



AMREF INTERNATIONAL UNIVERSITY
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF REHABILITATION MEDICINE
BACHELOR OF SCIENCE IN PHYSIOTHERAPY

END OF TRIMESTER EXAMINATIONS SEPTEMBER TO DECEMBER 2025

UNIT CODE: PHT 137

UNIT NAME: PHYSIOLOGY OF ENDOCRINE AND INTEGUMENTARY SYSTEMS

DATE: 8th DECEMBER 2025

TIME: 2pm-4pm

INSTRUCTIONS

- 1. All students will have two (2) hours to complete the examination**
- 2. This is an online exam, Attempt all questions as per the instruction**
- 3. It is the student's responsibility to report any page and number missing in this paper.**
- 4. Check that the paper is complete**
- 5. Total number of pages is 6 including the cover.**
- 6. Read through the paper quickly before you start.**

SECTION I: MULTIPLE CHOICE QUESTIONS

(30 MARKS)

1. Both ADH and aldosterone act to
 - a. Increase urine volume
 - b. Increase blood volume
 - c. Increase total peripheral resistance
 - d. Produce all of the above
2. The maximum effect of vasopressin occurs at
 - a. Distal convoluted tubule
 - b. Proximal convoluted tubule
 - c. Cortical part of the collecting duct
 - d. Medullary part of collecting duct
3. A hormonal effect on the renal tubules
 - a. Aldosterone increases potassium reabsorption from the distal tubule
 - b. Angiotensin II increases hydrogen ion secretion from the proximal tubules
 - c. ADH increases water reabsorption in the proximal tubule
 - d. Atrial natriuretic peptide decreases sodium reabsorption from the proximal tubules
4. A hormone that is largely unbound to plasma proteins
 - a. Cortisol
 - b. Thyroxine (T4)
 - c. Antidiuretic hormone
 - d. Estradiol
5. Regarding the islets of Langerhans
 - a. D cells secrete pancreatic polypeptide
 - b. A cells are the most common
 - c. Blood from the islets drain into the hepatic portal vein
 - d. B cell secretion of glucagon occurs by exocytosis
6. The most common cell type of the endocrine pancreas is:-
 - a. A cells
 - b. B cells
 - c. C cells
 - d. F cells
7. Both insulin and somatostatin:-
 - a. Are released from extra-pancreatic sites
 - b. Have receptors are linked to G proteins
 - c. Inhibit release of glucagon
 - d. Cause K uptake by cells
8. A substance which decreases the activity of hormone-sensitive lipase
 - a. Adrenaline
 - b. Thyroxine
 - c. Serotonin
 - d. Prostaglandin E

9. A hormone primarily responsible for the setting of basal metabolic rate and for promoting maturation of the brain is
 - a. Cortisol
 - b. Adrenocorticotrophic hormone
 - c. Thyroid stimulating hormone
 - d. Thyroxine

10. A term that best describes the interactions between insulin and glucagon
 - a. Synergistic
 - b. Permissive
 - c. Antagonistic
 - d. Cooperative

11. Antidiuretic hormone promotes the retention of water by stimulating
 - a. The active transport of water
 - b. The active transport of chloride
 - c. The active transport of sodium
 - d. The permeability of collecting duct to water

12. The presence of glucose in the urine
 - a. Occurs normally
 - b. Indicates presence of kidney disease
 - c. Occurs when its transport carriers become saturated
 - d. Is a result of hypoglycemia

13. The secretion of FSH in a male is inhibited by negative feedback effects of
 - a. Inhibin secreted from the tubules
 - b. Inhibin secreted from the leydig cells
 - c. Testosterone secreted from the tubules
 - d. Testosterone secreted from the leydig cells

14. Contraction of the mammary glands and ducts during the milk ejection reflex is stimulated by
 - a. Prolactin
 - b. Estrogen
 - c. Oxytocin
 - d. Progesterone

15. A hormone mostly important in insulin secretion
 - a. gastrin
 - b. CCK
 - c. GIP
 - d. Secretin

16. TSH secretion is stimulated by:
 - a. Dopamine
 - b. Somatostatin
 - c. Cold temperatures
 - d. Glucocorticoids

17. Thyroxine (T₄) has greater affinity for:
 - a. Thyroxine-binding globulin
 - b. Transthyretin
 - c. Thyroxine-binding pre-albumin
 - d. Albumin

18. Cutaneous receptive fields are smallest in
 - a. Fingertips
 - b. The back
 - c. The thighs
 - d. The arms

19. The layer of the epidermis that contain melanocytes
 - a. Stratum lucidum
 - b. Stratum basale
 - c. Stratum corneum
 - d. Stratum granulosum

20. Most body odor is as a result of bacteria metabolism of the secretions produced by _____ glands
 - a. Sebaceous
 - b. Merocrine
 - c. Apocrine
 - d. Eccrine sweat

21. The fibrous protein that is responsible for the strength and water resistance of the skin surface is
 - a. Keratin
 - b. Collagen
 - c. Elastin
 - d. Keratohyalin

22. The layer of the skin that provides protection against bacteria as wells as chemical and mechanical injuries
 - a. Dermis
 - b. Epidermis
 - c. Subcutaneous layer
 - d. Sebum layer

23. When the body temperature rises above normal
- Blood flow to the skin rises
 - Melanocyte activity increases
 - Sweat gland activity increases
 - Vasoconstriction occurs
24. The cells responsible for producing the pigment that determines skin color
- Keratinocytes
 - Melanocytes
 - Langerhans Cells
 - Marked Cells
25. The protein that provides mechanical strength and a waterproof barrier to the skin, hair, and nails is:
- Melanin
 - Collagen
 - Keratin
 - Elastin
26. A response that occurs to release heat when the body temperature rises above normal
- Blood vessels in the skin constrict
 - Sweat gland activity decreases
 - Blood flow to the skin increases (vasodilation)
 - Arrector pili muscles contract
27. The epidermal layer where cells constantly undergo mitosis to produce new skin cells
- Stratum corneum
 - Stratum lucidum
 - Stratum granulosum
 - Stratum basale (germinativum)
28. The contraction of the arrector pili muscles causes:
- Release of sweat
 - "Goose bumps"
 - Production of sebum
 - Increased blood flow
29. A skin manifestation of low oxygen levels in the blood
- Jaundice
 - Paleness
 - Cyanosis
 - Flushing

30. A type of cell responsible for forming the skin's ability to **tan** on exposure to sunlight
- Melanocytes
 - Keratinocytes
 - Dendrocytes
 - Adipocytes

SECTION II: SHORT ANSWER QUESTIONS. Attempt all (20 MARKS)

- Outline the way negative feedback controls the production of thyroid hormones (5 marks)
- Explain how parathyroid hormone (PTH) and calcitonin work antagonistically to maintain calcium homeostasis (5 marks)
- Explain the process of skin thermoregulation in response to high body temperature (5 marks)
- State the FIVE steps involved in immune surveillance work of the skin? (5 marks)

SECTION III: LONG ANSWER QUESTIONS. Attempt all (20 MARKS)

- Describe how exposure to UV rays affect the activity of melanocytes (10 marks)
- Describe the physiological consequences of a disease that destroys the beta cells of the pancreas (10 marks)