Endocrine System: Response to Stress

1. What two body systems work together to provide well coordinated, generalized, nonspecific responses to combat stress? _______________ and _____________

2. Increased levels of what three hormones indicate that an individual is experiencing stress? _______________, _______________ and _______________

3. In the nervous system’s response to stress, _______________ and _______________ exert many effects on the body. Choose the correct response in the pairs listed.

   ↑ or ↓ CO  ↑ or ↓ sweating
   ↑ or ↓ ventilation  ↑ or ↓ insulin
   ↑ or ↓ BP  ↑ or ↓ blood flow to digestive system
   ↑ or ↓ plasma levels of glucose, fatty acids etc

4. In response to stress, the hypothalamus increases the release of CRH, which increases ________ from the anterior pituitary and ___________ from the adrenal cortex. These hormones prolong the response to stress provided by the nervous system.

5. Cortisol enhances _______________ (in vessels) to help maintain blood pressure and also (increases or inhibits) the inflammation and immune response.

6. Besides cortisol, the adrenal cortex releases _______________, which promotes salt and water retention, which helps maintain blood volume and blood pressure.

7. _______________ (posterior pituitary hormone) also aids in the stress response by promoting water retention and at high levels it is a potent _______________. Both of these help maintain blood pressure.

8. Epinephrine is a (lipophilic or hydrophilic) hormone. Thus it (does or does not) require a protein carrier and the receptors at the target cell are located _______________. Epinephrine is synthesized from _______________ and has a very short half-life of ______.

9. _______________ is a condition in which there is hypersecretion of catecholamines by a tumor in the adrenal medulla. Which of the following symptoms would be present in a patient with this condition?

   sweating or cool dry skin
   ↓ BP or ↑ BP
   ↓ blood glucose or ↑ blood glucose
   ↑ HR or ↓ HR
   ↑ TPR or ↓ TPR
10. Cortisol is a (lipophilic or hydrophilic) hormone. Thus it (does or does not) require a protein carrier and the receptors on the target organ are located ____________. Cortisol is synthesized from ____________ and has a half-life of ________.

11. Hypercortisolism is better known as __________ ________, which is due to a hypersecreting tumor in the anterior pituitary. What hormone is being hypersecreted? _________________. Hypercortisolism from all other causes, such as glucocorticoid drugs, is known as __________ _________.

12. Primary adrenal insufficiency is better known as __________ ________. What two hormones are deficient? ______________ and ______________

13. The following symptoms would be characteristic of which disease? ______________
   Low blood pressure, decreased plasma sodium and hypoglycemia

14. The following symptoms would be characteristic of which disease? ______________
   high blood pressure, poor wound healing and hyperglycemia

15. Classify the following as either part of the rapid response (R) to stress mediated by the sympathetic nervous system or the prolonged (P) response of the endocrine system: maintains gas exchange _____
   maintains fuel levels _____
   maintains body defenses _____
   redirects blood flow _____
   makes fuel available _____