MODULE: BLG1502
ASSIGNMENT NO 2
UNIQUE NO: 886240
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QUESTION 1

1.1 Stigma
1.2 haustoria
1.3 Karyogamy
1.4 Cnidarians
1.5 Cephalisation
1.6 Coelom
1.7 Internodes
1.8 Vascular tissue
1.9 Ovaries
1.10 Epicotyl

QUESTION 2

2.1 Distinguish between chitin and peptidoglycan.

- Chitin = it's a structural polysaccharides consisting of amino Sugar monomers found in many fungal cell walls and it is responsible for building material for their cell walls.

- Peptidoglycan = is a type of polymer in bacteria cell walls consisting of modified sugars cross-linked by short polypeptide. It encloses the entire bacterium and anchors other molecules extended from it surface.

2.2 Compare Photo autotrophy and chemo heterotrophy.

- photo autotrophy = An organism that harnesses light energy to drive the synthesis of organic compound from CO_2 and in most cases water, they feed themselves and entire living world.

- Chemo heterotrophy= organisms that requires organic molecule for both energy and carbon.

2.3 Distinguish between gram-positive and gram-negative bacteria

gram-positive bacteria	gram-negative bacteria
Have a thick wall made of peptidoglycan	Have a thin layer of peptidoglycan, which is located between the plasma membrane and an outer membrane
The crystal violet enters the wall cell, where it forms a complex with iodine in the stain	The crystal violet-iodine complex can pass through this thin cell wall and hence is removed by alcohol rinse
This complex is too large to pass through the thick cell wall, so it is not removed by the alcohol rinse Result: the darker crystal violet dye masks the red safranin dye	Result: the safranin dye stains the cell pink or red

2.4 Compare sclerenchyma and collenchyma with regards to:

	SCLEREMCHYMA	Collenchyma cells
Structure and composition of the cell wall	• Ceased Elongated • Thick and contains large amount of lignin • Thick lignified secondary walls.	• Elongated cells. • Walls are unevenly thickened.
Functions	• Help supporting elements in the plant • Perform most of the metabolic functions.	• Help support young parts of the plant shoot.
Position in plants	• Fibers grouped in strands.	• Young stems and petioles.

2.5 Distinguish between bryophytes and pteridophytes

- Pteridophytes are vascular plants with xylem and phloem, that reproduce and disperse via spores whereas the dominant phase in byrophytes is gametophyte while the dominant phase in pteridophyte is sporophyte, Bryophytes have no vascular tissues while pteridophytes have vascular tissues.

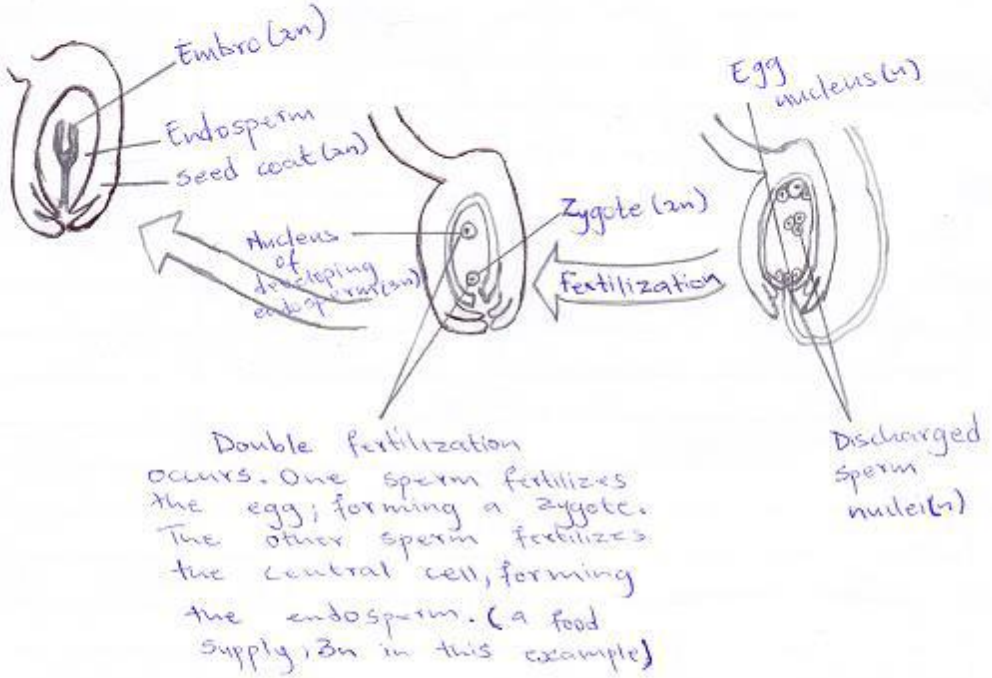
QUESTION 3

3.1 Distinguish between pollination and fertilization.

- **Pollination** is the process whereby pollen grains move from the another to the stigma on a flower's style, while **fertilization** is the fusion of the male gametes and female egg cells to form a new plant seed. **Pollination** precedes **fertilization** and depends on such media as wind, water and insects. **Pollination** takes place externally, while **fertilization** occurs in the inside of the flower and does not depend on external vector

- 3.2 By means of a diagram explain the process of double fertilization flowering plants. (8)

3.2.



QUESTION 4

4.1 Distinguish between malnutrition and undernutrition. (4)

- Malnutrition and Undernutrition are terms often used loosely to refer to a condition where a person is not getting a balanced diet. However, malnutrition could technically be both under as well as over nutrition. As such obesity is a condition that is a result of malnutrition.

4.2 Name the three enzymes involved in the digestion of carbohydrates and where they are found. (6)

Name of the enzyme	**Part of the body (Digestive juices)**
Amylase	Mouth (Saliva)
Pepsin)	Stomach (Gastric juice)
Trypsin), Lipases and/or Amylase	Pancreas (Pancreatic juice)
Sucrase, Lactase, and/or Maltase	Small intestine (Intestinal enzymes)

QUESTION 5

5.1 Distinguish between endocytosis and pinocytosis

- In **endocytosis** the cell takes in molecules and particulate matter by forming new vesicles from the plasma membrane. Whereas in **pinocytosis**, a cell continually "gulps" droplets of extracellular fluid into tiny vesicles, formed by infoldings of the plasma membrane.

5.2 Distinguish between diffusion and osmosis

- **Diffusion** is the movement of particles of any substances so that they spread out into the available space. Whereas the **Osmosis** is the diffusion of free water across a selectively permeable membrane, wether artificial or cellular.

5.3 Explain the process of osmoregulation

- Is the process of maintenance of salt and water balance (osmotic balance) across membranes within the body's fluids which are composed of water plus electrolyte and non-electrolytes. An electrolyte is a solute that dissociates into ions when dissolved in water.

QUESTION 6

- **Life cycle of pine**
  tree segregate into sporophyte and gametophyte generation. During the process of reproduction, these two stages occurring then again and thus called "Alternation of Generations". Let us begin by generally describe the differences between these generations, and then exhaust the life cycle of pine.
- **Sporophyte**
  A sporophyte is the diploid phase and has multi-cellular stages in a plant life cycle. It grows from zygote delivered when haploid cell is fertelised by a haploid sperm and every sporophyte cell consequently has two copies of every chromosome. The sporophyte is a phase in which spores are produced by the process called meiosis, or "reduction division" that decreases the quantity

of chromosomes in every spore mother cell by half. Both spores and gametophyte are usually haploid, which means they just have one copy of every chromosome.

- **Gametophyte**
  In gametophyte phase, gametes are produced. This stage starts with the development of spores. Formation of spores occurring by meiosis and spores formed are hapl oid. Then mitosis occurs in spores and the cells of multicellular arrangement are additionally haploid. By the procedure called mitosis, this multi-cellular arrangement generates haploid female and male gametes. At the point when the female and male gametes are turn out, they intertwined, fertilized and results to diploid zygote.

- In most conifer species, each tree has both ovulate and pollen cones. Male cones, usually 1 cm or less in length, are smaller than female cones.
- Microsporocytes divide by meiosis, producing haploid microspores. A microspore develops into a pollen grain (a male gametophyte enclosed within the pollen wall).
- In each ovulate cone scale has two ovules, or megasporangia, on its upper surface. Within each megasporangium, meiosis of a megasporocyte, or megaspore mother cell, produces four haploid megaspores.
- Pollination, the transfer of pollen to the female cones, occurs when a pollen grain reaches the ovule. The pollen grain then germinates, forming a pollen tube that slowly digests its way through the megasporangium.
- While the pollen tube develops, the megasporocyte undergoes meiosis, producing four haploid cells. One survives as a megaspore.
- The megaspore develops into a female gametophyte that contains two or three archegonia, each of which will form an egg.
- By the time the eggs are mature, sperm cells have developed in the pollen tube, which extends to the female gametophyte. Fertilisation occurs when sperm and egg nuclei unite.
- Fertilisation usually occurs more than a year after pollination. All eggs may be fertilised, but usually only one zygote develops into an embryo. The ovule becomes a seed, consisting of an embryo, food supply, and seed coat.

QUESTION 7

7.1 Homeostasis=

- “steady state,” referring to the maintenance of internal balance. In achieving homeostasis, animals maintain a relatively constant internal environment even when the external environment changes significantly. For example, the human body maintains a fairly constant temperature of about 37°C (98.6°F) and a pH of the blood and interstitial fluid within 0.1 pH unit of 7.4. Water and electrolyte balance, blood pressure, blood glucose concentration and respiration rate require to be constantly maintained. The nervous and endocrine systems control homeostasis in the body through feedback mechanisms that involve various organs.

7.2 Distinguish between the process of cellular respiration and fermentation

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

7.3 list the functions of the circulatory system

- Blood circulate to and from the heart through an amazingly extensive network of vessels
- Arteries carry blood from the heart to organs throughout the body. They carry blood away from the heart toward catapillaries
- The portal veins which carry blood from capillary beds in the liver.
- **Open circulatory system:** In this system the circulatory fluid bathes the organs directly. In these animals, the circulatory fluid called hemolymph, is also the interstitial fluid that bathes body cells. Contraction of one or more hearts pump the hemolymph through the circulatory vessels interconnected sinuses, spaces surrounding the organs. Arthropods and most molluscs are examples of this system.
- **Closed circulatory system:** Is the system in which a circulatory fluid called blood is confined to vessels and is distinct from interstitial fluid. One or more hearts pump blood into large vessels that branch into smaller ones that infiltrate the organs. These animals include annelids, cephalopods and all vertebrates

REFERENCE

Neil A.Campbell *et al* 2018. *Biology A Global Approach.* 11TH Edition. Pearson. New York.
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