Type I Questions: Choose the one most appropriate answer.

_____ 1. The following is NOT a ligand-gated channel receptor:

a) GABAa
b) muscarinic acetylcholine receptor
c) serotonin (5-HT3) receptor
d) AMPA receptor
e) nicotinic acetylcholine receptor

_____ 2. Nuclear receptor coactivators:

a) are not necessary for nuclear receptor activity
b) bind to the enhancer elements
c) are ubiquitous
d) have histone acetyltransferase activity
e) have histone deacetylaase activity

_____ 3. Which statement is NOT true for nuclear receptor enhancer elements:

a) they are often palindromic in nature
b) they are sometimes direct repeats of a sequence
c) the retinoic acid receptor response element (enhancer sequence that binds retinoic acid receptors) is identical for all retinoic acid responsive genes
d) the enhancer sequence that binds the estrogen receptor is based on a consensus
e) can be found far away from the promoter

_____4. The following statement about the insulin receptor tyrosine kinase is NOT true:

a) phosphorylates other insulin receptors
b) catalyzes transphosphorylation
c) can phosphorylate ras
d) can phosphorylate certain other kinases
e) can phosphorylate proteins that other receptor tyrosine kinases do not

_____5. Which of the following statements is <u>FALSE</u>

a) Absorption of a weakly basic drug is likely to occur more readily from alkaline intestine than from the acidic stomach
b) Alkalinization of the urine from pH 6 to pH 7 would help to eliminate amphetamine, a basic drug (pKa=8.5)
c) A weak acid (pKa=3.5) is more lipid-soluble at pH 2 than at pH 3
d) Very few drugs cross cell membranes by way of endocytosis

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e) Uncharged molecules cross cell membranes (by diffusion) more readily than charged molecules

_____6. Which of the following is responsible for the step of translocation of dopamine into synaptic vesicles in the presynaptic neuron:

a) Vesicular monoamine transporter (VMAT)
b) Dopamine transporter
c) Monoamine oxidase (MAO)
d) Metabolism by catechol-O-methyltransferase (COMT)
e) Aromatic L-amino acid transporter

Type II Questions: Questions in this section are to be answered by <u>using the key given below</u>

a) If only 1, 2 and 3 are correct
b) If only 1 and 3 are correct
c) If only 2 and 4 are correct
d) If only 4 is correct
e) If all are correct

_____1. The following statement(s) about acetaminophen is true:

1. it belongs to the para-aminophenol group of compounds
2. its major benefit is its long half-life compared with ASA
3. major toxicity can result from nucleophilic attack on liver cell proteins by a toxic intermediate
4. it is a potent anti-inflammatory

__ ___2. Side effects of aspirin can include:

1. stomach irritation
2. blood clots
3. prevention of blood coagulation
4. hypersensitivity to acetaminophen

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_____3. Acetylcholine is released from which of the following tissues?

1. **postganglionic parasympathetic neurons innervating intestinal smooth muscle**
2. **postganglionic sympathetic neurons innervating sweat glands**
3. **preganglionic neurons innervating sympathetic ganglia**
4. adrenal medulla

_____4. Acetylsalicylic acid can inhibit both COX-1 and COX-2 because

1. it can fit into the COX-2 side pocket
2. it undergoes extensive first pass metabolism
3. it is more potent than most Coxibs
4. **it acetylates a serine residue in both enzymes**

_____ 5. Norepinephrine:

1. Is the main neurotransmitter at nicotinic receptors
2. Is the main neurotransmitter at muscarinic receptors
3. Can be ingested orally
4. **Interacts widely with alpha and beta receptors**

___ ___6. The following statements about Ritalin are true:

1. Can increase stimulatory impulses in the brain to increase the "signal to noise ratio" of nerve transmission
2. Can increase blood pressure
3. Can increase heart rate
4. Has a better affinity for beta receptors than alpha receptors.

_____7. A drug is eliminated by renal filtration and the elimination is a first-order elimination process. The elimination half-life of the drug will depend on the following:

1. volume of distribution
2. extent of plasma protein binding
3. elimination rate constant
4. **plasma concentration**

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