmitters decrease.
C. Response is slower.
D. Abnormal concentrations of ions in the postsynaptic neuron could be a factor.
E. None of them

77) One of the following is responsible for the reflexes:
A. Cortex
B. Spinal cord
C. Cerebrum
D. Lower brain
E. All of the above

78) After giving a person healthy intravenous saline solution (isotonic NaCl), the properties of extracellular fluid will be_____?
A. Hypertonic and hypervolemic
B. Isotonic and normovolemic
C. Isotonic and hypervolemic
D. Hypotonic and hypervolemic
E. Hypotonic and normovolemic

79) Use the following to answer the question below:

1. Diabetes insipidus (deficiency of ADH)

2. Increased antidiuretic hormone (ADH)

secretion

3. Intravenous infusion of hypotonic solution

4. Drinking of high amounts of potable (normal)

water

5. Increased release of aldosterone

Which conditions are having highest potential to

cause hypernatremia in extracellular fluids with

dehydration of cells?

A. 2 and 3

B. 1 and 5

C. 2 and 5

D. 1 and 4

E. 3 and 5

80) With regard to measurements of body fluids, which of the following is TRUE:
A. 51Cr-labeled RBCs can be used for measuring total blood volume.
B. 40K+ radioisotope is used for measuring intracellular fluid volume.
C. Insulin is used to measure intravascular fluid volume.
D. 1251-albumin is used to measure interstitial fluids volume.
E. 22Na+ radioisotope is used to measure total body fluids

81) Edema at interstitial fluids can be generated by all the following EXCEPT:
A. Increased hydrostatic pressure in capillaries.
B. Decreased lymph flow from interstitial fluids.
C. Decreased albumin concentration in plasma.
D. Increased wash down of protein from interstitial fluid E. Increased venous pressure

82) Which of the following pairs are NOT having similar effects on Na+ level of body fluids:
A. Increased ADH secretion and drinking of high amounts of potable (normal) water.
B. High release of aldosterone and ingestion of high amounts of salts
C. Hypoaldosteronism (decreased aldosterone secretion) and deficiency of ADH hyper
D. Loss of hypotonic fluids from the body and activation of renin- angiotensin aldosterone system
E. High release of ANP (atrial natriuretic peptide) and intravenous infusion of hypotonic solution

83) Solute and water move across capillary wall via ……..
a) intercellular cleft (space between cells)
b) plasmalemma vesicles (Caveolae)
c) plasma proteins
d) A+ B
e) A + C

84) Listed below are the hydrostatic and oncotic pressure across a muscle capillary wall. Mean capillary hydrostatic pressure=30 mmHg/ Plasma colloid osmotic pressure= 25 mmHg/ Interstitial colloid osmotic pressure=10 mmHg/ Interstitial hydrostatic pressure=5 mmHg
What is the net filtration pressure (in mmHg) for fluid movement across the capillary wall?
A-25 mmHg
B-0 mmHg
C-5 mmHg
D-15 mmHg
E-10 mmHg

85) …….. proposes that as arterial pressure falls the arterioles have an intrinsic property to dilate in response to decreases in wall tension
a) metabolic theory
b) Myogenic theory
c) Angiogenesis
d) vasodilator theory
e) None of the above

1	E	26	E	51	C	76	A
2	E	27	A	52	C	77	B
3	D	28	A	53	B	78	C
4	C	29	B			79	B
5	E	30	C	55	E	80	A
6	D	31	D	56	B	81	D
7	D	32	D	57	D	82	C
8	A	33	A	58	C	83	D
9	A	34	E	59	B	84	E
10	D	35	C	60	E	85	B
11	B	36	B	61	A		
12	E	37	C	62	A		
13	A	38	C	63	D		
14	B	39	C	64	B		
15	C	40	A	65	D		
16	D	41	B	66	D		
17	D	42	C	67	E		
18	E	43	D	68	E		
19	B	44	D	69	D		
20	D	45	E	70	B		
21	C	46	A	71	A		
22	E	47	C	72	A		
23	C	48	C	73	C		
24	C	49	D	74	A		
25	B	50	D	75	E		