

Roll No.

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**M.Sc. (Fourth Semester)
EXAMINATION, May - June, 2022**

(New Course)

BIOCHEMISTRY

Paper Third (B)

(Molecular Endocrinology)

Time : Three Hours]

[Maximum Marks:80

Note: Attempt all section as directed.

(Section - A)

(Objective/Multiple Choice Questions)

(1 mark each)

Note: Attempt all questions: Choose the correct answer:

1. Thyroid hormones belong to which class of hormone?
 - (A) Steroids
 - (B) Proteins
 - (C) Polypeptides
 - (D) Amino acid derivatives

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2. Oxytocin secretion promotes all of the following actions except:
 - (A) Myometrium contraction
 - (B) Lactogenesis
 - (C) Milk Ejection
 - (D) Myoepithelial cell contraction of mammary glands
3. Hormone that contain iodine is:
 - (A) Testosterone
 - (B) Adrenaline
 - (C) Thyroxine
 - (D) Insulin
4. Neurotransmitters are often stored in:
 - (A) Synaptic buttons
 - (B) Microtubules
 - (C) Vesicles
 - (D) Endoplasmic reticulum
5. Which type of pheromone causes an immediate response?
 - (A) Ovulation
 - (B) Releaser
 - (C) Primer
 - (D) All of the above

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6. Name the gland, which releases Neurohormone -
- (A) Hypothalamus
 - (B) Pituitary
 - (C) Thyroid
 - (D) Pancreas
7. Thyrotropin releasing hormone stimulates the secretion of:
- (A) Growth hormone
 - (B) Prolactin
 - (C) Adrenocorticotrophic hormone
 - (D) Luteinizing hormone
8. _____ takes over the responsibility of transcription of fresh messenger RNA.
- (A) Steroid hormones
 - (B) Catecholamines
 - (C) Pituitary gland hormones
 - (D) Pancreatic hormones
9. Which of the following hormone is secreted in response to Angiotensin II?
- (A) Aldosterone
 - (B) Thyroxin
 - (C) Estrogen
 - (D) FSH

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10. Which of the following signal molecules does not interact with cell surface receptors?
- (A) Insulin
 - (B) Gastrin
 - (C) Glucagon
 - (D) Testosterone
11. How many transmembrane alpha-helices are present in the G-protein coupled receptors?
- (A) Two
 - (B) Four
 - (C) Five
 - (D) Seven
12. The catecholamines are synthesized from the amino acid:
- (A) Tryptophan
 - (B) Tyrosine
 - (C) Tryptamine
 - (D) None of the above
13. Which of the following receptor has intracellular receptors?
- (A) ADH
 - (B) ACTH
 - (C) Aldosterone
 - (D) Melatonin

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14. Estrogen and testosterone are steroid hormones and are most likely bind to:
- (A) Cytoplasmic receptors
 - (B) Membrane ions channels
 - (C) Enzyme linked membrane receptors
 - (D) G-protein linked membrane receptors
15. Which of the following hormones does not need a second messenger?
- (A) FSH
 - (B) LH
 - (C) Glucagon
 - (D) Oestrogen
16. The secretion of aldosterone is caused by:
- (A) Angiotensin II
 - (B) ACTH
 - (C) Epinephrine
 - (D) Insulin
17. Pituitary hormone triggering the male testes to generate sperm and in females, triggering follicular development on a monthly basis is:
- (A) Prolactin
 - (B) Growth hormone
 - (C) Follicle-stimulating hormone
 - (D) Luteinizing hormone

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18. Which of the following hormonal dosage is given as an oral administration to prevent pregnancy?
- (A) Relaxin
 - (B) Progesterone
 - (C) Estradiol
 - (D) Epinephrine
19. Which of the following hormones requires a cell surface receptor for its action?
- (A) Adrenaline
 - (B) Progesterone
 - (C) Growth factors
 - (D) All of the above
20. Secretion of Mullerian-inhibiting substance by Sertoli cells.
- (A) Causes the mullerian ducts to develop into Wolffian ducts.
 - (B) Causes the mullerian ducts to develop into oviducts
 - (C) Causes the mullerian duct to regress by apoptosis in males
 - (D) Causes the testis to produce testosterone

Section - B

(Very Short Answer Type Questions)

(2 marks each)

Note: Attempt all questions.

1. Enlist the biological function of Vasopressin hormone.

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2. What are neuropeptides? Give two examples :
3. What are biogenic amine neurotransmitters?
4. What are peptide hormones? Give examples.
5. Explain nuclear hormone receptors.
6. Explain the importance of testosterone
7. Comment on the Ovarian determining genes.
8. Mention the symptoms of endocrine disruption.

Section - C

(Short Answer Type Questions)

(3 marks each)

Note: Attempt all questions.

1. Comment on the different categories of hormone.
2. What are octapeptides? Explain the function of any one octapeptide with an example.
3. Explain the biosynthetic pathway for thyroid hormone.
4. Given brief outline of any one protein hormone produced by recombinant DNA technology.
5. Comment on the role of G protein in hormone signaling.
6. Explain membrane hormone receptors.
7. Describe the role of Mullerian inhibiting substance in female reproduction.
8. Comment on the mechanism of birth control pills with one example.

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Section - D

(Long Answer Type Questions)

(5 marks each)

Note: Attempt all questions.

1. What are neurotransmitters? Discuss various types and role of neurotransmitters.

OR

Give a detailed account on the chemical nature and general class of hormones.

2. Explain the expression of protein hormone encoding gene with an example.

OR

Describe the molecular basis of thyroid hormone synthesis.

3. Comment on the molecular mechanism of hormone action.

OR

Describe the protein hormone signal transduction pathway with an example.

4. What is contraception? Discuss various methods of contraception.

OR

What are stem cells? Comment on the stem cell renewal in testis.