UNISA university of south africa

DEPARTMENT OF LIFE AND CONSUMER SCIENCES

BLG1501

SEMESTER 2

TUTORIAL LETTER 202/2016

ASSIGNMENT 02

MEMORANDUM

Dr Monde Nyila

☎ 011 471 2294

e-mail: nyilama@unisa.ac.za

Question 9.1: What is the summarised equation for cellular respiration? (6)

Answer:

Organic compounds + Oxygen → Carbon dioxide + Water + Energy

OR

$C_6H_{12}O_6 + 6O_2 \rightarrow 6C0_2 + 6H_20$ + Energy (ATP + heat)

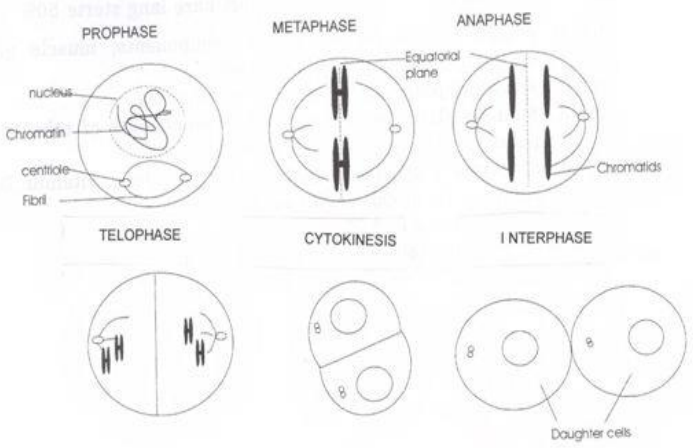
Question 9.12: Compare in tabulated form the processes of fermentation and cellular respiration. (6)

Answer:

Fermentation	Cellular respiration
The final electron acceptor is an organic molecule pyruvate (lactic acid fermentation) or acetaldehyde (alcohol fermentation)	The final electron acceptor is oxygen
Harvests less energy	Harvests more energy
Yields 2 ATPs	Yields 38 ATPs
Anaerobic conditions	Aerobic conditions

Question 10.3: Make labelled drawings to illustrate the different phases of mitosis in an animal cell with two chromosomes. (20)

Answer



Question 11.6: Tabulate the key differences between mitosis and meiosis. (14)

Answer:

Mitosis	**Meiosis**
DNA replication occurs during interphase before mitosis begins	DNA replication occurs during interphase before meiosis 1 begins
One division	Two divisions
Synapsis does not occur	Synapsis occurs during prophase 1
Two daughter cells, each 2n and genetically identical to parent cell	Four haploid cells, each containing half as many chromosomes as the parent cell
Effects growth and repair	Produces gametes

Question 12.5: A purple flower with an unknown genotype is crossed with a white flower. Determine the genotype of the purple flower if purple (P) is dominant and white (p) is recessive. (20)

Answer:

P-generation:

The purple flower must have the P-allele because purple is dominant. We do not know what the other allele is – P or p. Let us suppose the other allele is P.

PP crossed with pp (true-bred white)

Gametes through meiosis: P crosses with p

F1-generation is all Pp, all purple

If the outcome of our cross is purple flowers, we know that the purple flower was also true-bred.

Let us look at the other option, where the purple flower is a heterozygote –

P-generation:

Pp (heterozygote) crossed with pp (true-bred white)

Gametes through meiosis: P and p crossed with p and p

	p	**p**
P	**Pp**	**Pp**
p	**pp**	**pp**

Phenotype: 2 purple to 2 white

If the outcome of our cross is 2 purple flowers to 2 white flowers, know that the purple flower was a heterozygote.The outcome is 50% white and 50% purple.

Question 13.10: Describe the structure and function of ribosomes. (10)

Answer:

Ribosomes are made of two types of subunits – large and small subunits.

The ribosomal subunits are made up of proteins and RNA molecules are called ribosomal RNA, or rRNA.
The ribosomal subunits are made in the nucleolus.
The subunits are then transported via the nuclear pores to the cytoplasm.
Approximately two-thirds of the mass of a ribosome is rRNA.
The ribosomes of eukaryotes are slightly larger than those of prokaryotes.
Ribosomes play a role in the formation of polypeptides.

Question 14.8: Define predation, herbivory and parasitism. (6)

Answer:

Predation: The interaction in which a predator eats another animal.
Herbivory: The interaction in which a herbivore eats a plant.

Parasitism : A symbiotic relationship in which the parasite benefits at the expense of the host.

Question 15.8: Write short notes on the greenhouse effect. (6)

Answer:

CO_2, water vapour, sulphur dioxide and other greenhouse gases in the atmosphere intercept and absorb radiant energy emitted by the earth and reflect it back towards the earth. This process causes some of the solar energy to be retained. The greenhouse effect is believed to have contributed to the present global warming.

Question 16.4: 16.3 List the four major threats to biodiversity and give an example of each. (12

Answer:

HABITAT LOSS: Human activities such as agriculture, urban development, forestry, mining, etc., can also lead to habit loss.

INTRODUCED SPECIES: Introduction of exotic species, are those that humans move intentionally or accidently from the species, native locations to new geographic regions.

OVERHARVESTING: Overharvested organisms such as seabirds, elephants, whales, rhinoceroses, and fish are in the danger of extinction because of overharvesting..

GLOBAL CHANGE: The final threat to biodiversity is global change which changes the fabric of Earth's ecosystems at regional to global scales. Global change includes climate, atmospheric chemistry, and broad ecological systems that reduce the capacity of Earth to sustain life.

TOTAL: 100