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QUALIFICATION : BACHELOR of HUMAN NUTRITION	
QUALIFICATION CODE: 08BOHN	LEVEL: 5
COURSE: GASTRO INTESTINAL AND ENDOCRINE PHYSIOLOGY	COURSE CODE: GEP521S
DATE: NOVEMBER 2023	SESSION: 1
DURATION: 3 HOURS	MARKS: 120

FIRST OPPORTUNITY: QUESTION PAPER

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MODERATOR: DR ELZABE VAN DER COLF

INSTRUCTIONS:

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

PERMISSIBLE MATERIALS:

1. None

ATTACHEMENTS

1. None

This paper consists of 8 pages including this front page

QUESTION 1: MULTIPLE CHOICE QUESTIONS

[20 MARKS]

Write only the number of each question and next to it indicate your answer in the ANSWER BOOK.
(Each question carries 1 mark)

1.1 Vitamin B12 is absorbed mainly in the:

- A. Stomach
- B. Ileum
- C. Colon
- D. Jejunum
- E. Duodenum

1.2 Which of the following hormones regulates the homeostasis of potassium and sodium:

- A. Calcitonin
- B. Parathyroid hormone
- C. Androgen
- D. Aldosterone
- E. Glucagon

1.3 What does the liver do to help digestion:

- A. Makes important enzymes
- B. Neutralizes stomach acid
- C. Produces bile
- D. Regulates insulin

1.4 Which ion has the highest concentration in saliva under basal conditions:

- A. Bicarbonate
- B. Chloride
- C. Potassium
- D. Sodium

1.5 The common bile duct delivers bile from the ____ to the ____.

- A. liver, gall bladder
- B. gall bladder, duodenum
- C. pancreas, liver
- D. stomach, duodenum

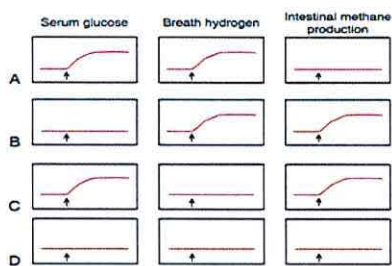
1.6 The surface area of the intestines are increased by the following except:

- A. Villi
- B. Microvilli
- C. Goblet cells
- D. Rugae

1.7 The last section of small intestine before it connects to the large intestine is the:

- A. Jejunum
- B. Duodenum
- C. Appendix
- D. ileum

1.8 A 21-year-old woman visits her physician because of nausea, light headedness, and flatulence. After an overnight fast, the physician administers 50 grams of oral lactose at time zero (indicated by the arrows in the above figure). Which combination is most likely in this patient during the next 3 hours:



- A. A
- B. B
- C. C
- D. D

1.9 The proenzyme pepsinogen is secreted mainly from which of the following structures:

- A. Acinar cells of the pancreas
- B. Ductal cells of the pancreas
- C. Epithelial cells of the duodenum
- D. Gastric glands of the stomach

1.10 Stools that contain excess fat are known as:

- A. Fistulas
- B. Steatorrhea
- C. Zollinger-Ellison syndrome
- D. Amoebiasis
- E. Osmotic diarrhoea

1.11 General weakness, cold intolerance, poor appetite, and weight loss is typical of:

- A. Cushing's syndrome
- B. Sheehan's syndrome
- C. Cushing's disease
- D. Adrenogenital syndrome
- E. Graves' disease

1.12 The most important hormone regulating renal function is:

- A. Antidiuretic hormone
- B. Aldosterone
- C. Atrial natriuretic hormone
- D. Growth hormone
- E. Parathyroid hormone

1.13 The ileum and distal jejunum of a 34-year-old man are ruptured in an automobile accident.

The entire ileum a portion of the jejunum are resected. What is most likely to occur in this man:

- A. Atrophic gastritis
- B. Constipation
- C. Gastric ulcer
- D. Gastroesophageal reflux disease (GERD)
- E. Vitamin B12 deficiency

1.14 Swallowing is a complex process that involves signaling between the pharynx and swallowing center in the brain stem. Which structure is critical for determining whether a bolus is small enough to be swallowed:

- A. Epiglottis
- B. Larynx
- C. Palatopharyngeal folds
- D. Soft palate
- E. Upper esophageal sphincter

1.15 A 10-year-old boy consumes a glass of milk and two cookies. His LES and fundus relax while the food is still in the esophagus. Which substance is most likely to cause relaxation of the LES and fundus in this boy:

- A. Gastrin
- B. Histamine
- C. Motilin
- D. Nitric oxide
- E. Norepinephrine

1.16 All of the following are endocrine glands except:

- A. Pituitary
- B. Thyroid
- C. Spleen
- D. Adrenals
- E. Parathyroids

1.17 Mechanical obstruction in the intestines may be caused by all of the following except:

- A. Gallstones
- B. Fecaliths
- C. Volvulus
- D. Incarceration of intestinal loops in a hernia sac
- E. Spinal cord injury

1.18 In cirrhosis the liver is:

- A. Smooth and shiny
- B. Smooth but fatty
- C. Dark brown and rough
- D. Nodular
- E. Covered with fibrin or pus

1.19 Which of the following is both synthesized and stored in the hypothalamus:

- A. ADH
- B. TSH
- C. LH
- D. Somatostatin

1.20 Which statement about antidiuretic hormone (ADH) is true:

- A. It is synthesized in the posterior pituitary gland
- B. It increases salt and water reabsorption in collecting tubules and ducts
- C. It stimulates thirst
- D. It has opposite effects on urine and plasma osmolality

QUESTION 2: TRUE / FALSE QUESTIONS

[20 MARKS]

Assess the following statements and decide whether they are true or false. Write only the number of each question and next to it indicate your answer as true or false in the ANSWER BOOK. (Each question carries **1 mark**)

- 2.1 The small endocrine gland located in the center of the "brain" is known as the pineal gland.
- 2.2 Secondary male characteristics are influenced by hormones known as "androgens."
- 2.3 Squamous stratified epithelium lines the oral cavity
- 2.4 'Peristalsis' is a voluntary muscle movement which moves food along the digestive tract
- 2.5 Contractions of the uterus may be stimulated by the hormone "vasopressin."
- 2.6 Mostly mechanical digestion occurs in the mouth
- 2.7 The "beta" cells of the pancreas are responsible for the production of glucagon.
- 2.8 Proportion and gastric juices differentiate 'chyme' from a 'bolus'
- 2.9 The hormone ACTH is produced by the "adrenal gland," & it regulates the activity of the adrenal cortex.
- 2.10 The segments of the small intestine encompass the duodenum, ileum and colon
- 2.11 Bile is produced by hepatocytes via active transport in the liver
- 2.12 The follicle stimulating hormone is a product of the " posterior" pituitary gland that acts on the ovaries and testes.
- 2.13 The uvula prevents food and liquid from entering the nasal cavity upon swallowing
- 2.14 Swelling of the thyroid glands due to a lack of iodine is referred to as "goiter."
- 2.15 Sodium bicarbonate causes ulcers to form in the gut
- 2.16 Villi decreases surface area to increase rate of absorption
- 2.17 Chemical digestion is the only type of digestion occurring in the human digestive system
- 2.18 Denaturation occurs when hydrochloric acid acts on protein in the gut
- 2.19 An inadequate secretion of hormones from the adrenal cortex can result in "Cushing's" disease.
- 2.20 Glucagon and insulin are both hormones produced by the "pancreas."

SECTION B: SHORT / LONG ANSWER QUESTIONS**[80 MARKS]****QUESTION 3: DEFINE THE FOLLOWING:****[20 MARKS]**

(Please answer ALL of the questions in this section.)

- 3.1 Crohn's disease (2)
- 3.2 Tropical sprue (2)
- 3.3 Graves' disease (2)
- 3.4 Addison's disease (2)
- 3.5 Cushing's syndrome (2)
- 3.6 Hashimoto's disease (2)
- 3.7 Barrett's esophagus (2)
- 3.8 Diabetes Mellitus (2)
- 3.9 Rickets (2)
- 3.10 Zollinger- Ellison syndrome (2)

QUESTION 4: LONG QUESTIONS**[60 MARKS]**

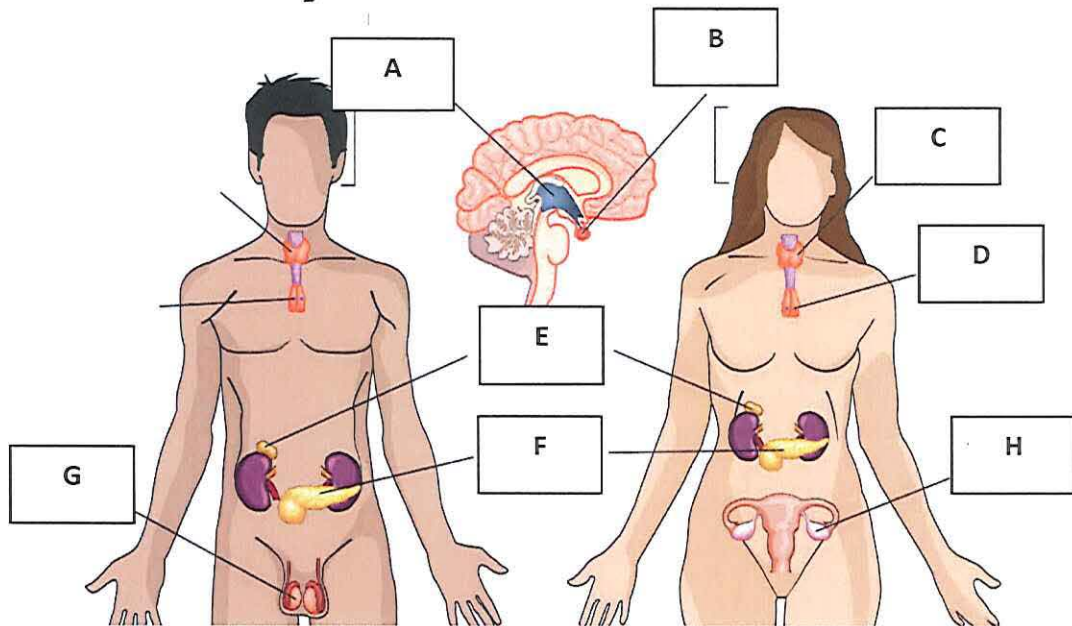
- 4.1 Mention the groups of salivary glands (3)
- 4.2 Mention 3 functions of saliva (3)
- 4.3 Name 4 causes of malabsorption (4)
- 4.4 Mention the functions of the gastrointestinal tract (6)
- 4.5 Mention the hormones that are secreted by the pituitary gland and their actions (16)
- 4.6 Explain the complex process of follicle stimulating hormone (FSH) and luteinizing hormone (LH) in women (10)
- 4.7 It is Matt's birthday, but he will not be eating any cake. Matt has gluten enteropathy, also called celiac disease. Celiac disease results from an inappropriate immune response to gluten, a group of proteins found in wheat and various other grains. After eating food containing gluten, such as most breads and cereals, Matt has bouts of diarrhea because his intestinal lining is unable to properly absorb water and nutrients. The poor absorption is due to a reduced number of villi, or folds of the intestinal lining, and reduced transport capacity of the remaining cells within the villi.
 - 4.7.1 Identify the type of tissue affected by Matt's disease (1)
 - 4.7.2 Which parts of the cells in this tissue are damaged, thus reducing their ability to absorb water and nutrients? (1)
 - 4.7.3 Explain why Matt has diarrhea after eating food containing gluten? (2)
 - 4.7.4 Mention the signs and symptoms of this disease? (6)

4.8 Use the diagram below to label the endocrine glands:

(8)

Write only the letter of each question (A, B, C etc.) and next to it indicate your answer in the ANSWER BOOK.

Endocrine System



END OF QUESTION PAPER