



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN MEDICAL
LABORATORY SCIENCE; PHARMACEUTICAL SCIENCE AND
MEDICAL BIOTECHNOLOGY WITH INFORMATION
TECHNOLOGY

PMT 226: MEDICAL ENDOCRINOLOGY

Date: 7th April, 2014

Time: 11.15 a.m. – 1.30 p.m.



PMT226: Medical Endocrinology

Instructions

1. This examination is divided into TWO sections.
2. Answer ALL questions in section A
3. Answer the first question in Section B, plus ANY OTHER one question
4. For all attempted questions, credit will be given for short concise answers with clearness in expression
5. Indicate the question numbers on the front page of the answer booklet in the order in which you have answered them
6. If you have a question during the examination, please raise your hand and an examination committee member will come to you.

SECTION A: Answer ALL questions

1. Define the following
 - a. Nontropic hormone
 - b. Prostaglandins
 - c. Negative feedback loop of hormonal action

[2 X 3 marks]
2. Describe the rate-limiting step in steroidogenesis

[4 marks]
3. List FOUR enzymes responsible for the processing of the POMC peptide hormones

[4 marks]
4. Describe how the effective plasma concentration of hormone maybe regulated

[3 marks]
5. Mention any TWO mechanisms through which hormones may be eliminated from the body

[2 marks]
6. Compare the modes of activity of steroid hormones with hormones derived from oligopeptides

[4 marks]
7. Briefly, describe the major functions of the gastrointestinal tract hormones

[5 marks]
8. Briefly, explain the biosynthetic pathways leading to the formation of prostaglandins, thromboxane or leukotrienes

[4 marks]
9. For each of the following (i – viii), select the best answer from the choices given:
 - i. Progesterone:

- a) causes changes in endometrium
- b) causes menstruation
- c) is secreted from corpus luteum
- d) the immediate precursor is pregnenolone
- e) is secreted from ovary

ii. Which one of the following does not stimulate glucagon secretion?

- a) stress
- b) hypoglycemia
- c) starvation
- d) exercise
- e) somatostatin

iii. Which of the following is dissimilarity between hormones and enzymes?

- a) they are secreted into circulation
- b) they are not used up during the reaction
- c) they are produced by one organ and act on the other
- d) they all are not protein in nature
- e) they are highly specific

iv. Which one is a mis-match?

- a) thyroid gland : calcitonin
- b) pancreas : somatostatin
- c) adrenal cortex : mineralocorticoids
- d) anterior pituitary : thyrotropin releasing hormone
- e) adrenal medulla : catecholamines

v. Which one of the following does not stimulate glucagon secretion?

- a) stress
- b) hypoglycemia
- c) starvation
- d) exercise
- e) somatostatin

vi. Which of the following hormones cause the contraction of gall bladder and emptying of bile:

- a) gastrin
- b) motilin
- c) cholecystokinin
- d) secretin
- e) gastric inhibitory peptide

vii. Which of the following is indispensable for the ovulation to occur

- a) FSH
- b) LH
- c) prolactin
- d) estrogen
- e) progesterone

viii. Insulin receptors consist of:

- a) α -chain
- b) β -chain
- c) α & β chains
- d) 1 α & 2 β chains
- e) 2 α & 2 β chains

[1 X 8 marks]

SECTION B: Answer Q10 and ANY other ONE question

10. a. With reference to the female HPG-axis of hormonal action, explain how the follicle stimulating hormone, FSH and luteinizing hormone, LH are involved in feedback loops at the following stages

- i. mid-point of the menstruation cycle
- ii. start of the development of the follicle
- iii. after ovulation

[3 +3 + 4 marks]

b. Elucidate the involvement of cortisol in the HPA-axis feedback loop mechanism

[5 marks]

11. Describe the major functions of the endocrine system and using atleast two specific examples, illustrate how these are achieved.

[5 + 10 marks]

12. For the endocrine pancreas:

- i). Mention four cell types in the islets and the hormones they produce
- ii). Describe in detail, the mode of activity of any one of the hormones it produced

[8 + 7 marks]