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 Dysmielination
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 NADH + 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. Adrenocorticotropic 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