



MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATIONS

ACADEMIC YEAR: 2018/2019

FIRST YEAR SECOND SEMESTER

**SCHOOL OF TOURISM AND NATURAL
RESOURCE MANGEMENT
DEPARTMENT OF ENVIRONMENTAL
STUDIES, GEOGRAPGY AND AGRICULTURE**

COURSE CODE: AHP 1202

COURSE TITLE: BIOCHEMISTRY 11

DATE: 23RD APRIL 2019

TIME: 0830 - 1030 HRS

INSTRUCTIONS TO CANDIDATES

Answer ALL Questions in Section A and B. Choose ANY TWO Questions from Section C.

This paper consists of 6 printed pages. Please turn over.

SECTION A: Answer ALL questions (20 MARKS)

1. The following are requirements for absorbed amino acids in animals. Which one is **NOT**?

- A. Maintenance
- B. Lactation
- C. Wool
- D. Energy

2. Choose a deficiency sign that is **NOT** associated with Iron.

- A. Frequently occurs in older animals
- B. Nutritional anemia
- C. Labored breathing
- D. Pale eyelids, ears and nose

3. Three of the following are enzymes involved in lipid digestion in rumen. Which one is **NOT**?

- A. Reductases
- B. Trypsin
- C. α - galactosidases
- D. Lipase

4. The statements below explain carbohydrate metabolism/utilization by cardiac and skeletal muscles. **EXCEPT**?

- A. Oxidize glucose/produce and store glycogen (fed)
- B. Breakdown glycogen (fasted state)
- C. Glucose to glycerol for triglyceride synthesis
- D. Shift to other fuels in fasting state (fatty acids)

5. Below are biological buffering systems. Select one that is **NOT**.

- A. Bicarbonate/carbonic acid buffer system
- B. Protein buffer system
- C. Hemoglobin buffer system
- D. Sodium/Chloride buffer system

6. Select one that is **NOT** an inherited disorder of fibrinogen?

- A. Hyperfibrinogenemia
- B. Afibrinogenemia
- C. Hypofibrinogenemia
- D. Dysfibrinogenemia

7. Choose one that is **NOT** a sign of Factor XI Deficiency (FXID) in animals?
- A. Results to prolonged bleeding (after birth, dehorning, castration)
 - B. Affected cows frequently have pink-coloured colostrums
 - C. Stunted growth
 - D. Reduced reproduction performance and animals affected are more susceptible to diseases
8. Select a genetic defect that does **NOT** occur in dairy cattle.
- A. Arachnomelia
 - B. Spinal Dysmyelination
 - C. Weaver Syndrome (Bovine Progressive Degenerative Myelopathy)
 - D. Congenital Erythropoietic Porphyria
9. The enzyme that catalyses the last reaction in β -oxidation is:
- A. Succinyl dehydrogenase
 - B. Enoyl CoA hydratase
 - C. Acyl CoA dehydrogenase
 - D. Thiolase
10. Microbial fermentation of carbohydrates in ruminants yields three volatile fatty acids. Which one of the following is **NOT** a product of this process?
- A. Propionic acid
 - B. Acetic acid
 - C. Methanoic acid
 - D. Butyric acid
11. The statements below refer to the characteristics of Tricarboxylic acid cycle **EXCEPT**?
- A. All compounds are tricarboxylic acids
 - B. Several high energy phosphate compound are produced
 - C. Carbons from glucose are lost as CO_2 (decarboxylation)
 - D. Several $\text{NADH} + \text{H}^+$ are generated via oxidation of intermediates
12. Proteins and polypeptides hormones are secreted by the following **EXCEPT**
- A. Anterior and posterior pituitary gland
 - B. Adrenal cortex
 - C. Pancreas
 - D. Parathyroid gland

13. Which among the statements below **BEST** explains carbohydrates deficiencies in animals?
- A. Lack of energy
 - B. Decreased growth and development
 - C. Reduced feed intake
 - D. Body tissue loss
14. Select a proteinase that is **NOT** found in pancreatic juice
- A. Trypsin
 - B. Chymotrypsin
 - C. Elastase
 - D. Hexokinase
15. Selective Media are used to suppress the growth of unwanted bacteria and encourage the growth of desired microbes. Choose the **ODD** one out among the ones given below.
- A. MacConkey Agar
 - B. Brilliant Green Agar
 - C. Bismuth Sulfite Agar
 - D. Eosin Methylene Blue
16. Choose a pair of compounds that stimulates phosphofructokinase 1
- A. ATP and ADP
 - B. Citrate and AMP
 - C. ADP and AMP
 - D. Citrate and ADP
17. Below are symptoms of vitamin B12 deficiency **EXCEPT** one.
- A. Megaloblastic anaemia.
 - B. Neurological disturbances
 - C. Gastric atrophy and malabsorption.
 - D. Stunted growth
18. Select one that is **NOT** a ketone body.
- A. Acetoacetate
 - B. Butyrate
 - C. β -hydroxybutyrate
 - D. Acetone
19. Water is used by animals for various purposes. Which one among the ones given below is **NOT**?

- A. Bloodstream requires liquid for circulation
- B. Transport of lipids into the cell
- C. Needed to produce milk
- D. Provides cells with pressure to allow them to hold their shape

20. Which of the following biochemical events does **NOT** explain the bacterial digestion of carbohydrates in rumen?

- A. Cellulose, hemicellulose digested by cellulases and hemicellulases
- B. Complex polysaccharides are digested to yield sugars that are fermented to produce VFA
- C. Starches and simple sugars are more rapidly fermented to VFA
- D. Microbes engulf starch particles prior to digesting them

SECTIN B: Answer ALL questions (40 MARKS)

1. Illustrate the following biochemical processes:

- a. Gluconeogenesis pathway from propionic acid (4 mrks)
- b. Simplified concept of blood coagulation mechanism (4 mrks)

2.

- a. State any **FOUR** biochemical functions of water (4 mrks)
- b. Describe the mechanism of action of hydrophilic hormones (4 mrks)

3.

- a. State both the functions and deficiency signs of Cobalt in animals (4 mrks)
- b. Describe the causes and signs of Arthrogryposis Multilpex (Curly Calf Syndrome) (4 mrks)

4.

- a. Illustrate the technique employed in establishing pure cultures in biochemical tests (4 mrks)
- b. Discuss the principles behind SIM medium (4 mrks)

5.

Outline the biochemical reactions for the following processes

- a. Transdeamination (4 mrks)
- b. Oxidation of glycerol (4 mrks)

SECTION C: Answer only TWO questions

1.

- a. Discuss the functions of the following pituitary hormones (10 mrks)
 - i. Adrenocorticotrophic hormone (ACTH)
 - ii. Lutenizing hormone (LH)
 - iii. Vassopressin hormone
- b. Outline the biosynthetic pathway for various amino acids (10 mrks)

2.

- i. Discuss the functions and deficiency signs of the following minerals
 - Calcium
- ii. Manganese
 - a. Use a diagram to show protein (Nitrogen) utilization by the ruminants (10 mrks)

3.

- a. Describe causes and signs of the following genetic diseases found in animals (10 mrks)
 - i. Complex Vertebral Malformation in dairy cows
 - ii. Albinism
- b. Discuss the phosphate buffer system in biological organs (10 mrks)

4.

- a. Discuss the clinical significance of vitamin A deficiency (10 mrks)
- b. Illustrate glycolytic pathway and for every step indicate the enzyme involved (10 mrks)

GOOD LUCK