

**E-6536**

**M.Sc. (III<sup>rd</sup> Semester) Examination, 2021**

**ZOOLOGY**

**(Molecular Endocrinology and Reproduction :**

**Neuroendocrinology)**

*Time Allowed : Three Hours*

*Maximum Marks : 70*

**SECTION - A**

**Note :** Attempt any ten questions. Each question carries one mark. **10×1=10**

**Q. 1.** Objective Type :

Fill in the blanks :

- (i) \_\_\_\_\_ are chemicals found in the synaptic vesicles which, when released, has an effect on the next cell.
- (ii) \_\_\_\_\_ reduces anxiety by suppressing the circuitry in the brain that causes the anxiety.

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- (iii) Posterior pituitary gland is also called \_\_\_\_\_.
- (iv) \_\_\_\_\_ is a hormone that regulates the sleep-wake cycle.
- (v) \_\_\_\_\_, the primary stress hormones increases sugar in the blood stream.

Multiple choice type :

- (vi) If Na<sup>+</sup> channels opened on a cell, immediately :
- (a) K<sup>+</sup> ions would rush out
- (b) K<sup>+</sup> ions would rush in
- (c) Na<sup>+</sup> ions would rush out
- (d) Na<sup>+</sup> ions would rush in
- (vii) The site where the threshold potential (–55 mV) has to occur first in order to produce an action potential is the :

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- (a) Dendritic spines
- (b) Soma
- (c) Axon
- (d) Axon hillock

(viii) Which of the following are intracellular second messengers ?

- (a) Acetylcholine
- (b) Glycine
- (c) IP3
- (d) Glutamate

(ix) What type of selection is most likely responsible for the large antlers seen on male elk ?

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- (a) Intersexual selection
- (b) Group selection
- (c) Intrasexual selection
- (d) Kin selection

(x) FSH is produced by :

- (a) Thyroid gland
- (b) Anterior pituitary gland
- (c) Posterior pituitary gland
- (d) Gonads

(xi) The most common benign tumor of the pituitary gland is a :

- (a) Glioma
- (b) Prolactinoma
- (c) Carcinoid tumor
- (d) Islet cell tumor

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(xii) Excess prolactin causes :

- (a) Acromegaly
- (b) Gynaecomastia
- (c) Dwarfism
- (d) Anaemia

**SECTION - B**

**Note :** Attempt any five questions. Each question carries  
2 marks. **5×2=10**

**Q. 2.** Very short answer type (25-30 words) :

- (i) Structural characteristics of neurons.
- (ii) Ovarian steroid signalling in the hypothalamus.
- (iii) Hypothalamo-vascular system.
- (iv) Sexual dimorphism.
- (v) Synthesis and regulation of melatonin.

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(vi) Biological clock.

(vii) Stress hormones.

**SECTION - C**

**Note :** Attempt any five questions. Each question carries  
4 marks. **5×4=20**

**Q. 3.** Short answer type (250 words) :

- (i) Explain the stereotaxic atlas of rat brain & hypothalamus.
- (ii) Discuss about neuromodulation.
- (iii) Discuss about the regulation of pituitary hormone secretion.
- (iv) Explain endocrine disruptors in embryonic diapause & other mechanisms.

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- (v) Write about the physiological actions of clock gene expression & pineal.
- (vi) Discuss the role of immuno-cytochemistry & in-situ hybridization in neuroendocrine disorders.
- (vii) What is the role of immune responses in neuroendocrine regulation ?

**SECTION - D**

**Note :** Attempt any three questions. Each question carries 10 marks. **3×10=30**

**Q. 4.** Essay type (more than 500 words) :

- (i) Explain the general organization of neuro endocrine organs.
- (ii) Discuss hypothalamo-hypophyseal interactions with the gonads and adrenal.

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- (iii) Explain the regulation of pituitary hormone secretion.
- (iv) Discuss the regulation of systemic homeostasis by nervous & immune system interactions.

