Quiz Questions : Sarkar : "You will come to my office and we will mate[meet]."

BASIC CONCEPTS - HOMEOSTASIS

1. What is the principle of Complementarity?
2. Secondary active transport requires what?
3. What are organs?
4. What is homeostasis?
5. What are the three steps of homeostasis?
6. What are the three independent components of control mechanism?
7. What does the control center do?
8. Homeostasis is primarily maintained by _____.
9. What are the two regulatory mechanisms? Describe both.
10. What are the three components of negative feedback? Describe each.
11. Give an example of negative feedback? Positive feedback?
12. What may occur if negative feedback mechanisms are overwhelmed?

MUSCULAR SYSTEM BASICS

13. What are the three main functions of the nervous system?
14. Sensory (afferent) in the PNS has both somatic and _____ portions.
15. Motor (efferent) in the PNS has both somatic and _____ portions.
16. Somatic divisions refer to _____.
17. Describe the ganglionic neurons of the sympathetic nervous system.
18. What do Dual innervations allows for?
19. What cell has a 5x higher concentration than neurons?
20. _____ moves soluble compounds toward _____ via rhythmic contractions of axon.
21. Describe the ganglionic neurons of the parasympathetic nervous system.
22. What is axonal transport?
23. What is movement toward the axon terminal?
24. What are the functions of neurons?
25. What is the blood-brain-barrier?
26. What is the underlying functional feature of the nervous system?
27. Neurons are _____.
28. Neuron action potentials are always the same regardless o f_____.
29. The resting membrane potential is maintained by what?
30. In a neuromuscular junction, _____ neurons use _____ as a neurotransmitter.
31. What are the large EPSPs call on skeletal muscle?
32. The large EPSPs do what?
33. What is a drug that blocks Ach action at an NMJ?

34. What are presynaptic inhibitions?
35. What is a Inhibitory postsynaptic potential (IPSP) caused by?
36. What is a Excitatory postsynaptic potential (EPSP) caused by?

RECEPTORS

37. What two inhibitory receptors are from the same superfamily of ligand-gated ion channels?
38. $GABA_A$ receptor is a _____.
39. $GABA_B$ receptor is a _____.
40. Excitatory amino acid receptors are all activated by _____.
41. What are the excitatory amino acid receptors and provide any extra information if available.
42. What is the full name for AMPA?
43. What is the full name of NMDA?
44. Metabotropic receptors mobilize ____ and increase _____.
45. Metabotropic receptors sometimes associate with _____, a.k.a. _____.
46. What are the five basic properties of receptors?
47. What is the saturable/reversible equation and what does each factor stand for?
48. B_{max} corresponds to what?
49. What is the equation of the dissociation constant? What is another name for it?
50. What is the equation of the association constant?
51. How much is high-affinity? Practically, how does high-affinity apply here?
52. How are receptors defined?
53. Reversible agonist will ____ with the actual intended ligand, which may _____.
54. Irreversible agonists will _____ and may _____.
55. Secondary messenger molecules will continue to send inhib/excit signals until what?
56. Ion channels alter what?
57. There is often _____ receptor for a central neurotransmitter.
58. When do different effector mechanisms exist for the same central neurotransmitter?
59. What are autonomic receptors coupled with?
60. G proteins are _____ with __, __, and __ subunits.
61. What are the two kinds of α subunits?
62. If a α-subunit binds to a _____ it becomes inactive.
63. Binding of GTP activates _____, causing _____, thus _____ the G protein.
64. To initiate physiological actions, what do enzymes do G-proteins couple GPCR with?
65. AC produces what secondary messenger?
66. Phospholipase C produces what secondary messenger?
67. Usually the secondary messengers _____.

68. Norepineprine acts as _____ messenger.

NEUROTRANSMITTERS & NEUROPEPTIDES

69. What are the neurotransmitters?
70. How are NTs inactivated?
71. The synaptic vesicle membrane is recycled by _____.
72. What is additionally need to recycle the synaptic vesicle?
73. What are the five basic steps of chemical nerve transmission?
74. Depolarization opens _____ channels in the presynaptic nerve terminal leading to exocytosis.
75. The influx of Ca^{2+} is the result of what 4 factors?
76. When Ca^{2+} floods the active site, which vesicles undergo exocytosis?
77. After repetitive stimulation, what is release from distinct areas other than the active sites?
78. NT receptors are present _____, and can _____ upon subsequent depolarization.
79. What NTs are reuptaken by a transport protein coupled to the Na^{+} gradient?
80. Which NTs are degraded?
81. Which NTs are uptaken and metabolized by glial cells?
82. Epinephrine is produced from what amino acid? Serotonin? NO_2?
83. VIP and CCK, both neuropeptides, are used in the GI tract for _____.
84. PIPs → _____ + _____ . What classification are the products?
85. Neurotransmitters act: _____ and _____.
86. Neurotransmitters release: _____ and _____.
87. NTs elicit a _____. If they do not, but still adhere to a receptors, it is a _____.
88. NTs bind to specific receptors in a _____ and _____ manner.
89. The quantal theory of neurotransmitters is called _____.
90. A quantum is a _____.
91. Exocytosis is led by sequential _____ located in the _____.
92. What structures are phosphoralated on the synapsin? What does the phosphoralation?
93. Non-peptide neurotransmitters are biosynthesized by _____.
94. Peptide neurotransmitters are biosynthesized by _____ and transported to the _____.
95. What are the large dense core vesicles that NTs are synthesized, packed, and stored in?
96. In autonomic ganglion, what are the Ach receptors?
97. In autonomic ganglion, what are the neuropeptide receptors?
98. What are the 2 forms of Ach?
99. Where is AchE found?
100. What blocks the nicotinic cholinergic receptor? Muscarine?
101. Preganglionic nicotinic receptors for the PNS & SNS are present at the _____ and _____.

102. Binding of nicotinic Ach causes what ions influx/efflux?
103. Postganglionic muscarinic receptors are located where?
104. Activation of the M1 receptors results in what?
105. Activation of the M2 receptors inhibits _____ resulting in _____.
106. What are the major CNS exctiory neurotransmitters?
107. What is the most common inhibitory NT in the brain?
108. Adenlase cyclase turns what into cAMP; cAMP is a _____ molecule.
109. Glycine is an _____ NT, opening _____ channels and can be blocked by _____.
110. GABAa receptors have what pharmalogical binding sites?
111. Neuropeptides can cause a _____ of effects and not thought to _____.
112. Many neuropeptides are _____ and involved in _____ and _____.
113. Cholecystokinin promotes what?
114. Substance P is a _____ neuropeptide.
115. What are the analgesic neuropeptides?
116. _____, an _____, blocks the analgesic effects of some peptides.
117. Describe the most common neuropeptide.
118. What is the only lipid neuropeptide? What is its effects?
119. What are the gaseous neuropeptides?
120. What system do gaseous neuropeptides work through?
121. What specifically does NO cause?
122. Analgesic peptides may also be blocked by what?
123. What are the monoamine neurotransmitters?
124. What happens when monoamine NT's are activated?
125. When an monoamine NT binds to the β-receptor, the _____ dissociate and _____ bonds.
126. The α-GTP activates the _____ producing _____ via ____.
127. The cyclic AMP activates _____, which _____.
128. When an monoamine NT binds to the α2-receptor, _____ is inhibited.
129. Monamines are mostly broken down by enzymes (__%), what is the primary enzyme?
130. MAOI's are used as _____.
131. Serotonin is involved in the regulation of _____, _____, _____, _____, and _____.
132. What pharmaceutical is structurally similar to serotonin?
133. SSRIs, which function by _____, include what named antidepressants?
134. Norepinephrine, is a neurotransmitter where?
135. Dopamine's biological activity occurs in the _____, most significantly in the _____.
136. Where and how is epinephrine released?
137. Epinephrine stimulates a variety of _____, as well seen in small amount in the _____.

138. Dopamine, which is involved in _____ and _____, have _____(#) of receptors.
139. Degeneration of the dopamine motor system may result in _____.
140. Anti-dopamine drugs may be used to treat what psychological syndrome?
141. NE is used in PNS as a _____ neurotransmitter.
142. NE in the CNS affects _____.
143. _____ stimulates NE pathways.
144. How are adrenergic receptors classified?
145. In general α-receptors on smooth muscle has a _____ effect; β-receptors _____.
146. Where are α_1 adrenergic receptors located?
147. α_1 receptors are (excitatory/inhibitory), and receptor activation produces _____.
148. Where are α_2 adrenergic receptors located?
149. α_2 receptors are (excitatory/inhibitory), and receptor activation produces _____.
150. Where are β_1 adrenergic receptors located?
151. β_1 receptors are (excitatory/inhibitory), and receptor activation produces _____.
152. Where are β_2 adrenergic receptors located?
153. β_2 receptors are (excitatory/inhibitory), and receptor activation produces _____.
154. α_1 receptors are predominantly _____; the agonist is _____, the antagonist is _____.
155. α_2 receptors are predominantly _____; the agonist is _____, the antagonist is _____.
156. B_x receptors are predominantly _____; the agonist is _____, the antagonist is _____.
157. Give an example of a pharmaceutical B_x agonist and what it does?
158. Give an example of a pharmaceutical B_x antagonist and what it does?

AUTONOMIC NERVOUS SYSTEM

159. ____ autonomic preganglionic neurons release _____ onto _____ receptors.
160. ____ postganglionic sympathetic neurons secrete _____ onto _____ receptors.
161. ____ postganglionic parasympathetic neurons secrete _____ onto _____ receptors.
162. ANS Postganglionic neurons synapse where?
163. The sympathetic nervous system tends to go off _____, while the para _____.
164. The parasympathetic nervous system is known as what system?
165. What occurs to the pupil during SNS stimulation?
166. What occurs to the pupil during paraSNS stimulation?
167. What is the control center of the ANS?
168. The adrenal medulla is an extension of the _____.
169. The action of the adrenal is under control of the _____, and act like _____.
170. What does the adrenal medulla release in emergency situations and in what percentages?

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MUSCULAR SYSTEM BASICS

171. A motor unit is _____.
172. A twitch is produced in response to a _____.
173. What is the order of muscle tissue?
174. What is the functional unit of skeletal muscle?
175. Describe the A-band?
176. Describe the I-Band?
177. Where does actin bind?
178. What is the H-band?
179. What is a globular form of actin?
180. Describe f-actin.
181. What covers the binding sites on active and provides stability?
182. What attaches tropomyosin to actin & intiates the contraction process?
183. What are the three subunits of troponin and what does each do?
184. How are cross-bridges formed?
185. Myosin heads cannot bind to actin until _____.
186. What does Myosin ATPase do?
187. What lies in the grooves between the G-actins?
188. _____ is attached to tropomyosin at a interval of every 7 actins.
189. What happens when calcium levels rise about 10^{-6}M?
190. Where is the action potential transmitted in the muscle?
191. Where is Ca^{2+} released from? What is it released into?
192. What ion influx into the muscle cell (as a result of Ach), initiates the AP?
193. What is a twitch?
194. What is a summation?
195. What is tetanus?
196. What are the factors that affect muscular force generation?

SKELETAL MUSCLE

197. Fast twitch fibers have _____ activity, and use _____ metabolism.
198. The ____ pigmented fast twitch fibers _____ rapidly and develop tension ___ than slow twitch.
199. Fast twitch fibers have high SERCA. What is serca?
200. In the absence of oxygen, what product results out of glucose?
201. In the presence of oxygen, Pyruvic acid can enter what?
202. Complete depletion of ATP results in _____.
203. Slow twitch fibers have _____ activity, and use _____ metabolism.

204. Slow twitch fibers are _____ pigmented, due to high levels of _____.
205. Slow twitch fibers have a _____ diameter and _____ cross-bridges.
206. ST fibers, who have numerous _____, are fatigue _____.
207. What are the two types of muscle contraction?
208. In isotonic contraction, the force _____ throughout the shortening process.
209. In isotonic contraction, the muscle ____ and moves a load. Tension and load remain _____.
210. Isotonic contractions are often used for what?
211. What are the two types of isotonic contraction?
212. In isometric contraction, the length of fibers _____ and _____ and _____ do not move.
213. Although _____, muscle length overall does not change.
214. ATP can be produces by what three methods?
215. What donates a phosphate to ADP in direct phosporylation? Via what enzyme?
216. In glycolysis, what are the three products?
217. What are the products of Oxidative phosphorylation?
218. During heavy exercise, skeletal muscle respires _____ for the first _____seconds.
219. Energy comes from what source during light exercise?
220. During moderate activity, what is the energy source?
221. The liver increases _____.
222. During heavy exercise, GLUT-4 is moved where? What is GLUT-4?
223. Lactic acid accumulates due to the _____.
224. Phosphocreatine levels are _____ than ATP levels in muscle cells.
225. Single unit smooth muscle cells are _____ coupled. Multi-unit?
226. What is a phasic smooth muscle contraction? Tonic?
227. What senses a degree of stretch and speed of contraction?
228. What does a golgi tendon organ do?

SMOOTH MUSCLE

229. Relaxation occurs when _____.
230. During relaxation, myosin is _____ and can no longer _____.
231. Smooth muscles have _____ contractions and can form what important state?
232. Calcium binds to _____, which the complex then activates _____.
233. MLCK phosphorylates _____ and increases _____ resulting in binding.
234. What are calveioli and what do they do?
235. The SR interacts with calveioli and are important in what role _____.
236. What are the Ca^{2+} channels?
237. What critical dissociation occurs during muscle relaxation?

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238. What causes sustained muscle contraction fatigue?
239. During moderate exercise, how does muscle fatigue occur?
240. What is central fatigue?
241. What drug blocks angiotensin II promoting vasodialation?
242. A elevation of Myoplasmic Ca^{2+} causes _____. What NT can cause this?