Education and Sport Development

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NORTH WEST PROVINCE

GRADE 10

LIFE SCIENCES

MEMO

JUNE EXAMINATION 2017

SECTION A

QUESTION 1

1.1

1.1.1 D✓✓
1.1.2 D✓✓
1.1.3 D✓✓
1.1.4 D✓✓
1.1.5 C✓✓
1.1.6 B✓✓
1.1.7 C✓✓
1.1.8 A✓✓
1.1.9 C✓✓
1.1.10 B✓✓**(20)**

1.2

1.2.1 Antagonistic muscles✓
1.2.2 kwashiorkor✓
1.2.3 monosaccharide✓
1.2.4 ciliated epithelium✓
1.2.5 chloroplast✓
1.2.6 epidermis✓
1.2.7 enzymes✓
1.2.8 osmosis✓ **(8)**

1.3

1.3.1 NONE✓✓
1.3.2 B ONLY✓✓
1.3.3 NONE✓✓
1.3.4 A ONLY✓✓
1.3.5 A ONLY✓✓
1.3.6 BOTH A and B✓✓**(12)**

1.4

1.4.1 Microscope✓ (1)
1.4.2 A-Course adjustment control✓
C- Arm✓
D- Stand/fool plate ✓
E- Stage ✓ (4)**(5)**

1.5

1.5.1 a) E✓
b) A✓
c) B✓ (3)
1.5.2 Lock and key theory✓✓ (2)
(5)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

A- centriole✓
B- spindle fibre✓
C- chromatid✓
D- centromere✓(4)

1.5.2. Eight (8)✓(1)
1.5.3. Four (4) ✓(1)
1.5.4. Growth✓Repair✓Reproduction ✓ any 2 (2)
(8)

2.2

2.2.1 Cell Y✓ (1)
2.2.2 -Cell wall✓
-Chloroplasts✓
-Large vacuoles✓(Any 2) (2)
2.2.3 A: Mitochondria
B: Endoplasmic reticulum (2)
2.2.4 -Stores water and minerals
-Provides turgidity (2)

2.2.5 Structure A ✓

2.2.6 Table = ONE mark

Cell Y (PLANT CELL)	**Cell X (ANIMAL CELL)**
Cell wall present✓	Cell wall absent✓
Large vacuole✓	Vacuoles small ✓
Has chloroplasts✓	Has no chloroplasts✓
No centriole✓	Has centriole✓

(any two differences(4) + table(1) (5)

(12)

2.3

2.3.1

a) F✓ – guard cells around stomata✓

b) G✓ – Xylem✓ (4)

2.3.2 Palisade parenchyma/palisade mesophyll✓ (1)

2.3.3 Lots of chloroplasts✓ for more sunlight✓ therefore more photosynthesis✓

Arranged perpendicular✓ to epidermis to allow for more✓ cells to be ableto get sunlight✓ (2X2=4)

2.3.4 spongy mesophyllableto get sunlight✓ (1)

2.3.5 Rounded✓ in shape. Large surface area✓ for absorbtion of carbon dioxide✓ and water✓

Allows for intercellular spaces✓ for gases to diffuse✓ (3)

2.3.6 F contains more chloroplasts✓for more photosynthesis ✓

To allow opening and closure✓ for more carbon dioxide✓ to enter

Inner walls are thicker✓ than outer walls✓ – not the case with epidermal cells (any 2X2 = 4)

2.3.7 Transpiration would not occur✓.

Gaseous exchange would not occur✓

The plant would die✓ (3)

(20)

[40]

QUESTION 3

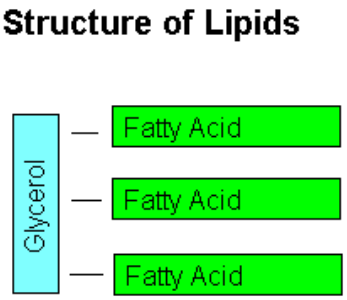
3.1

3.1.1 Carbohydrates ✓ (1)

3.1.2 Monosaccharides✓ /glucose (1)

3.1.3 -Building blocks of all organic material in cells✓
-Enzymes are proteins which control many reactions ✓
-Hormones are proteins which control metabolic✓ activities/processes✓
-Reserve source of energy (3)

3.1.4 Rubric to be used to assess the diagram of lipid



Heading	✓
One glycerol	✓
Three fatty acids	✓
Structure E-shaped	✓

(4)

3.1.5 Iron ✓ (1)**(10)**

3.2

3.2.1 A = clavicle ✓
B = sternum ✓
C = (costal) cartilage ✓ (3)

3.2.2 Vertebrae / vertebral column✓ / spinal column (1)

3.2.3 Heart ✓ and lungs ✓ (2)

3.2.4 Osteoporosis ✓ (1)

(7)

3.3

3.3.1 a = tendon / sinew ✓
b = muscle to bone ✓
c = (hyaline) cartilage ✓
d = chondrytes (cells) in protein chondrin in spaces lacunae✓
e = ligament✓ (5)

3.3.2 Hinge ✓ (1)

(6)

3.4

3.4.1. Transverse section of a stem. ✓ (1)

3.4.2 - Lack of root hairs✓✓
- Evidence of secondary thickening✓✓*I*
- Presence of vascular bundles
- Presence of a pith and hypodermis Any 2 (2x2)= (4)

3.4.3 - Hardened with lignin – support✓
- Pits in their walls – lateral movement of water✓

- Elongated, hollow, forms long tubes – for water to flow through✓
- Cross walls absent or perforated – allows for rapid movement of water

Any 3 (3)

3.4.4. Yes✓(1)

3.4.5. A thick, dark annual ring shows that water in plentiful, whereas a thin light ring shows that the tree experienced a dry year.✓(1)**(10)**

3.5

3.5.1. Embryonic cells can be used to breed bean plants ✓on a growth medium ✓

OR

Embryonic cells cannot be used to breed bean plants✓ on a growth medium ✓ (2)

(any 1 of the above hypotheses for 2 marks)

3.5.2. Cloning✓ (1)

3.5.3. Type of growth medium. ✓

Size of petri-dishes.✓

Number of embryonic cells.

Amount of growth medium.

Temperature.

Amount of sunlight.

Type of plant.

Area on plant where embryonic cells are extracted.

Time allowed for growth of plants. (mark FIRST 2) (2)

3.5.4. Mitosis✓ (1)

3.5.5. They believe that people are trying to play God. ✓

It leads to a decrease in genetic variety.

Survival of cloned organisms are uncertain.

Too many identical individuals might lead to more crime.

(mark FIRST 1) (1)

(7)

[40]

SECTION C
QUESTION 4

4.1

Possible answer

Introduction X 1 mark
Connective supports and joins the other tissues of the body together.
Any 4 tissues X 4 marks = 16
Tissue ✓
Structure ✓✓ (function must relate to the foot)
Function ✓ (function must relate to the foot)

White fibrous connective tissue✓
forms tendons that attach skeletal muscles to bone
It forms the periosteum, a tough layer that surrounds long bone of the femur.
closely packed fibrous collagen fibres that are arranged in parallel rows
provides strength and elasticity to allow for maximum support.

Yellow elastic tissue✓
forms ligaments that connect bones to bones.
holds bones in place at joints
prevents dislocation during normal movement
dense network of elastic fibres
yellow in colour due to the presence of the elastic fibres, which provides greater elasticity.

Hyaline cartilage✓
covers and protects the ends of bones at the moveable joints
acts as a shock absorber in joints
translucent bluish-white appearance
white collagenous fibres in a matrix which is tough yet flexible.

Bone tissue✓
Haversian systems that extend lengthwise through the bone
Each system consists of a hollow canal called the Haversian canal
contains tiny blood vessels, a nerve fibre and a lymph vessel
matrix is hard and strong and is made of water, supporting salts of calcium and collagenous fibres.
provides a place for muscles to attach

Voluntary striated muscles✓
spindle-shaped slender cells called fibres (myofibril)
myofibrils have alternating light and dark bands - striated or striped appearance
well-developed properties of contraction that enable movement when stimulated by a nerve

Multipolar neurons✓
Found between central nervous system and the effectors
short-branched dendrites and one long axon

Axon terminates in a motor end plate lying within the sheath of the muscle fibre
carries impulses away from the spine and brain towards the muscles in foot and leg to move

ASSESSING THE PRESENTATION OF THE ESSAY

Criteria	Relavance (R)	Logical Sequence (L)	Comprehensive (C)
General	**Al information provided is relevant to the topic**	**Ideas are arranged in a logical sequence**	**Al aspects required by the essay have been sufficiently addressed**
In this essay	**Only information relevant to the adaptation of the movement of the foot is given**	**Information regarding the movement of the foot are arranged in a logical way**	**Any 4 tissue, structure and function was discussed**
Marks	**1**	**1**	**1**

Synthesis (3)

(20)

TOTAL SECTION C: 20

GRAND TOTAL: 150