PNG UNIVERSITY OF TECHNOLOGY
DEPARTMENT OF AGRICULTURE
I SEMESTER 2020
FINAL EXAMINATION. 16TH JUNE 2020
AG 114. ANATOMY AND PHYSIOLOGY OF FARM ANIMALS

Time 3 hours Max. Marks 100

I. Name the bones (b1-5) and joints (j 1-5))which are marked on the figure. 10

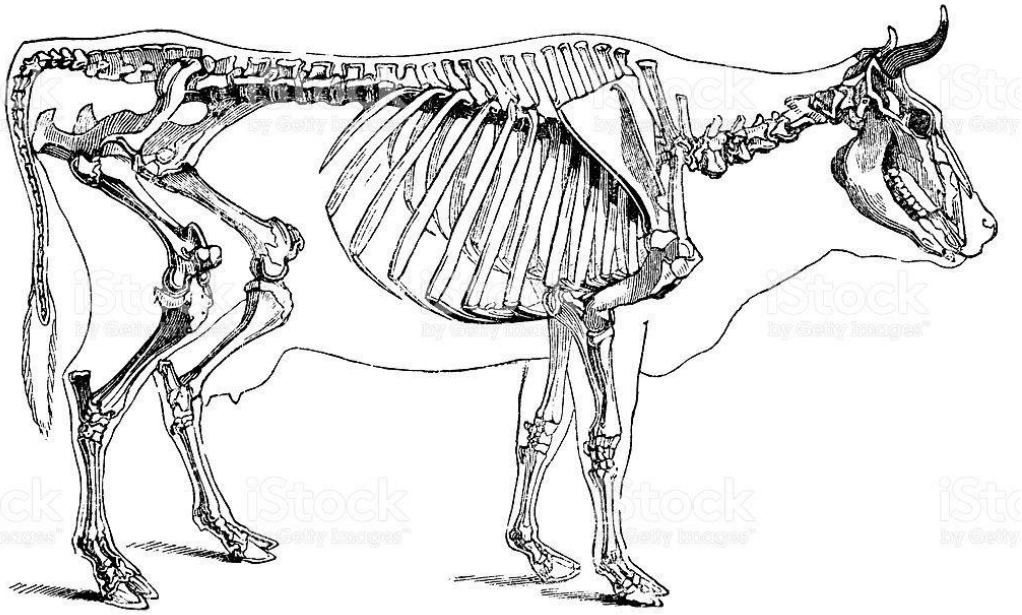

Fig 1. Skeletal system of cattle.

II. Write the function of the following: 10

a. SA node.
b. Valves in the veins.
c. Surfactant.
d. Oviduct.
e. Insulin.
f. Aldosterone.
g. Hydrochloric acid
h. Nephron.
i. Lymphocyte.
j. Glia cells.

III. Draw the figure of a nephron, label the parts and write the functions of each of them.2+3+5

IV. Based on the experiments that you have done, what are the effects of the following : 15

1. Thyroid hormone.
2. Alloxon.
3. Insulin.
4. Estrogen.

5. Amylase.
6. Thiouracil.
7. Adrenaline on heart rate.

V. What do you understand by negative feedback mechanism in endocrine system? Name the hormones secreted by pituitary gland along with their action. 2+3+5

VI. Define the following terms: 10

1. Dead space.
2. Emulsification.
3. Cellular respiration
4. Gluconeogenesis.
5. Partial pressure.
6. Erythropoiesis.
7. ADH
8. Spermatogenesis.
9. Goblet cells.
10. Cardiac sphincter.

VII. What are the differences in the digestive system of pigs and birds. Explain the process of digestion in simple stomached animals. 5+10

VIII. Define monoestrous and polyestrous animals with examples. Name the different phases of estrous. 2+2+6

IX. Select the correct answer. 10

1. prostaglandins brings about contraction of
   a. Smooth muscles.
   b. Skeletal muscles.
   c. Cardiac muscles.
   d. All of them
2. Glucogon is involved in maintaining the
   a. Sodium concentration
   b. Glucose level
   c. Absorption of water in intestines
   d. None of them
3. Neurotransmitter secreted at the synapse is
   a. Adrenaline.
   b. Histamine
   c. Acetylcholine.
   d. Glucose.
4. During isometric contraction of the muscle there is
   a. Decrease in length
   b. Increase in length
   c. Increase in tension
   d. Decrease in tension.

5. Lymphocytes are involved in
   a. Phagocytosis
   b. Production of histamine.
   c. Production of antibodies.
   d. All of them.

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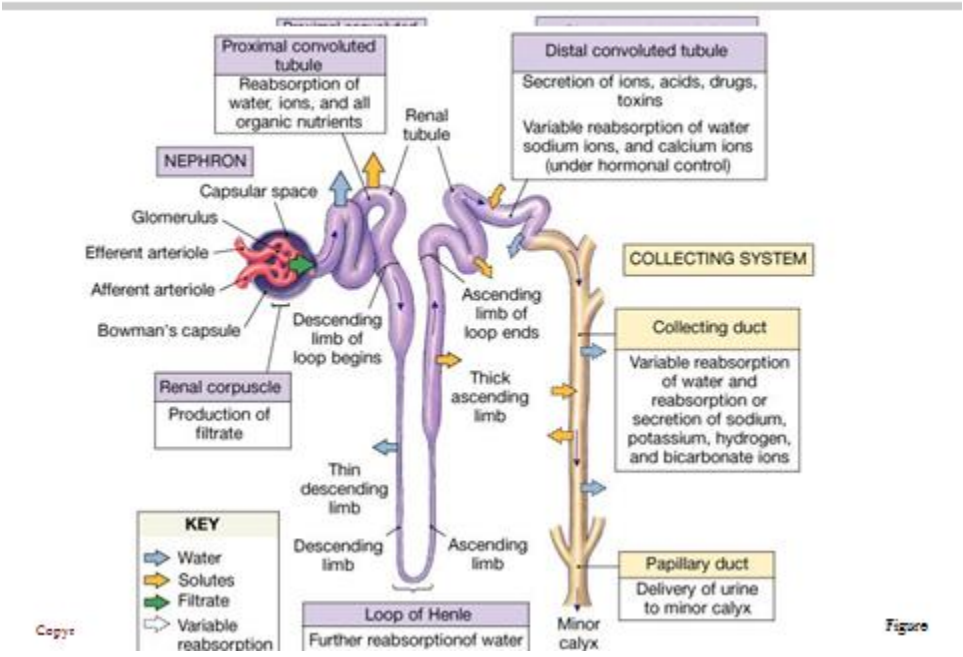
I. Name the bones and joints which are marked on the outline. 10

B1 Humerus	J1 Knee
B2 Radius/ulna	J2 Elbow
B3 Femur	J3 Hock
B4 Tibia/fibula	j4 Stifle
B5 meta tarsal	J5 Pastren

II. Write the function of the following: 10

a. SA node. *Initiate heart contraction*
b. Valves in the veins. *Maintain unidirectional flow*
c. Surfactant. *Prevents collapse of alveoli*
d. Oviduct. *Connects ovary with uterus, a tube for passage of ovum to uterus*
e. Insulin. *Reduces blood glucose*
f. Aldosterone. *Increases sodium absorption in kidney*
g. Hydrochloric *acid activates pepsinogen*
h. Nephron. *Functional unit of kidney-produces urine*
i. Lymphocyte. *Produce antibodies*
j. Glia cells. *CT cells in nervous system-protect and provide nutrition to nerve cells*

III. Draw the figure of a nephron, label the parts and write the functions of each of them.10



IV. Based on the experiments that you have done, what are the effects of the following: 15

1. Thyroid. *Increases basal metabolic rate-oxygen consumption*
2. Alloxon. *Reduces insulin- increase blood glucose level*
3. Insulin. *Reduces blood glucose level*
4. Estrogen. *Increases the weight of uterus- uterus development*
5. Amylase. *Hydrolyze starch to maltose/glucose*
6. Thiouracil. *Reduce metabolic rate- decrease oxygen consumption*
7. Adrenaline on heart rate. *Increases heart rate and force of contraction*

V. What do you understand by negative feedback mechanism in endocrine system? Name the hormones secreted by pituitary gland along with their action. 10

Presence of a product or the effect will decrease or reduce the action
Growth hormone—increase in the development of bone and muscles
TSH- activates thyroid glands
Corticotrophin- stimulate adrenal cortex to produce cortisol
FSH- follicular development
LH- ovulation
Prolactin- mammary gland development- milk production

VI. Define the following terms: 10

1. Dead space. *Space in the respiratory system where there is no exchange of gases takes place*
2. Emulsification. *Keeping lipid in fine suspension (solution) in an aqueous medium*
3. Cellular respiration *otherwise called oxidative phosphorylation*
4. Gluconeogenesis. *Production of glucose from non carbohydrate sources*.
5. Partial pressure. *Pressure exerted by the each component in a mixture of gases*
6. Erythropoiesis. *Production of erythrocytes -RBC*
7. ADH *anti diuretic hormone*
8. Spermatogenesis. *Production of sperms*
9. Goblet cells. *Unicellular glands -modified epithelial cells producing mucus*
10. Cardiac sphincter. *A band of circular muscles at the distal end of esophagus*

VII. What are the differences in the digestive system of pigs and birds. Explain the process of digestion in simple stomached animals. 15

Birds have beak, triangular tongue a crop, proventriculus gizzard, a pair of caeca, and cloaca.
The food which is masticated is mixed with saliva and the amylase hydrolyzes starch to maltose. The food bolus is swallowed . In the stomach the food is mixed with gastric secretions and is converted to chime. Pepsinogen which is produced in stomach is activated to pepsin by HCl and initiates proteolysis. The chime is passed on to duodenum by the movements of stomach. In the duodenum the contents get mixed with pancreatic secretions and bile. The pancreatic enzymes amylase, trypsin, chymotrypsin and lipses hydeolse starh to maltose, proteins to dipeptides and fats to FA and MG . they are further lysed to monosaccharides, amino acids and FFA and glycerol respectively by intestinal enzymes and absorbed. The unabsorbed portion is eliminated as feces.

VIII. Define monoestrous and polyestrous animals with examples. Name the different phases of estrous. 10

Monoestrous- shows estrus once in a year while poly estrous animals show estrus cycle throughout the year once in 21-28 days
Follicular phase proestrus and estrus
Luteal phase- met estrus and diestrus

IX. Select the correct answer. 10

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   a. Phagocytosis
   b. Production of histamine.
   c. *Production of antibodies*.
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