EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

BIOLOGY **6884/02**

Paper 2 **October/November 2019**

Confidential

MARK SCHEME

{6884/02}

MARKS: 80

This document consists of **5** printed pages.

1 **(a)** **(i)** molar;
ridged/ grooved surface; [2]

(ii) a label line to the pulp cavity + with the label pulp; [1]

(iii) cavity only on the enamel;
has no nerve endings;
no detection of temperature changes which may result in pain; [3]

(iv) increases the resistance teeth to acid;
strengthens teeth reducing corrosion
preventing decay**;** [max 2]

(b) breaks down into smaller pieces;
increases the surface area;
for (enzyme) amylase;
converting starch to maltose;
[max. 3]

(c) peristalsis;
alternate contraction and relaxation of oesophagus muscles/ antagonistic action of muscles of the oesophagus;
longitudinal and circular muscles of the oesophagus [max 2]

(d) liver cells damaged;
less/no bile produced;
ref. acidic medium in the duodenum for action of lipase;
no emulsification/less surface area for fat digestion;
ref. less or no digestion of fat; [max. 4]

2 **(a)** **(i)** 1.00 + mol/dm^3; [1]

(ii) strip **F** was in a hypotonic solution/ dilute solution;
solution had a high water potential compared to potato cells;
water molecules moved into the cell;
by osmosis;
created high turgor pressure within the cell;
pressure exerted against the cell walls;
potato cells become turgid;
results/causing gain in length of tissue; ……[max. 4]

(b) active transport;
absorbed against a concentration gradient/ from low concentration to higher concentration;
using energy (from respiration); [max. 3]

3 **(a)** **(i)** xylem vessels correctly shaded, one or more; [1]

(ii) vascular bundle forms a circle (towards the epidermis); [1]

(b) cells will be losing water;
faster than they can absorb (from the xylem);
cells will lose turgor pressure;
becoming flaccid; [max. 3]

(c) starch converted by enzyme;
to sucrose;
translocated;
in the phloem; [max. 3]

4 **(a)** **(i)** 117 beats per min; +/- 1 [1]

(ii) heart rate increases **more** when running than when walking;
more oxygen transported to muscles;
more glucose transported to muscles;
increased rate of respiration;
more energy released;
increased muscle activity/ contraction; [max. 5]

(b) more red blood cells absorb more oxygen;
to counteract/balance the effect of reduced atmospheric oxygen;
ensures metabolic reactions/rate of respiration at higher altitude is normal; [3]

(c) **(i)** blockage of coronary arteries; [1]

(ii) diet/ smoking/stress/genetic disposition/age; [1]

5 **(a)** spontaneous change in a gene/ a chromosome; [1]

(b) FSH- maturation of follicle/ ovum;
LH-release of ovum/ ovulation; [2]

(c) reduced oxygen/ uptake (by foetus);
less respiration/ energy;
slow growth/ small size of embryo/ low birth weight;
less nutrients / glucose/ amino acids/ named nutrient (supplied to foetus);
reduced progesterone (released from placenta);
still birth/ miscarriage; [max. 5]

(d) labour/ contraction of uterus;
dilation of cervix;
delivery/ baby released from uterus;
afterbirth/ release of placenta; [max. 3]

(e) slowly release progesterone;
suppressing secretion of FSH;
by pituitary gland;
stopping maturation of follicle;
stopping release of egg/ ovulation; [max. 2]

6 **(a)** **(i)** rods; [1]

(ii) pupil constricts/ size decreases;
radial muscles relax;
circular muscle contract;
ref. to iris; [4]

(iii) pupil reflex is rapid/ faster;
localised while effect of hormones is widespread;
short lived;
involves nerves/ nervous reaction; [max. 2]

(b) **(i)** any substance taken into the body/ externally administered substance;
modifies/ alters or affects chemical reactions; [2]

(ii) sharing of unsterilised injection needles;
spread of infections/ HIV/AIDS/ hepatitis;
collapsed veins;
addictive; [max. 3]

7 **(a)** pancreas; [1]

(b) **(i)** 90 AU +/-1; [1]

(ii) low-level of glucose;
glucose used up in respiration;
glucagon increases;
to stimulate liver cells;
to convert glycogen to glucose;
glucose then rises/ returns to normal; [max. 4]

8 **(a)** parental phenotypes: normal normal

parental genotypes: $X^{C}X^{c}$ $X^{C}Y$;

gametes: X^{C} X^{c}; X^{C} Y encircled; ecf

crosses shown

F1 generation genotypes $X^{C}X^{C}$, $X^{C}Y$, $X^{C}X^{c}$, $X^{c}Y$; ecf

offspring phenotypes: normal female; normal male, normal female, colour blind male;

probability for colour blind male: 50% / 0.5/ ½; [5]

use of Punnet square is equally acceptable, but all stages must be clearly shown.

(b) males have only one X chromosome/ the allele for colour blindness is only present on the X chromosome; [1]