

Characteristics of organisms

1. Cellular organisation
2. Nutrition
3.
4.
5. Growth and development
6. Excretion
7. Movement
8. Irritability and co-ordination

Cellular organisation

- 1) Some organisms are made up of cell.
- 2) The organisms with one cell are called organisms.
- 3) organisms are made up of
 - (i) plasma membrane
 - (ii) cytoplasm
 - (iii) organelles (nucleus, mitochondria, golgi body, ribosomes, chloroplast, ER)
- 4) Organelle level organisation is found in organisms.
- 5) Some organisms are made up of cells.
- 6) The organisms with many cells are calledorganisms.
- 7) A organism arises from a single cell called a zygote.
- 8) A is produced when a male gamete (sperm/pollen) fuses with a female gamete (ovum)

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- 9) Fusion of a gamete (sperm/pollen) with a gamete (ovum) and forming an unicellular zygote is called fertilization.
- 10) The will undergo mitosis cell division and form a multicellular organism.
- 11) The cells of a multicellular organisms are modified to do specific
- 12) A group ofmodified to do a specific function is called a tissue.
Eg. (i) Epithelial tissue – squamous, cuboidal, columnar, stratified
(ii) Muscle tissue – skeletal, smooth, heart
(iii) Connective tissue - blood & bone
(iv) Nervous tissue
- 13) Many get together and form an organ.
Eg. Brain, heart, stomach, kidney, liver, eye, lung, bladder, uterus (womb), penis
- 14) Many get together and form a system.
Eg. Digestive system, respiratory system, reproductive system, nervous system
- 15) Many get together and form an organism.
Eg. Man, dog, coconut tree, bacterium, fungus.
- 16) Tissue and system level organisation is found organisms.

Nutrition

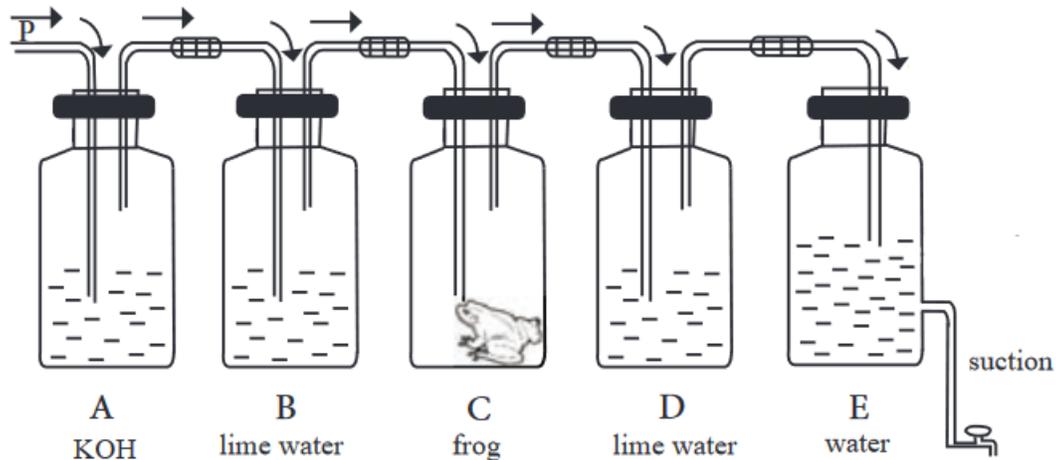
- 1) The process by which the energy and materials are obtained for the maintenance of life is called
- 2) Energy is necessary for cell growth and repair the worn out structures.
- 3) The energy is obtained by nutrients.
- 4) Some organisms who produce their own

- 5) They are called
eg – green & some bacteria.
- 6) Autotrophs are divided into two types according to the type of energy they use to produce
- 7) The organisms who produce their own using light are called photo-autotrophs. Eg – green plants
- 8) This process of producing their own using light is called photosynthesis
- 9) occurs in an organelle called chloroplasts.
- 10) The pigment found in are called chlorophyll
- 11) absorbs solar energy and convert it into chemical energy and store in nutrients.
- 12) The organisms who use chemical reactions to produce their own are called chemo-autotrophs Eg – some bacteria.
- 13) The word equation of photosynthesis
- sunlight
- Carbon dioxide + water -----> glucose + oxygen
- chlorophyll
- 14) The balanced equation of photosynthesis
- sunlight
- $6 \text{ CO}_2 + 6 \text{ H}_2\text{O} \text{ -----} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$
- chlorophyll
- 15) The food is produced in and stored in roots (beet root, carrot), stems (sugar cane) and fruits (mango, papaw).

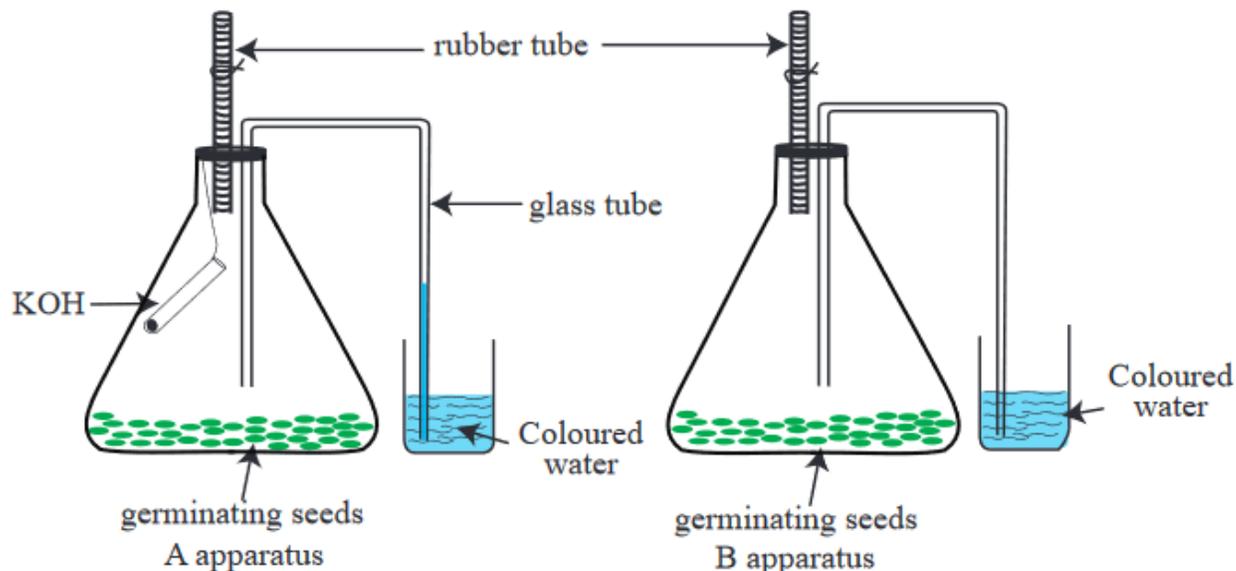
- 16) The organisms who cannot produce their ownare called heterotrophs.
- 17) Since consume other organisms they are called consumers.
Eg- animals, fungi, some bacteria
- 18) The organisms who decompose dead and dead are called decomposers.
Eg. (FBI) Fungi, some bacteria & invertebrates.
- 19) Organisms who get nutrients from dead or from dead are called saprophytes

Respiration

1. Organisms need energy for their metabolisms
2. This energy is obtained by doing
3. Cellular respiration occur in
4. Word equation of cellular respiration
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5. Balanced equation of cellular respiration
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How to prove that CO₂ is produced during respiration

- 1) The vessel is used as a suction pump.
- 2) When the tap in vessel is opened, there will be a continuous flow of air through all the vessels.
- 3) The KOH in vessel will absorb CO₂ in air.
- 4) Therefore the water in vessel B will not become milky.
- 5) But the water in vessel D became milky.
- 6) Therefore the air in vessel contains CO₂.
- 7) This CO₂ was produced by the frog in vessel
- 8) Therefore respiration produces
- 9) A control experiment can be prepared without a frog in vessel

How to prove that O₂ is absorbed in respiration

- 1) The CO₂ in the flask A and the CO₂ produced by the germinating seeds in flask A will be absorbed by
- 2) The coloured water column in the glass tube in apparatushas drawn up
- 3) Therefore the O₂ in flaskwas absorbed during respiration.
- 4) There was no such changed in apparatus
- 5) Therefore the volume of O₂ absorbed during respiration is equal to the of CO₂ released during respiration.

Irritability & Co-ordination

1. A change in the environment which is strong enough to bring about a response is known as a
2. Light, sound, taste, smell, touch, pressure, pain, cold & hot are examples for
3. The organs which help to sense stimuli are called

4. Eye, ear, tongue, nose & skin are the examples for
5. The reactions that occur in organisms due to stimuli are called
6. The organs that are being used to respond are called
7. Muscles and glands are the examples for
8. The communication between the and the is called co-ordination
9. Neurons and hormones are used in
10. Even plants respond for stimuli
11. Eg. – Leaves of thora, tamarind & sesbania folds at night. Therefore they are sensitive to
12. Leaves of Mimosa folds when touched. Therefore they are sensitive to

Excretion

- 1) The chemical that occur in an organism are called metabolic reactions.

Eg. Digestion of food, cellular respiration, photosynthesis, protein synthesis

- 2) The which break large complex substances into simple substances are called catabolic reactions.

Eg – cellular respiration

- 3) The which makes complex substances from simple substances are called anabolic reactions.

Eg - photosynthesis

- 4) Therefore there are two types of metabolic

(i) catabolic reactions reactions

(ii) anabolic reactions

- 5) The products produced during metabolic are called metabolic products
- 6) Some metabolic are useful – Eg – glucose, O₂, enzymes
- 7) Some metabolic are harmful – Eg – CO₂, urea
- 8) The harmful metabolic products should be removed from the body.
- 9) Removing the harmful metabolic is called excretion.
- 10) The substances which are removed during excretion are called excretory substances.
Eg . urea, CO₂, salt & water
- 11) The organs which are used to remove excretory substances are called excretory
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Eg – kidney, lungs, skin
- 12) The main excretory is the kidney.

Movements

- 1) Changing the location of an organism or a part of an organism is called
- 2) is necessary for protection, reproduction and to obtain food.
- 3) Unicellular organisms use pseudopodia, cilia or flagella for

Amoeba uses pseudopodia.

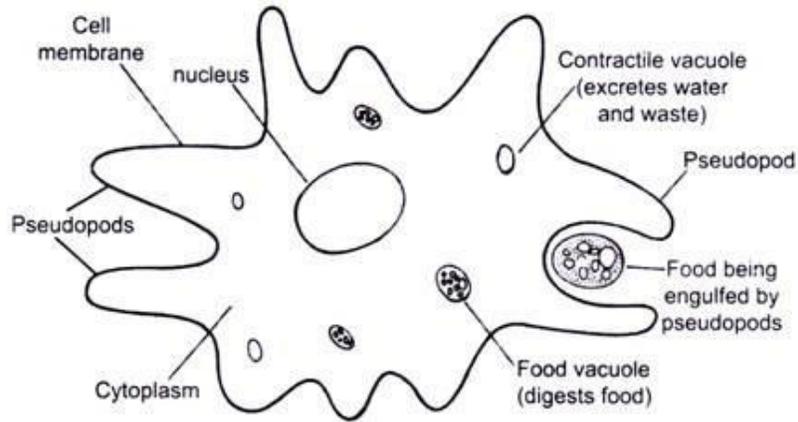
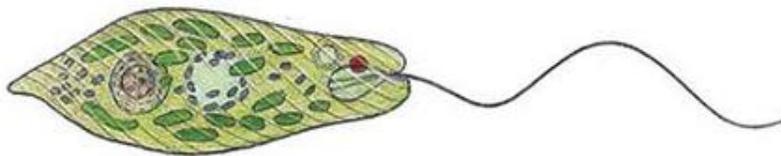


Fig. 9.7 *Amoeba proteus*

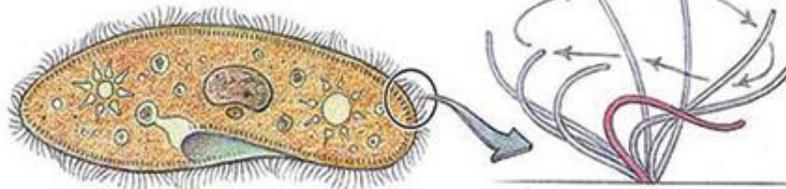
Euglena uses flagella

Direction of motion



(a) Flagella

Direction of motion



(b) Cilia

Paramecium use cilia

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- 4) Multicellular organisms use muscles to the whole body or a part of the body.
 - 5) Organelles within the cells also can
 - 6) Plants show by means of growth.
 - 7) Therefore those in plants are called tropic movements.
 - 8) According to the stimulus, the tropic are named.
 - 9) Tropic due to light are called photo-tropism.
 - 10) Tropic due to gravity are called geo-tropism.
 - 11) Tropic due to chemicals are called chemo-tropism.
 - 12) If the is towards the stimulus, it is called (+) tropic movement.
 - 13) Shoot apex of a growing towards light is called (+) photo-tropism.
 - 14) Root apex of a growing towards the gravity is called (+) geo-tropism.
 - 15) Pollen tube towards the chemicals in the ovules is called (+) chemo-tropism.
 - 16) If the is away from the stimulus, it is called (-) tropic movement.
 - 17) Shoot apex growing from the gravity is called (-) tropic movement.

Reproduction

- 1) An organism producing a new organism belonging to the same species is called
- 2) There are two types of
 - (i) Sexual
 - (ii) Asexual (vegetative)
- 3) The which happens due to fusion of two gametes and forming a unicellular zygote is called sexual reproduction.

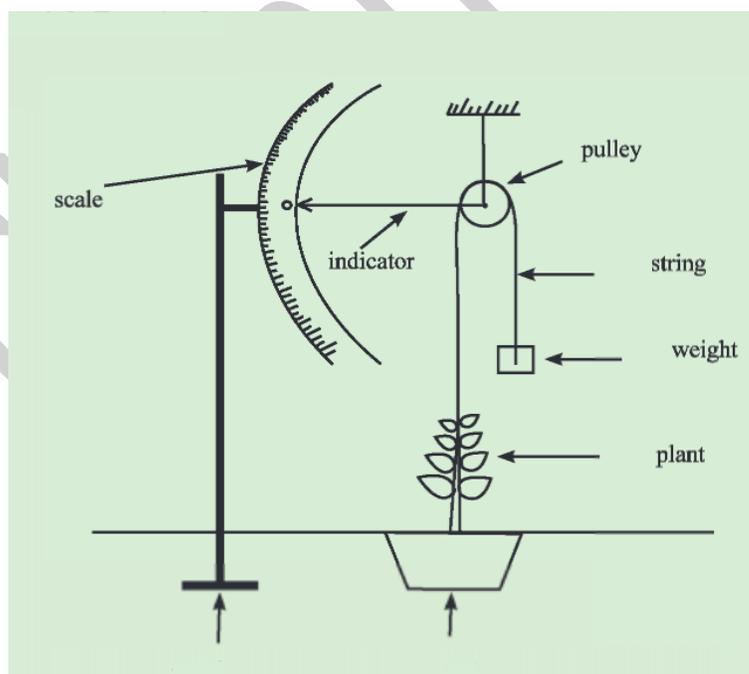
Ex – A sperm fusing with an ovum and producing a unicellular

4) A single organism producing an identical organism without the fusion of gametes is called asexual (vegetative)

Ex – Propagation of new plants using the vegetative structures such as roots, underground stems, leaves, shoots is called asexual (vegetative)

Growth & development

- 1) A simple unicellular organism becomes a complex multicellular
- 2) The growth of an unicellular is the irreversible increase in size and volume of the cell.
- 3) In multicellular, the number of cells increase due to mitosis cell division.
- 4) Cells modify (differentiate) to perform a specific function.
- 5) The cell growth is the irreversible increase in dry mass.
- 6) Development is the increase complexity of a cell.
- 7) Auxanometer is used to show the growth of a plant.



Viruses

- 1) can be seen only by using an electron microscope.
- 2) show living and non living features.
- 3) No organelles are found inside a
- 4) Therefore there are no metabolic reactions in
- 5) The only living feature shown by is reproduction.
- 6) It happens only inside living (host) cells.
- 7) Virus contains a protein capsid and either or RNA. (Not DNA and RNA).
- 8) Dengue, AIDS, chicken pox, measles, influenza, common cold, mumps, chicken gunia, banana bunchy top disease, curly leaf of chillies are due to

