MEMORANDUM

BIOLOGY

BLG 1501

MAY/JUNE 2012

DURATION: 2 HOURS

MARK: 100

QUESTION 1

1.1 B

1.2 D

1.3 A

1.4 B

1.5 C

1.6 B

1.7 C

1.8 D

1.9 B

1.10 C

10 X 2 =**[20]**

QUESTION 2

2.1.1 Diploid – two sets of chromosomes per nucleus.

2.1.2 Enthalpy – the total potential energy of a system.

2.1.3 Autotroph – produce its own organic food from inorganic substances.

2.1.4 Climax community – succession progress to a stable persistent community.

2.1.5 Ecotone – transition zone where two communities or biomes meet and integrate.

2.1.6 Primosome – a complex of proteins responsible for synthesizing the RNA primers required in DNA synthesis.

2.1.7 Isomers / isomer – two or more chemical compound with the same chemical formula but different structural formulas.

(2 x 7 = 14)

2.2

Alcohol fermentation	**Lactic acid fermentation**
Pyruvate is converted to ethanol into two steps	Pyruvate is directly reduced by NADH to form lactate as an end product
Carbon dioxide is released from the pyruvate and forms acetaldehyde	No release of carbon dioxide
Acetaldehyde is reduced by NADH to ethanol	No acetaldehyde formed.

(6)

2.3

2.3.1 Nucleus

2.3.2 Plasma membrane

2.3.3 Vacuole

2.3.4 Smooth endoplasmic reticulum

2.3.5 Chloroplast (5)

[25]

QUESTION 3

3.1 Parasitism**:** a symbiotic relationship in which the parasite benefits at the expense of the host.

Mutualism**:** a symbiotic relationship in which both participants benefit.

Commensalism**:** a symbiotic relationship in which the symbiont benefits but the host is neither helped nor harmed. (6)

3.2 The velocity of an enzymatic reaction will increase with temperature because the substrate collides with active sites more frequently. Beyond the optimum temperature the speed of an enzymatic reaction will drop sharply. The same hold true for pH.

The more substrate molecule available the more frequently they access the active sites of the enzymes. However, there is a limit to how fast the reaction can be pushed by adding more substrate to a fixed concentration of enzyme and the velocity of the reaction will stabilize if all the active sites are engaged.

Cofactors can be inorganic or organic (called co-enzymes) that bound to the active site to assist the enzyme. Enzyme inhibitors are usually chemicals that inhibit the enzyme reaction by binding to the active site. It is usually irreversible if the inhibitor bind covalently to the site by it may be reversible if the bond is weak. (15)

3.3.1 Acid – proton (H^+) donor, Base is proton acceptor.

3.3.2 Kinetic energy- energy in motion, potential- to do work (stored energy).

3.3.3 Phagocytosis – cell engulfs food particles. Pinocytosis, cell engulfs liquid

(3 x 3= 9)

[**30]**

QUESTION 4

4.1 P-generation: PPLL crossed with ppll

Gametes through meisois: PL cross with pl

F1-generation are all PLpl all purple

F1-generation cross with F1-generation:

Gametes formed by meiosis are PL, Pl, pL and pl crossed with PL, Pl, pL and pl

The Punnet square for the F2 generation is as follows:

Gametes	PL	Pl	pL	pl
PL	**PPLL**	**PPLl**	**PpLL**	**PpLl**
Pl	**PPLl**	**PPll**	**PpLl**	**Ppll**
pL	**PpLL**	**PpLl**	**ppLL**	**ppLl**
pl	**PpLl**	**Ppll**	**ppLl**	**ppll**

F2-generation:

Phenotype: 9 one pod normal : 3 three pod normal : 3 one pod wrinkle : 1 three pod, wrinkle.

(20)

4.2 1. Organisms are composed of cells.

2. Living organisms grow and develop.
3. Metabolism.
4. Movement.
5. Response to stimuli.
6. Reproduction.
7. Population evolve and adapt to change (any five 1 x 5 = 5)

[25]

TOTAL MARKS: 100