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QUALIFICATION : **BACHELOR OF HUMAN NUTRITION**	
QUALIFICATION CODE: **08BOHN**	LEVEL: **5**
COURSE: **GASTROINTESTINAL AND ENDOCRINE PHYSIOLOGY**	COURSE CODE: **GEP521S**
DATE: **JANUARY 2025**	SESSION: **1**
DURATION: **3 HOURS**	MARKS: **100**

SECOND OPPORTUNITY/SUPPLEMENTARY EXAMINATION: QUESTION PAPER

EXAMINER: **DR. PENEHAFO HAITAMBA-SHINDUME**

MODERATOR: **MR. GEORGE WALIOMUZIBU MUKISA**

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. No Permissible material

This question paper consists of 7 pages including this front page

SECTION A: MULTIPLE CHOICE AND MATCHING QUESTIONS [20 MARKS]

QUESTION 1: MULTIPLE CHOICE QUESTIONS [10 MARKS]

Evaluate the statements/questions in each numbered section and select the most appropriate answer or phrase from the given possibilities. Fill in the appropriate letter next to the number of the correct statement/phrase on your ANSWER SHEET. [10]

1.1 Which of these glands does not secrete saliva into the oral cavity?

A) Submandibular glands
B) Goblet glands
C) Sublingual glands
D) Parotid glands

1.2 HCL .

A) Is an enzyme.
B) Creates the acid conditions necessary for pepsin to work.
C) Is secreted by the small intestine
D) Activates salivary amylase.
E) All the above.

1.3 Which of these hormones stimulate stomach secretions?

A) Cholecystokinin
B) Gastric inhibitory peptide
C) Gastrin
D) Secretin

1.4 Given these ducts:

1. Common bile duct
2. Common hepatic duct
3. Cystic duct
4. Hepatic ducts

Choose the arrangement that lists the ducts in the order that bile passes through them when moving from the bile canaliculi of the liver to the small intestine.

A) 3,4,2
B) 3,2,1
C) 3,4,1
D) 4,1,2
E) 4,2,1

1.5 Which of these is not a function of the large intestine?

A) Absorption of fats
B) Absorption of certain vitamins
C) Absorption of water and salts
D) Production of mucus
E) All of the above.

1.6 Hormones secreted from the posterior pituitary

A) Are produced in the anterior pituitary
B) Are transported to the posterior pituitary within axons
C) Include GH and TSH
D) Are steroids
E) All of the above

1.7 Growth hormone

A) Increases the usage of glucose.
B) Increases the breakdown of lipids.
C) Decreases the synthesis of proteins.
D) Decreases the synthesis of glycogen.
E) All of the above.

1.8 Within the pancreas, the pancreatic islets produce

A) Insulin
B) Glucagon
C) Digestive enzymes
D) Both a and b
E) All of the above.

1.9 If Aldosterone secretions increase

A) Blood potassium levels increase
B) Blood hydrogen levels increase
C) Acidosis results
D) Blood sodium levels decrease
E) Blood volume increases

1.10 If a person who has diabetes mellitus forgot to take an insulin injection, symptoms that may soon appear include?

A) Acidosis
B) Hyperglycaemia
C) Increased urine production
D) Lethargy and Fatigue

E) All of the above

QUESTION 2: MATCH EACH ANSWER **[10 MARKS]**

2.1 Match the following endocrine glands with their origins and the type of hormones they produce (Steroid, Peptide, or Amine) (One mark for a full correct answer) (5)

Endocrine Gland	Germ Layer Origin	Hormone Type
1. Adrenal medulla	a) Endoderm	Steroid
2. Adrenal cortex	b) Mesoderm	Peptide
3. Thyroid gland	c) Ectoderm neural cells	Amine
4. Gonads		
5. Pancreas		

2.2 Match each GIT condition (Column A) with its correct effect on digestion and absorption (Column B). Each correct match is worth 1 mark. (5)

GIT Pathology	Effects on Digestion and Absorption
1. Celiac disease	**A**-Inflammation of any part of the GIT, often causing malabsorption of nutrients and chronic diarrhea.
2. Lactose intolerance	**B**- Sores in the stomach or duodenum that can impair digestion and lead to pain, bleeding, or blockages.
3. Gastroesophageal reflux disease (GERD)	**C**-Inflammation and damage to the small intestine, leading to poor nutrient absorption, especially of fats and fat-soluble vitamins.
4. Crohn's disease	**D**-Difficulty digesting milk sugar (lactose), causing bloating, diarrhea, and discomfort when consuming dairy products.
5. Peptic ulcers	**E**-Acid from the stomach backs up into the esophagus, causing heartburn and potential damage to the esophageal lining.

SECTION B: SHORT/LONG ANSWER QUESTIONS **[80 MARKS]**

Please answer ALL the questions in this section.

QUESTION 3: **[20 MARKS]**

3.1 List and explain 4 functions of Bile Acids. (4)

3.2 Describe the following reactions that take place during the phase 2 detoxification pathway in the liver:

i) Glutathione Conjugation (2)

ii) Methylation (2)

3.3 Elaborate the 3 primary ways the ENS interacts with the CNS. (3)

3.4 Discuss the process of how protein is digested. (6)

3.5 Propose the meaning of Steatorrhea and state its symptoms? (3)

QUESTION 4: **[20 MARKS]**

4.1 Differetiate between an endocrine and an exocrine gland. Give two examples of each. (4)

4.2 Describe what a steroid hormone is and give an example a one. (2)

4.3 Suggest the three different regions within the adrenal cortex and the hormones they produce. (6)

4.4 Propose two disorders involving the Adrenal glands. (2)

4.5 Identify six symptoms that may indicate a person is experiencing an underactive thyroid (hypothyroidism). (6)

QUESTION 5: **[10 MARKS]**

Describe the process of carbohydrate digestion in each of the following parts of the gastrointestinal tract (You can consider a flow chart for illustration purposes):

Mouth (1)

i. Stomach (1)

ii. Small intestines (1)

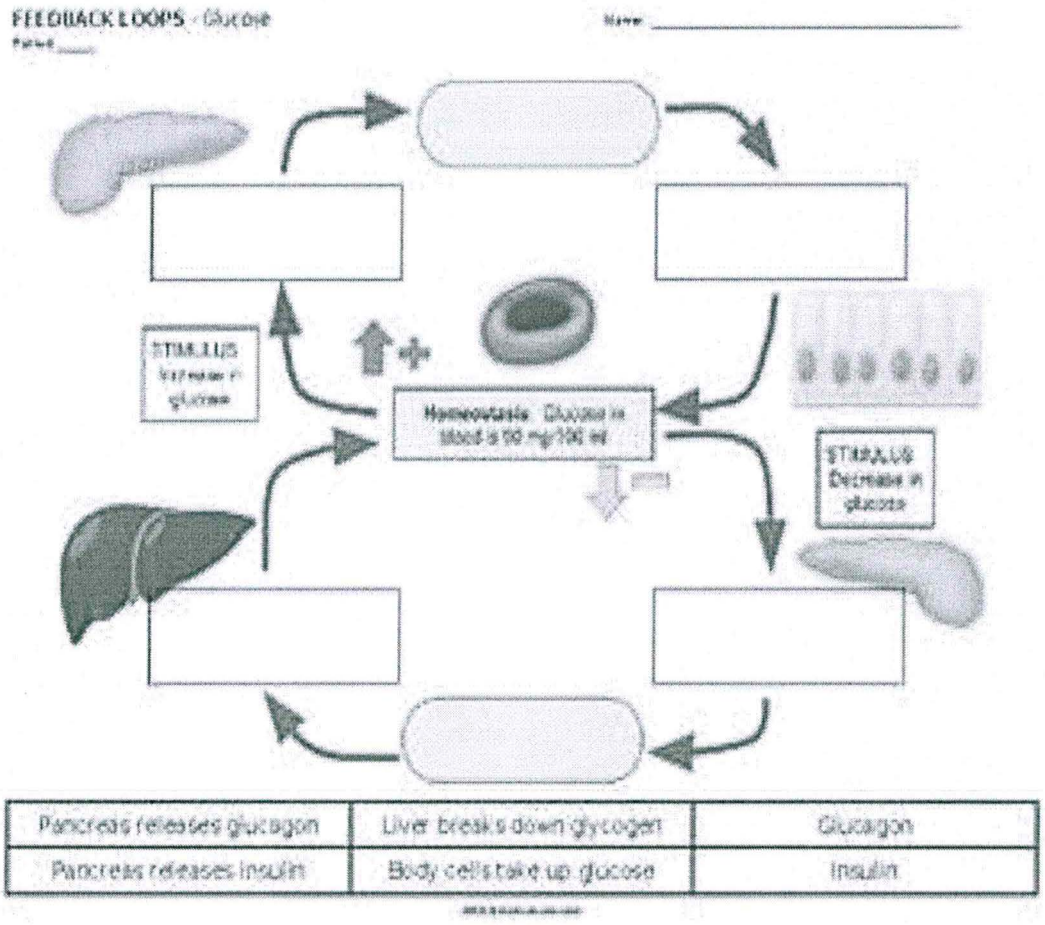
iii. Pancreatic enzymes (2)

iv. Intestinal enzymes (3)

v. End product (2)

QUESTION 6: **[10 MARKS]**

1. Give the name of the following feedback loop. (2)
2. Is it a negative a or a positive feedback loop? (2)
3. Draw and label the empty spaces of the processes taking place within this feedback loop. (6)



Pancreas releases glucagon	Liver breaks down glycogen	Glucagon
Pancreas releases insulin	Body cells take up glucose	Insulin

QUESTION 7: **[10 MARKS]**

Maria is a 58-year-old woman who has been feeling increasingly fatigued and weak over the past few months. She has also noticed a yellowish tint in her skin and the whites of her eyes, along with dark urine and pale stools. She complains of frequent bloating and loss of appetite, leading to unintentional weight loss. Maria's medical history includes long-term alcohol use, and she has not been monitoring her diet or health closely. A physical examination reveals an enlarged liver. Blood tests show elevated liver enzymes, high bilirubin levels, and signs of liver dysfunction. Her doctor suspects advanced liver disease with jaundice as a prominent symptom.

7.1 What is jaundice, and why is it a common symptom of advanced liver disease? (2)

7.2 How does liver dysfunction contribute to Maria's symptoms, such as yellowing of the skin and eyes, dark urine, and pale stools? (2)

7.3 Discuss the role of bilirubin in the development of jaundice in patients with liver disease. (2)

7.4 Mention lifestyle factors, including Maria's history of alcohol use, may have contributed to her liver disease?
(2)

7.5 Suggest potential treatment options and lifestyle changes that could help manage Maria's condition and slow the progression of liver disease. (2)

QUESTION 8: **[10 MARKS]**

Jacob is a 52-year-old man who has been feeling unusually tired and thirsty for the past few months. He has also been experiencing frequent urination, especially during the night. Jacob mentions that he has gained weight over the years and has a sedentary lifestyle due to his desk job. His diet consists mostly of fast food and sugary snacks. He also has a family history of diabetes. A recent blood test revealed that Jacob has elevated blood glucose levels, and his doctor diagnosed him with type 2 diabetes.
Jacob is concerned about his condition and wants to know how he can manage it.

8.1 Explain type 2 diabetes, and how does it affect blood sugar regulation in the body? (2)

8.2 Propose how Jacob's lifestyle and diet might have contributed to the development of

type 2 diabetes. (2)

8.3 State symptoms of diabetes is Jacob experiencing, and how are they related to high blood glucose levels? (2)

8.4 Suggest lifestyle changes that Jacob could implement to help manage his diabetes and improve his health. (2)

8.5 Why is it important for Jacob to monitor his blood sugar levels regularly, and how can this help in managing his condition? (2)

END OF QUESTION PAPER