

COMMON TERMS USED IN SETTING BIOLOGY QUESTIONS

“WHAT……?”

- ”**What”** is a word or term used in asking to know specific or exact information about the importance of something.
- The answer must also be specific. You know the answer or not. Guessing will not help.

Examples

(a). What is osmosis?

- **Answer:**
- Osmosis is the movement of water molecules from a dilute solution into a concentrated solution through a semipermeable membrane.

(b).What name is given to the space between the canines and premolars in the lower jaw of a herbivorous mammal?

- **Answer:**
- Diastema

(c).What process is used in the formation of reproductive cells?

- **Answer:**
- Meiosis

NAME

- Is a term used in asking for a name of a particular thing or process.
- The answer must be specific and to the point asked. You either know it or not. guessing will not help

Examples

(a).Name the part of a light microscope that focuses light on the object placed on the stage.

Answer: Condenser

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(b).Name the part of the human brain that controls involuntary movements such as breathing, yawning, blinking .

Answer: Medulla oblongata

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(c).Name two products of the light stage of photosynthesis

Answer:

- Oxygen
- Hydrogen ions
- ATP

STATE

- Is a term used in asking one to exactly express or say in written about a thing or a process.
- The answer must be specific and exact. Guessing does not score.

Example

(a). State the properties of a cell membrane that make it function well in cell physiology

- **Answer:**

Semipermeable, possess electric charges, sensitive to changes in temperature and pH.

(b). State three characteristics of gaseous exchange surfaces.

- **Answer:**

Moist surfaces have a one cell thick epithelium, have a large surface area.

(c). State any functions of mammalian blood other than transport

Answer:

Defence against diseases, blood clotting, temperature regulation and distribution of heat.

LIST

-
- A term used in asking one to produce an actual written catalogue of items or aspects required.

Examples

- (a). List five scientific skills acquired while studying biology.
- **Answer:**
- Observation, identification, recording, classification and measurement.
- (b). List five evidences of organic evolution.
- **Answer:**
- Fossil records, comparative anatomy, comparative embryology, geographical distribution, cell biology.
- (c). List five cell organelles found in a living cell as seen under an electron microscope
- **Answer:**
- Mitochondria,
- ribosomes,
- lysosomes,
- Golgi apparatus,
- endoplasmic reticulum.

OUTLINE

- Is a term that demands the response to be presented in the form of points. Thus it is similar to the term “list”

Examples

(a). Outline the roles of active transport in the human body.

Answer:

Reabsorption of glucose and some salts in the kidney, absorption of digested food from alimentary canal, excretion of waste products from body cells, reabsorption of useful materials in the blood stream.

(b). Outline five ways of breaking seed dormancy

Answer:

- Increase of oxygen for respiration,
- presence of growth hormones,
- presence of water,
- presence of light,
- absence of enzyme inhibitors.

GIVE

A term used in the same way as the four stated terms i.e. what, name, state, list. The answer must be specific and to the point without explanation.

Guessing will not help.

Examples

- (a).Give two characteristics of Meristematic cells
- **Answer:**
- Have dense cytoplasm
- Have thin cell walls

Example

(b).Give the differences between the following structures in wind and insect pollinated flowers.

STRUCTURE	INSECT POLLINATED	WIND POLLINATED
Anther	Small, short firmly attached to filament	Large, long, loosely attached to filament
Pollen grain	Large, heavy	Small, light
Stigma	Small, sticky	Large

Example

(c). Give a reason why the wall of the left ventricle is thicker than that of the right ventricle

Answer:

Left ventricle wall pumps blood through a longer distance to all parts of the body. For this reason, the left ventricle has a thicker wall so as to exert more pressure for pumping the blood.

DISTINGUISH

- Is a term used to state the difference between two aspects or processes by way of making their meanings or purposes clear.

Examples

(a).Distinguish between open and closed circulatory system

Answer:

- In an open circulatory system the transport fluid / blood comes in contact with the body tissues but in closed circulatory system the fluid / blood is always confined in the vessels.

example

(b).Distinguish between smooth and rough endoplasmic reticulum.

- **Answer:**
- Smooth endoplasmic reticulum does not have ribosomes attached to it whereas rough endoplasmic reticulum has ribosomes attached to it.

Example

- (c).Distinguish between homologous and analogous structures
- **Answer:**
- Homologous structures are those structures having a common embryonic origin but have been modified in course of time to perform different functions.
- Analogous structures are structures that have a different embryonic origin but have been modified to perform similar function.

HOW

- Is a term used to find out specific information about the state of something. The answer must be precise and to the point.

Examples

(a). How would one find out from a sample of urine whether a person in suffering from diabetes mellitus?

Answer: Boil urine with equal amounts of Benedicts solution. A green, yellow, orange, red precipitate is an indication of diabetes mellitus.

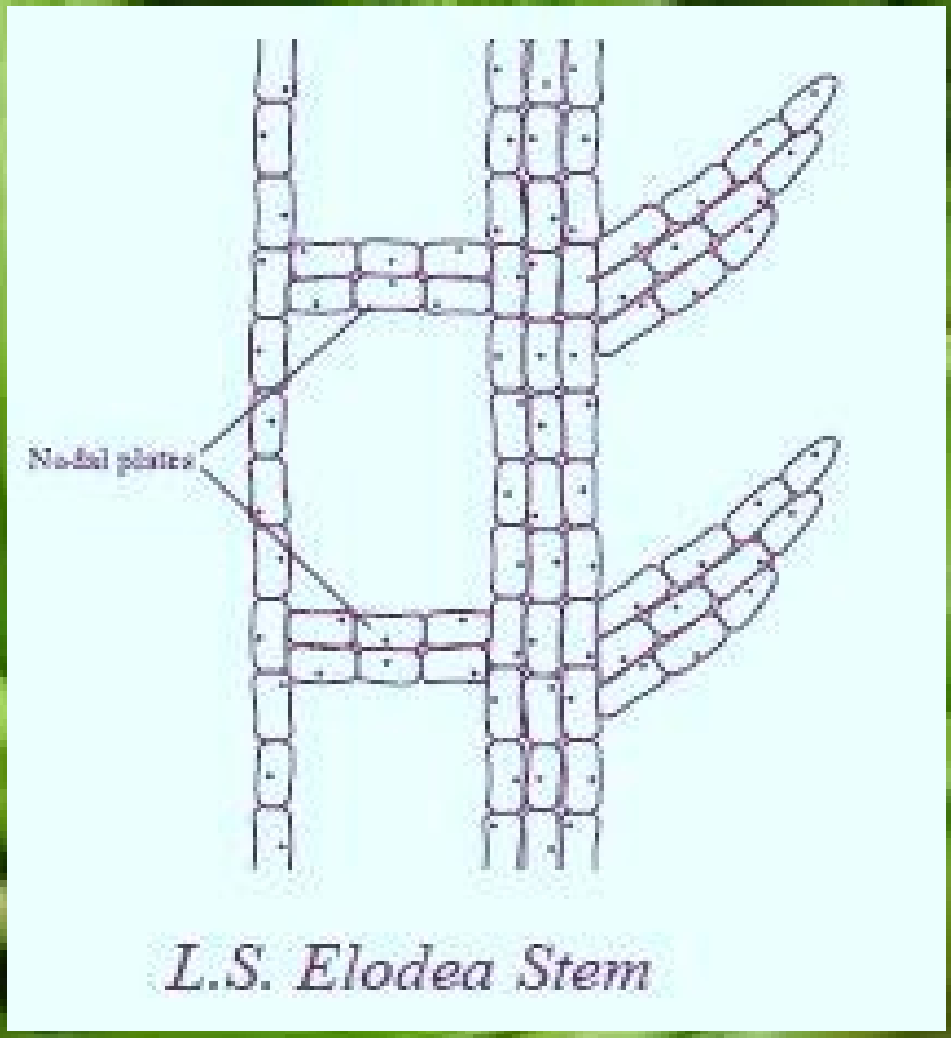
(b). How are xylem vessels adapted for support?

Answer: Have thick and lignified walls

example

(c). How is aerenchyma tissue adapted to its function?

Answer: Has large airspaces which store gases for gaseous exchange and for buoyancy (ability to float).



example

(d). How do the following factors affect the rate of diffusion?

(i). Diffusion gradient

Answer: The higher the diffusion gradient the faster the rate of diffusion

(ii). Surface area to volume ratio.

Answer: The higher the surface area to volume ratio the faster the rate of diffusion

(iii). Temperature

Answer: Increase in temperature increases the rate of diffusion.

COMPARE AND CONTRAST

- The term compares is used to mean similarities between two structures or processes or objects. The answer given usually starts with the term “both” have a, b, c, d,
- The term contrast is used to mean differences between two structures or processes or objects.
- In contrast the answer is in a tabular form.

Examples

Compare and contrast a plant cell and animal cell

Answer

Comparison

- Both have a nucleus,
- both have a cell membrane,
- both have cytoplasm

Contrast

But if the question talks only of compare without mentioning contrast then you state the differences between say an animal cell and a plant cell.

PLANT CELL	ANIMAL CELL
Has a cell wall	Has no cell wall
Has a definite shape	Has no definite shape
Cytoplasm usually situated at the periphery / towards the edge of the cell	Cytoplasm usually occupies much of the cell
Usually stores starch, oils and proteins	Usually stores glycogen and fats
Some have chloroplasts	Usually do not have chloroplasts

EXPLAIN

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- The meaning of the term is to make an event, process or concept clear or understandable. The answer to such a question demands more than just remembering what one has learnt. It calls for reasoning out things or events giving reasons why the events or things are happening. It is a term used to find out students who understand the subject well and those who do not.

- **Examples**
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- (a). Explain why it is sometimes necessary to stain specimens for observation under a microscope.
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- **Answer:**
-
- Different cells in the tissues absorb the stain at different rates and hence staining helps to distinguish different parts.
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- (b). Explain how the guard cell is adapted to its function
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- **Answer:**
-
- It has a thin outer wall and thick inner wall which allows it to bulge on the outer side causing the opening of the stomata.
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- (c). Explain how comparative embryology can be used as evidence of organic evolution.
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- **Answer:**
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- Embryos of vertebrates are morphologically similar suggesting that the organisms have a common ancestry / origin.

- **ACCOUNT**
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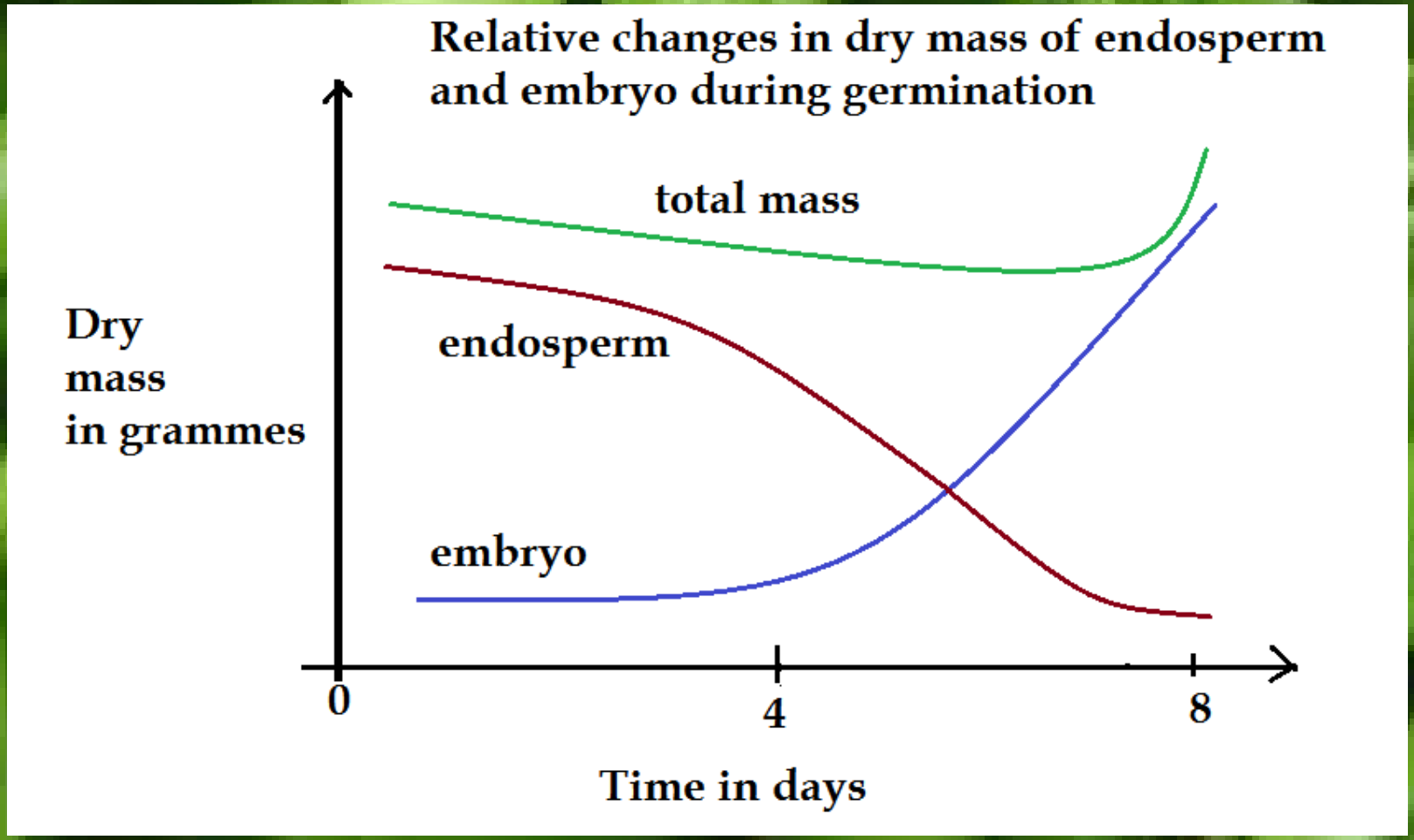
- Is a term used to mean putting forth a statement of an event and giving a reason why the event is taking place. In short account means to explain something giving a reason or reasons why it is taking place. This term strictly separates weaker students in the subject from those who know the subject well. It is a term that requires thinking, reasoning, understanding and application of knowledge. Other previous terms except the term explain, simply test for recall or memory. But the two terms explain and account test for higher abilities of knowledge. It follows that only intelligent students are the ones who can score a high mark with such questions.
- The term “Account” is commonly used in setting graph questions.

Examples

- The graph below shows changes in mean dry mass of endosperm, embryo and total mass of germinating maize seeds.


Relative changes in dry mass of endosperm and embryo during germination
total mass
endosperm
embryo
Dry mass in grammes
0
4
8
Time in days

- **Account for the:**
- **(i). Decrease in dry mass of endosperm from day 1 to day 9. Answer:**
- Starch / food substances are broken down into sugars which are transported to the embryo causing a decrease in dry mass of the endosperm.
- **(ii). Increase in dry mass of embryo from 1 to day 9.**
- **Answer:**
- New cells and tissues are manufactured from proteins leading to growth – hence increase in dry mass of the embryo.
- **(iii). Decrease in total mass up to day 6.**
- **Answer:**
- The rate of respiration or breakdown of sugars is higher than the rate of manufacture of raw materials.
- **(iv) . Increase in total mass after day 6.**
- **Answer:**
- First foliage leaves are formed and so photosynthesis takes place to provide energy and raw materials for formation of new tissues resulting into growth – hence increase in total mass.

- **WHY**
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- Is a term used to demand to know the importance of something or process. The term also requires one’s reasoning and not just recalling what one has learnt

- **Examples**
- (a). Why is oxygen important in the process of active transport in cells?
- **Answer:**
- Oxygen is required for respiration / oxidation of food to produce energy needed for active transport.
- (b). Why are green plants referred to as primary producers in an ecosystem?
- **Answer:**
- They make use of energy from the sun to make food.
- (c). Why are the gills of fish highly vascularized?
- **Answer:**
- To facilitate transportation of gases / carbondioxide and oxygen.
- (d). Why are people with blood group O universal donors?
- Blood group O has no antigens and does not cause agglutination with other blood groups.
- N.B The term is used in asking short answer questions.

- **DESCRIBE**
- It is a term that demands a detailed answer with all the relevant facts included in the answer. It is a term that is commonly used in setting biology essay questions.
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- **Examples**
- (a). Describe the structure and functions of the mammalian skin
- (b). Describe how soil pollutants can affect the growth of plants
- (c). Describe how a human eye functions

- **DEFINE**
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- Is a term which requires one to give the formal meaning of a biological term.

- **Example**
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- (a). Define the term species
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- **Answer:**
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- A species is a group of organisms that can freely interbreed to give rise to fertile / viable offsprings.
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- (b). Define the term active transport
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- **Answer:**
-
- Is the movement of molecules / ions of a substance from a low concentration to a high concentration with the help of energy.
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- (c). Define the term homeostasis
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- **Answer:**
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- Homeostasis is the ability of an organism to adjust so as to maintain a stable internal environment.