



FACULTY OF SCIENCE
DEPARTMENT OF BOTANY
LS2AFET
LIFE SCIENCE 2A FET
APK CAMPUS
EXAM
12 JUNE 2014

SESSION: 12H30 – 15H30

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INTERNAL MODERATOR Dr A NEL

DURATION: 3 HOURS

TOTAL MARKS: 150

NUMBER OF PAGES: 9 PAGES

Please read the following instructions carefully:

1. Answer all the questions in the question paper.
2. Answer ALL of the questions in the test book.
3. Work neatly.
4. Read your questions carefully.
5. Good Luck.

QUESTION 1**[18]**

Choose the alternative that best completes the statement or answers the question. **Only write down the correct letter next to the appropriate question number in your answer book.**

1.1 DNA or RNA may be the genetic material of _____.

- a. a bacterium
- b. a viroid
- c. a virus
- d. an archaeon

1.2 One cell transfers a plasmid to another by _____.

- a. binary fission
- b. transformation
- c. conjugation
- d. the lytic pathway

1.3 Spores released from a fungus are _____.

- a. diploid
- b. triploid
- c. dikaryotic
- d. haploid

1.4 Foreign molecules that elicit an immune response are called _____.

- a. pathogens
- b. antibodies
- c. histamine
- d. antigens

1.5 Which of the following is not considered to be part of an innate immune response?

- a. Phagocytic cells.
- b. Fever.
- c. Histamines.
- d. Lymphocytes.

1.6 _____ trigger immune responses.

- a. Lysozymes
- b. Antigens
- c. Histamines
- d. All of the above

1.7 In the moss life cycle, the sporophyte _____.

- a. consist of leafy green shoots.
- b. is the heart-shaped prothallus.
- c. consists of a foot, a stalk and a capsule.
- d. is the dominant life cycle.

1.8 How are ferns different from mosses?

- a. Only ferns produce spores as dispersal agents.
- b. Ferns have vascular tissue.
- c. In the fern life cycle, the gametophyte and sporophyte are both independent.
- d. Both b and c are correct.

1.9 Which of these pairs is mismatched?

- a. pollen grain → male gametophyte.
- b. Ovule → female gametophyte.
- c. seed → immature sporophyte.
- d. pollen tube → spores.

1.10 Which of the following groupings includes the largest number of species?

- a. Invertebrates
- b. Chordates
- c. Insects
- d. Vertebrates

1.11 Which of the following animal groups does not have tissues derived from mesoderm?

- a. Annelids
- b. Amphibians
- c. Cnidarians
- d. Flatworms

An adult animal that possesses bilateral symmetry is most certainly also _____.

- a. Triploblastic
- b. a deuterostome
- c. eucoelomate
- d. the product of metamorphosis

1.13 Which of the following statements is correct?

- a. Phloem sap is an aqueous solution that is high in glycogen.
- b. Phloem sap travels from a sugar sink to a sugar source, a net producer of sugar.
- c. Phloem sap travels from a sugar source to a sugar sink, a net producer of sugar.
- d. Phloem sap travels from a sugar source to a sugar sink, a net consumer or storer of sugar.

1.14 All of the following involves active transport across membranes **except** _____.

- a. the movement of mineral nutrients from the apoplast to the symplast.
- b. the movement of sugar from the mesophyll cells into the sieve-tube members in maize.
- c. the movement of sugar from one sieve-tube member to the next.
- d. the movement of mineral nutrients into cells of the root cortex.

1.15 Which one (1) of these pairs is mismatched?

- a. slightly movable joint - vertebrae
- b. hinge joint - hip
- c. synovial joint - elbow
- d. immovable joint – sutures in cranium

1.16 Which one (1) of the following occurs in the arm when food is brought to the mouth from a plate?

- a. Biceps relax and the triceps contract.
- b. The bended arms is stretched.
- c. Biceps and triceps contract.
- d. The angle of the elbow joint becomes smaller.

1.17 The membrane that surrounds bundles of fascicles.

- a. Epimysium.
- b. Perimysium.
- c. Endomysium.
- d. Sarcolemma.

1.18 The skeletal system does not _____.

- a. produce blood cells
- b. store minerals
- c. help produce movement
- d. produce body heat

QUESTION 2

[18]

Give the correct biological term for each of the following statements. **Only write down the correct term next to the appropriate question number on the answer sheet.**

2.1 The type of fungus that has a continuous cytoplasmic mass with several nuclei.

2.2 The vegetative filaments of fungi.

- 2.3 The vegetative filament of a fungus that penetrate the substrate on which it grows.
 - 2.4 Process by which certain living cells ingest / engulf other cells or particles.
 - 2.5 The signalling molecule, stored in mast cells.
 - 2.6 A fluid rich in white blood cells, dead microbes, and cell debris that accumulates at the site of infection.
 - 2.7 The male gametangia that produce & release sperm.
 - 2.8 The hard, resistant substance found in the walls of spores.
 - 2.9 Leaves with a single vein.
 - 2.10 Animals with two (2) layers that makes up their body plan.
 - 2.11 Animals that possess a true body cavity.
 - 2.12. The developing digestive tube.
 - 2.13 The tendency of water molecules to cling together and form a continuous water column.
 - 2.14 Drops of water that is forced out of the vein endings along the edges of leaves.
 - 2.15 The process that takes place when products of photosynthesis is transported through the phloem.
 - 2.16 A skeleton that consists of fluid held under pressure in a closed body.
 - 2.17 The large opening at the base of the skull.
 - 2.18 The type of joints found in the elbows, knees, fingers and toes.
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QUESTION 3**[12]**

Provide a short definition for each of the following:

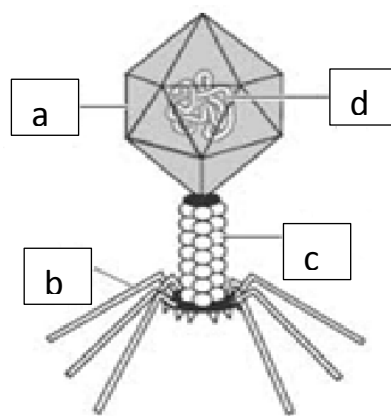
- 3.1 Isogametes.
- 3.2 Conjugation.
- 3.3 Phagocytes.
- 3.4 Fever.
- 3.5 Archegonia.
- 3.6 Seed.
- 3.7 Hydathodes.
- 3.8 Sugar sink.

- 3.9 Cephalization.
- 3.10 Acoelomates.
- 3.11 Haematopoiesis.
- 3.12 Ball and socket joint.

QUESTION 4

[17]

- 4.1 Study the diagram below and answer the questions that follow.

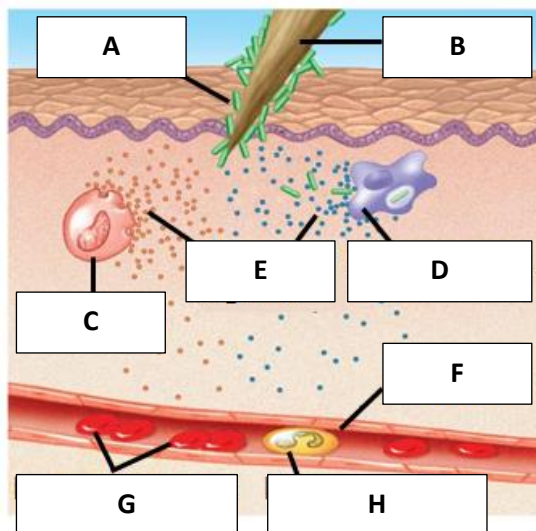


- 4.1.1 Provide a label for the diagram in 4.1 (1)
- 4.1.2 Explain with the use of diagrams (with labels) how the organism in the diagram 4.1 will use the lysogenic cycle to reproduce. (6)
- 4.1.3 Name another form of reproduction that the organism in 4.1 can use. (1)
- 4.2.1 Provide a detailed explanation of how a bacterium uses budding as a method of asexual reproduction (5)
- 4.2.2 Name another method that a bacterium can also use to reproduce asexually. (1)
- 4.3 The vegative filaments of fungi can be named specifically according to where they grow. Provide an example of three (3) types of vegative filaments. (3)

QUESTION 5

[17]

5.1 Study the diagram below and answer the questions that follow.



- 5.1.1 What process is represented by the diagram in 5.1? (1)
- 5.1.2 Provide labels for A – H for the diagram in 5.1. (8 x ½ = 4)
- 5.1.3 What is the function of H in the diagram above. (1)
- 5.1 Name the two (2) immune systems present in all vertebrates. (2)
- 5.2.1 Which part of a pathogen, that invades an organism, will activate the B-lymphocytes of the organism being attacked? (1)
- 5.2.2 What will the B-lymphocyte do after being activated by the structures answered in question 5.2.1. (3)
- 5.3 Describe how antibiotics work? (5)

QUESTION 6

[17]

- 6.1 Draw and label the life cycle of the fern. (16 x ½ = 8)
- 6.2 Draw and label a fertilised ovule (egg) of a seed plant. (6)
- 6.3 List the three (3) key features of the gymnosperms life cycle. (3)

QUESTION 7**[17½]**

- 7.1 The table below lists the common names of the nine (9) animal phyla studied this year. For each phylum, list two (2) characteristics and one (1) example from this phylum.

Copy and complete the table in your answer sheet.

(27 x ½ = 13 ½)

PHYLUM	CHARACTERISTICS	EXAMPLE
7.1.1 Porifera		
7.1.2 Cnidarians		
7.1.3 Platyhelminthes		
7.1.4 Nematodes		
7.1.5 Molluscs		
7.1.6 Annelids		
7.1.7 Arthropods		
7.1.8 Echinoderms		
7.1.9 Chordates		

- 7.2 During early embryonic development, cleavage is followed by another process.

- 7.2.1 Provide the name for the process referred to in 7.2. (1)

- 7.2.2 Draw the end product of the process referred to in 7.2.1. (3)

QUESTION 8**[16]**

- 8.1 Water and minerals can travel into the roots using three (3) routes; discuss the transmembrane route in detail. (12 X ½ = 6)

- 8.2 The upward movement of water in xylem is made possible by various factors.

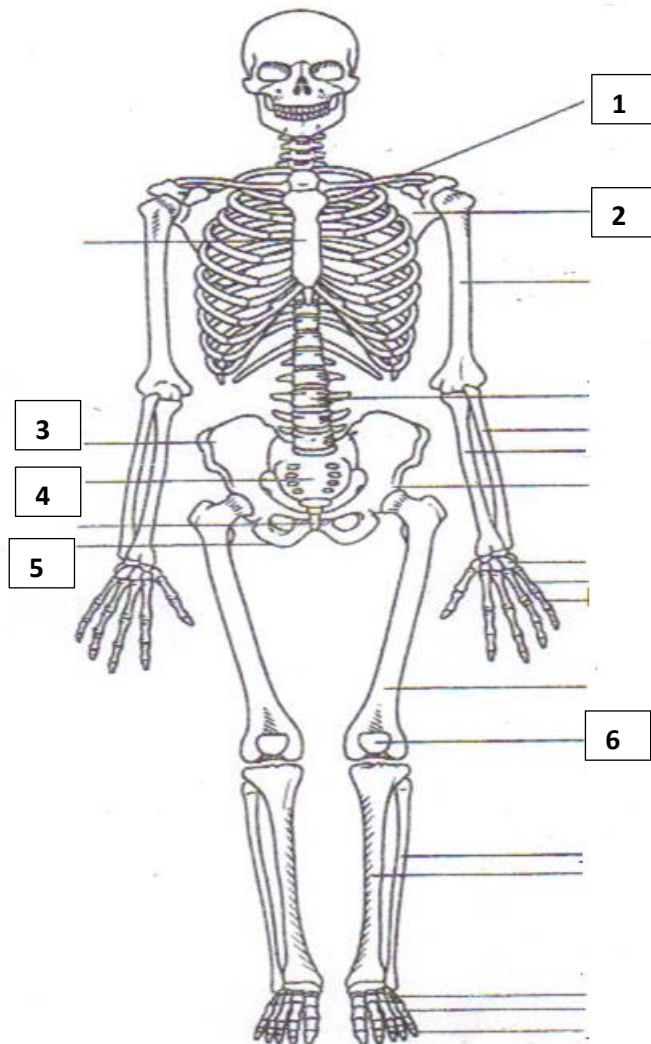
- 8.2.1 Discuss transpiration as one (1) of these factors in detail. (6 x ½ = 3)

- 8.3 Discuss translocation of substances from the leaves to the rest of the plant. (10 x ½ = 5)

- 8.4 List two (2) factors that will increase the speed of transpiration in a leaf. (2)

QUESTION 9**[17½]**

9.1 Study the following diagram and answer the questions that follow.



9.1.1 Identify the structures 1, 2, 3, 4, and 5.

(5)

9.1.2 The human skeleton is divided into two (2) parts. Name these parts and mention to which part each of structures 1 – 5 in questions 9.1.1 belong.

(2 + 5 x ½ = 4.5)

- 9.2 Match the term in column B with the correct description in column A. **Only write down the correct term next to the appropriate question number on the answer sheet.** (16 x ½ = 8)

COLUMN A	COLUMN B
9.2.1 Human skull	a. Consists of the sternum and thoracic vertebrae.
9.2.2 Atlas	b. Shoulder, arms, hips and legs.
9.2.3 Thorax	c. Carries the weight of the skull and allows the head to nod.
9.2.4 Gliding joint	d. 28 Bones.
9.2.5 Axial skeleton	e. Between atlas and axis.
9.2.6 Pivot joint	f. Allows head to move to the side.
9.2.7 Vertebral column	g. Skull, vertebral column, thorax.
9.2.8 Axis	h. Wrist and ankles.
9.2.9 Hinge joint	i. 33 Bones.
9.2.10 Appendicular	j. Elbows, knees, fingers and toes.

TOTAL 150