

UNIVERSITY OF FORT HARE

**GENERAL INTRODUCTION TO
ANIMAL BIOLOGY**

ZOO 111

SUPPLEMENTARY EXAMINATIONS

JULY

2018

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Time: 3 HRS
Subject: ZOO 111
Marks: 150

This paper consists of 14 pages including the cover page

Internal Examiners

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INSTRUCTIONS

**Answer all questions in Section A and Section B.
Answer Section A on the Multiple Choice Answer Sheet.
Answer Section B in the Test Answer Book.**

**Submit this question paper together with the Multiple Choice Answer Sheet
and your Test Answer Book.**

Section A [75 marks]

- 1.) _____ is a spherical structure within the nucleus and is composed of DNA, RNA and protein.
 - a) Cell
 - b) Nucleus
 - c) Mitochondrion
 - d) Nucleolus
 - e) DNA

- 2) In Cell Theory: All organisms are composed of one or more cells.
 - a) (Schwann; 1838-39)
 - b) (Schleiden; 1838-39)
 - c) (Virchow & Schwann; 1838-39)
 - d) (Schleiden & Schwann; 1838-39).
 - e) (Virchow & Schleiden; 1838-39)

- 3) Prokaryotic cells usually do not have a real _____.
 - a) binary fission
 - b) DNA
 - c) bacteria
 - d) nucleus
 - e) ribosomes

- 4) All cells are basically the same in _____ composition and metabolic activities
 - a) zoological.
 - b) physical.
 - c) chemical.
 - d) microbiological.
 - e) Botanical

- 5) The _____ is the outermost part of an animal cell.
 - a) extracellular membrane
 - b) intercellular membrane
 - c) plasma membrane
 - d) intracellular membrane
 - e) cell wall

- 6) Golgi apparatus is responsible for _____ and _____ of materials to different parts of the cell.
 - a) packaging; excretion
 - b) packaging; creation
 - c) packaging; modification
 - d) packaging; building
 - e) packaging; delivering

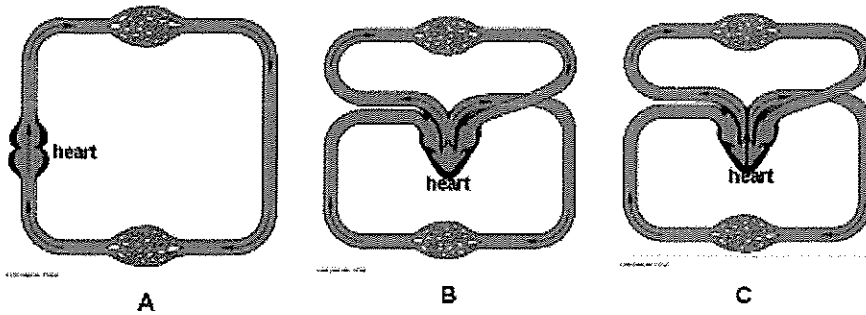
- 7) In an isotonic solution a cell neither _____ or _____.
 - a) sink; swim
 - b) swells; shrink
 - c) dies; live
 - d) grows; dies
 - e) divides; live

- 8) A _____ solution has a smaller number of solute particles than a reference solution.
 - a) isosmotic
 - b) hypotonic
 - c) hyperosmotic
 - d) hyposmotic
 - e) hypertonic

- 9) The _____ converts foods into usable energy (ATP production), through cell respiration.
- mitochondrion
 - DNA
 - nucleus
 - lysosome
 - ribosome
- 10) In a _____ solution a cell shrinks, a process called crenation.
- tonic
 - isotonic
 - hypertonic
 - hypotonic
 - osmotic
- 11) Flattened stacks of interconnected membranes represent _____.
- Nucleus
 - Plasma membrane
 - Lysosomes
 - Golgi apparatus
 - Ribosomes
- 12) Key proteins associated with replication are made in _____.
- G₁ phase
 - S phase
 - G₂ phase
 - G₃ phase.
 - G₀ phase.
- 13) Eukaryotes includes:
- protists; bacteria; plants; animals
 - protists; fungi; plants; animals
 - protists; fungi; archaeobacteria; animals
 - protists; fungi; plants; archaeobacteria;
 - protists; archaeobacteria; plants; animals
- 14) Osmotic pressure is the force required to _____ the movement of water across a selectively permeable membrane.
- reduce
 - prevent
 - assist
 - allow
 - absorb
- 15) Which of the following led to the discovery of cells?
- Electricity.
 - Computers.
 - Microscopes.
 - Calculators.
 - Cellphones.
- 16) Rough Endoplasmic Reticulum (RER) has _____ attached to its surface.
- nucleus.
 - cells.
 - ribosomes.
 - proteins.
 - DNA.
- 17) The cytoplasm has a viscous _____ containing organelles
- water
 - fluid
 - oil
 - paraffin
 - syrup

- 18) The plasma membrane has a double layer of _____ and proteins.
- water
 - carbohydrates
 - enzymes
 - phospholipids
 - fats
- 19) Endocytosis, the _____ of material by cells.
- egestion
 - ingestion
 - excretion
 - digestion
 - division
- 20) Which of the following is an (are) animal dietary habit(s)?
- Carnivory.
 - Omnivory.
 - Herbivory.
 - Saprophagy.
 - All of the above.
- 21) Which of the following are NOT involved in the voluntary process of digestion?
- Teeth.
 - Pharynx.
 - Tongue.
 - All of the above.
 - None of the above.
- 22) Which of the following is an accessory organ of the human digestive system?
- Pharynx.
 - Mouth.
 - Larynx.
 - All of the above.
 - None of the above.
- 23) High stomach acidity _____.
- creates ideal conditions for carbohydrate digestion
 - promotes emulsification of fats
 - favours protein digestion through activation of pepsin
 - blocks the release of histamine, thereby favouring production of peptic ulcers
 - converts lipases into their active forms.
- 24) Which of the following enzymes is NOT secreted by the pancreas?
- Trypsin.
 - Chymotrypsin.
 - Carboxypeptidase.
 - Nucleases.
 - All of the above are secreted by the pancreas.
- 25) Sucrose is digested into:
- Glucose + glucose
 - Glucose + fructose
 - Fructose + fructose
 - Glucose + galactose
 - Galactose + fructose
- 26) Extracellular fluid is subdivided into blood plasma and _____.
- intracellular fluid.
 - interstitial fluid.
 - electrolytes.
 - water.
 - None of the above.

Use the figure below to answer questions 27 and 28.



- 27) A mammalian circulatory system is indicated by
- A.
 - B.
 - C.
 - Both A and C.
 - None of these.
- 28) A circulatory system that only allows for partial mixing of oxygenated and oxygen-poor blood is indicated by
- A.
 - B.
 - C.
 - Both B and C.
 - None of the above.
- 29) Blood velocity (speed) is slowest in the _____.
- arteries
 - veins
 - capillaries
 - venules
 - The speed of the blood is the same in the whole circulatory system.
- 30) The function of the lymphatic system is to _____.
- drain excess interstitial fluid
 - protect against invasion through immune responses
 - transport dietary lipids from the gastro-intestinal tract to the blood
 - All of the above.
 - None of the above.
- 31) Which of the following organ(s) do not belong to the lymphatic system?
- Spleen.
 - Pancreas.
 - Thymus.
 - Tonsils.
 - Appendix.
- 32) Which of the following living organisms do not respire?
- Humans.
 - Bacteria.
 - Protists.
 - All of the above.
 - None of the above.
- 33) _____ respiration is a process in which glucose is oxidized and the energy is used to make ATP.
- Internal.
 - Extant.
 - Cellular.
 - Intensive.
 - Extensive.
- 34) Which adult forms of the following organism uses external gills for respiration?

- a) Amphibians.
 - b) Fish.
 - c) Polychaete worms.
 - d) Both a) and c).
 - e) All of the above.
- 35) What is the proper sequence in the flow of air in mammals?
- a) nasal cavities, larynx, pharynx, bronchi, trachea
 - b) nasal cavities, pharynx, bronchi, larynx, trachea
 - c) nasal cavities, pharynx, larynx, trachea, bronchi
 - d) nasal cavities, larynx, pharynx, trachea, bronchi
 - e) nasal cavities, bronchi, larynx, trachea, pharynx
- 36) The exchange of gases in the human lungs occurs through the _____.
- a) bronchi.
 - b) tracheas.
 - c) alveoli.
 - d) glottis.
 - e) bronchioles.
- 37) Which of the following transports the highest concentration of carbon dioxide?
- a) Blood plasma.
 - b) Carbaminohemoglobin.
 - c) Red blood cells (bicarbonate & hydrogen ions).
 - d) None of the above.
 - e) All of the above.
- 38) Regulatory chemicals of the endocrine system are called _____.
- a. Hormones
 - b. Homones
 - c. Homeones
 - d. Hermiones
 - e. Hoemones
- 39) Hormones of the pituitary gland include _____.
- a) Luteinizing hormone
 - b) Prolactin
 - c) Growth hormone
 - d) None of the above
 - e) All of the above
- 40) Epinephrine is produced by _____.
- a) Pituitary gland
 - b) Adrenal gland
 - c) Thyroid gland
 - d) Parathyroid gland
 - e) Thymus gland
- 41) Functions of the nervous system include _____.
- a) Sensory function
 - b) Integrative function
 - c) Motor function
 - d) All of the above
 - e) None of the above
- 42) Which of the following is not part of a neuron?
- a) Dendrite
 - b) Myelin sheath

- c) Schwann cells
- d) All of the above
- e) None of the above

43) Which of the following neurons is dominant in the nervous system?

- a) Motor neuron
- b) Sensory neuron
- c) Interneuron
- d) Afferent neuron
- e) Efferent neuron

44) Which of the following channels are found on the neuron's membrane?

- a. Potassium channel
- b. Sodium channel
- c. Potassium-sodium channel
- d. All of the above
- e. None of the above

45) The functional excretory unit of the kidney is the _____.

- a. Ureter
- b. Urethra
- c. Bladder
- d. Nephron
- e. Neckron

46) Active reabsorption of Na^+ ions occurs at the _____.

- a. Thin descending limb of the Loop of Henle
- b. Thin ascending limb of the Loop of Henle
- c. Thick ascending limb of the Loop of Henle
- d. Distal convoluted tubule
- e. Collecting duct

47) The first step of urine formation takes place at the _____.

- a. Bowman's capsule
- ~~a-b. Loop of Henle~~
- ~~b-c. Distal convoluted tubule~~
- ~~e-d. Proximal convoluted tubule~~
- ~~d-e. Collecting duct~~

48) Sodium reabsorption in the distal convoluted tubule is controlled by the hormone, _____.

- a. Aldosterone
- b. Alsoderone
- c. Aidosterone
- d. Adidasterone
- e. None of the above

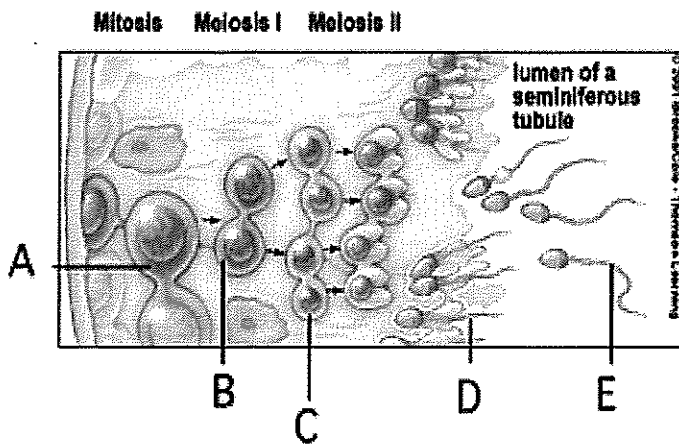
49) Progesterone is an example of a _____ hormone.

- a. Sterile
- b. Steroid
- c. Striated
- d. None of the above
- e. All of the above

50) The final concentration of the urine is controlled by the _____ hormone.

- a. Antidiuretic
- b. Antidiary
- c. Antididetic
- d. Intermediary
- e. Extraordinary

- 51) Nitrogenous waste found in urine includes _____.
- Urea
 - Ammonia
 - Creatinine
 - All of the above
 - None of the above
- 52) Nitrogenous waste found in urine includes _____.
- Urea
 - Ammonia
 - Creatinine
 - All of the above
 - None of the above
- 53) Sweat glands are an example of _____.
- Endocrine glands
 - Exocrine glands
 - Eminent glands
 - Exiting glands
 - Enticing glands
- 54) Epinephrine is produced by the _____.
- Pituitary gland
 - Adrenal gland
 - Thyroid gland
 - Parathyroid gland
 - Thymus gland
- 55) Which of the following is not part of a neuron?
- Dendrite
 - Myelin sheath
 - Schwann cells
 - All of the above
 - None of the above
- 56) Which of the following neurons is dominant in the nervous system?
- Motor neuron
 - Sensory neuron
 - Interneuron
 - Afferent neuron
 - Efferent neuron
- 57) Sperm are produced in the
- testes.
 - vas deferens.
 - epididymis.
 - prostate gland.
 - penis.
- 58) Which of the following is the site where mature sperm are stored?.
- Ureter
 - Urethra
 - vas deferens
 - bulbourethral gland
 - epididymis



Use the figure above showing spermatogenesis to answer the following TWO questions.

59) Diploid stage(s) is (are) indicated by

- A
- B
- C
- D
- B, C, and D.

60) Mature sperm is (are) indicated by

- none of these.
- B
- C
- D & E
- E

61) Which of the following is a phase of the menstrual cycle?

- follicular phase
- luteal phase
- ovulation
- all of these
- none of these

62) Menstrual flow results in the discharge of

- the follicle.
- the corpus luteum.
- the endometrial lining.
- surface cells from the vagina.
- blood from the blood vessels on the outer surface of the uterus.

63) During orgasm, which of the following stimulate a feeling of pleasure?

- LH
- endorphins
- testosterone
- oxytocin
- all of these

64) Which of the following is the most effective in protecting against sexually transmitted diseases?

- condoms
- the Pill
- douching
- an IUD
- the rhythm method

65) Sexual reproduction

- leads to uniform characteristics within a population.
- results in new combinations of genetic traits.
- creates genetic clones.
- requires less tissue differentiation than asexual reproduction.

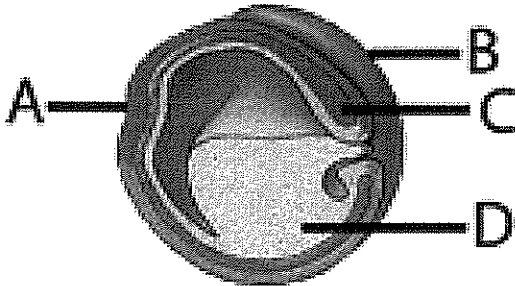
e. produces genetic clones and requires less tissue differentiation than asexual reproduction.

66) Which of the following will NOT develop into one or more gametes?

- a. spermatogonium
- b. polar bodies
- c. primary oocyte
- d. spermatid
- e. secondary spermatocyte

67) Which stage in reproduction and development occurs before the others?

- a. cleavage
- b. gamete formation
- c. gastrula formation
- d. zygote formation
- e. blastula formation



Use the figure above to answer the following TWO questions.

68) The letter "A" represents

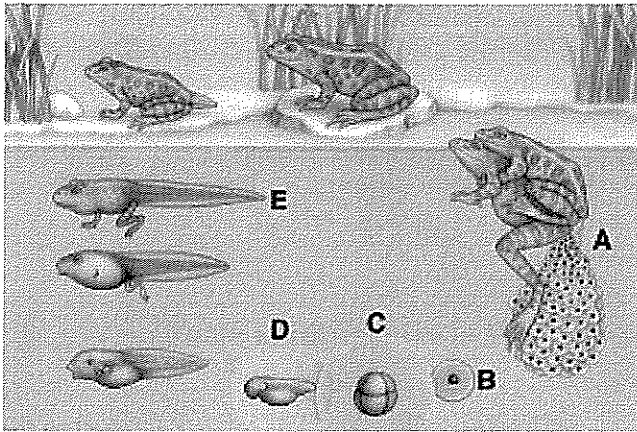
- a. ectoderm.
- b. endoderm.
- c. mesoderm.
- d. neural plate.
- e. yolk.

69) The letter "C" represents

- a. ectoderm.
- b. endoderm.
- c. mesoderm.
- d. neural plate.
- e. yolk.

70) Which embryonic tissue is incorrectly associated with its derivative?

- a. skin; mesoderm
- b. nervous system; ectoderm
- c. liver; endoderm
- d. circulatory system; mesoderm
- e. brain; ectoderm



The following TWO questions refer to the figure above illustrating frog development.

71) Fertilization is indicated by

- a. A
- b. B
- c. C
- d. D
- e. E

72) Apoptosis is occurring at

- a. A
- b. B
- c. C
- d. D
- e. E

73) Which of the following human extraembryonic membranes is the first site of blood cell formation and the source of germ cells?

- a. amnion
- b. yolk sac
- c. chorion
- d. allantois
- e. none of these

74) The pea plant was an excellent choice for Mendel's experiments because

- a. true-breeding varieties were available.
- b. the plant can self-fertilize.
- c. it can be cross-fertilized.
- d. true-breeding varieties were available, and it can be cross-fertilized.
- e. true-breeding varieties were available, the plant can self-fertilize, and it can be cross-fertilized.

75) The most accurate description of an organism with genotype $AaBb$ is

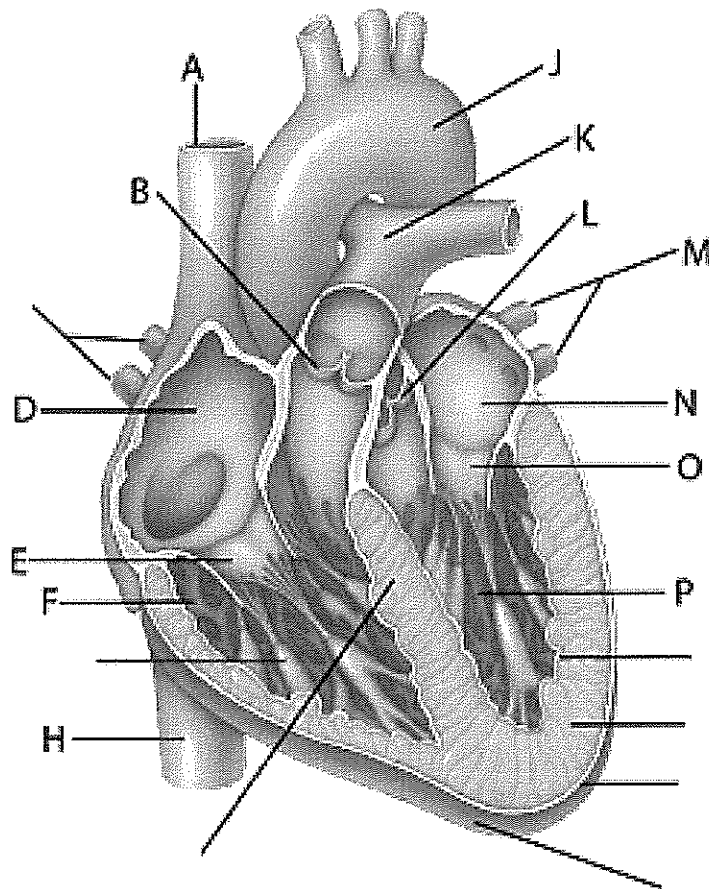
- a. homozygous dominant.
- b. heterozygous.
- c. heterozygous dominant.
- d. homozygous recessive.
- e. heterozygous recessive.

Question 2

- a) With the aid of a detailed diagram (i.e. properly labeled), outline the formation of urine in a nephron. 10 marks
- b) Describe the processes that happen at a neuromuscular junction. 5 Marks
- c) Name the nitrogenous wastes produced by the following excretory organs: i) Nephridia, ii) Malpighian tubules and iii) Protonephridia. 3 Marks

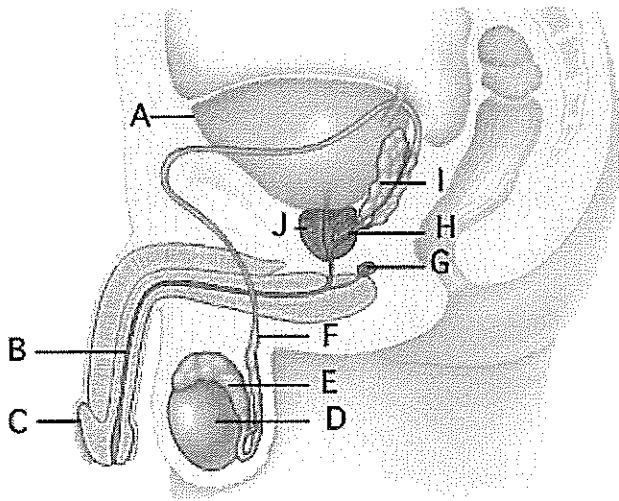
Question 3

- 1) Label the letters A-P of the figure below in your answer book. Ignore any letters that have not been labeled on the figure (i.e. C, G & I) 13 marks



- 2) Define these three important steps of the digestive process and mention whether these are voluntary or involuntary: 3 marks
 - a) *Ingestion:*
 - b) *Digestion:*
 - c) *Absorption:*
- 3) Name the three main types of nutrients and the end products of their digestion? 3 marks

Question 4



- a. The above picture depicts the human male reproductive system. Identify the letter corresponding to each of the SIX labels below.
- i. vas deferens
 - ii. epididymis
 - iii. seminal vesicle
 - iv. bladder
 - v. testis
 - vi. urethra
- 6 marks
- b. If black fur colour in cats is controlled by a dominant allele (B) and brown by its recessive allele (b), give the genotypes of **each of the parents and offspring** of a cross of a black male with a brown female that produces 1/2 black offspring and 1/2 brown offspring.
- 4 marks
- c. Animals which produce eggs and sperm at the same time are called (i) _____ hermaphrodites while those which produce both at different times in their life are known as (ii) _____ hermaphrodites.
- 2 marks
- d. Using the information provided in the adjacent cells, complete the gaps (i-vii) in the table below which outlines the events of a human 28-day ovarian/menstrual cycle.

Phase	Events (what is happening)	Day of cycle
Follicular phase	(i)	1 – 5
	Follicle matures in the ovary; endometrium rebuilds	(ii)
(iii)	Oocyte released from ovary	(iv)
Luteal phase	(v) and (vi) and (vii)	15-28

7 marks

END OF EXAM

Submit THIS QUESTION PAPER together with the Multiple Choice Answer Sheet and your Test Answer Book.

Don't forget to full in your name and student number on the Multiple Choice Answer Sheet