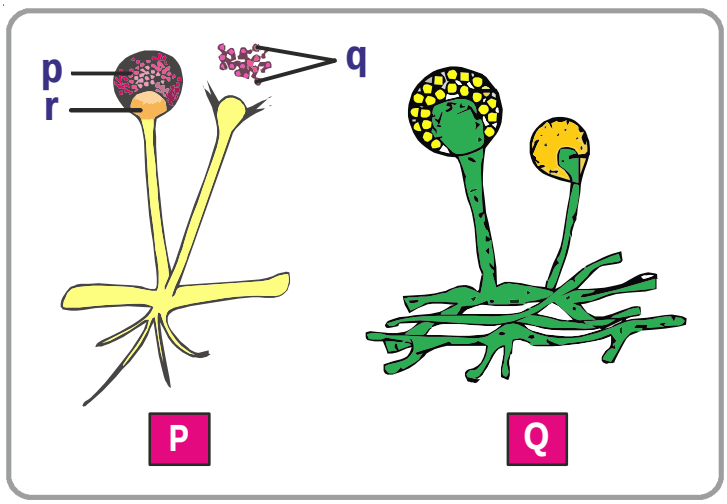
01 **Observe the given figure and answer the questions given.**



(i) Identify 'P' and 'Q'.

(ii) Label the parts (p, q, and r) and write their respective functions.

(iii) Write any 2 main characteristic features of P and Q.

(iv) Write two uses of P and Q.

(i) The organisms 'P' and 'Q' are identified as (Fungi: P - Rhizopus and Q - Mucor)

(ii) p - Rhizoidal hyphae – (derive nutrition)

q - Sporangiospores – (produce spores)

r - Columella – (non spore forming dome shaped areas)

(iii) Characteristic features:

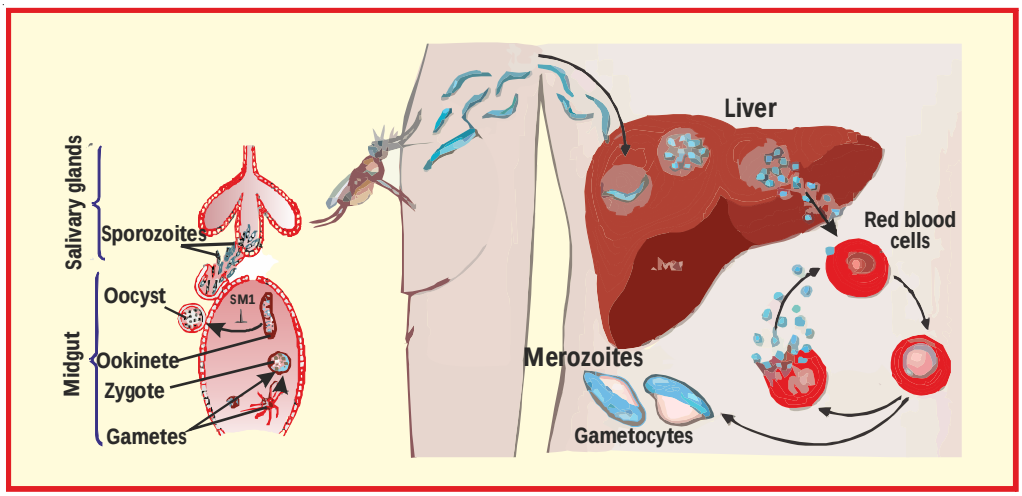
a) They are saprophytes, seen growing on moist bread, jams and jellies and so are commonly called as bread moulds.

b) They undergo sexual reproduction (conjugation)

iv) Few species of these organisms are used in alcholic fermentation, industrial production of citric acid, lactic acid, fumaric acid and certain enzymes.

(Rhizopus is used inpreparation of a delicious food 'Tempeh' from soyabean in indonesia).

02 **Observe the given figure and answer the following questions.**



(i) What does the figure show ? Identify. Name it.

(ii) Fill in the blanks.

(a) _____ parasite is transmitted from human to human through bite of _____ of genus _____, causing a disease called _____.

(b) During the bite, _____ get injected into human host. These invade the liver wherein they develop into _____ which inturn invade _____ of blood and multiply by _____ method.

(iii) Name the host(s) on which disease causing organism shown in the picture lives as a parasite ?

(iv) Give three main symptoms of the said disease.

(v) Name the drug which is used in the treatment of disease.

(vi) Suggest 3 preventive measures.

(i) It shows – "the Life cycle of plasmodium, a malarial parasite".

(ii) a) Plasmodium, mosquito, anophelus, malaria.

b) Sporozoites, merozoites, RBC's and asexual.

(iii) Plasmodium, a malarial parasite liver on 2 hosts to complete its life cycle.

a) Body of man

b) Body of anopheles

(iv) The main symptoms of malaria are high fever, headache and shivering. The fever is repeated on third or fourth day.

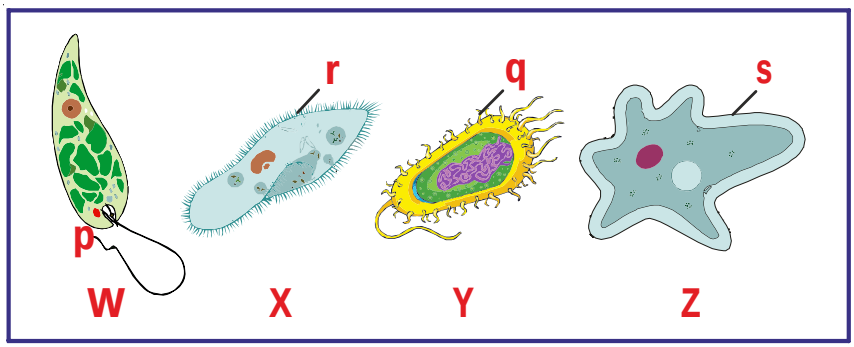
(v) Various drugs such as quinene, paludrin, comoquin etc are useful in treatment of malaria.

(vi) (a) Killing and destryoing the mosquitoes or the breeding areas. The aquatic bacteria on which larvae feed are genetically engineered to produce toxins which destroy the larvae. This is a recently developed, effective biological control method.

(b) Using mosquito repellants or nets

(c) Administration of protective drugs.

03 **Observe the following organisms carefully, answer the following questions.**



(i) **Identify the organisms (W, X, Y and Z) shown. Name them.**

(ii) **Label the parts - p, q, r, and s.**

(iii) **What do you think are the distinguishing features of p, q, r and s.**

(i) W - Euglena; X - Paramecium; Y - Bacteria; Z - Amoeba

(ii) p - Flagella; q - cilia; r - pili/fimbriae; s - pseudopodia

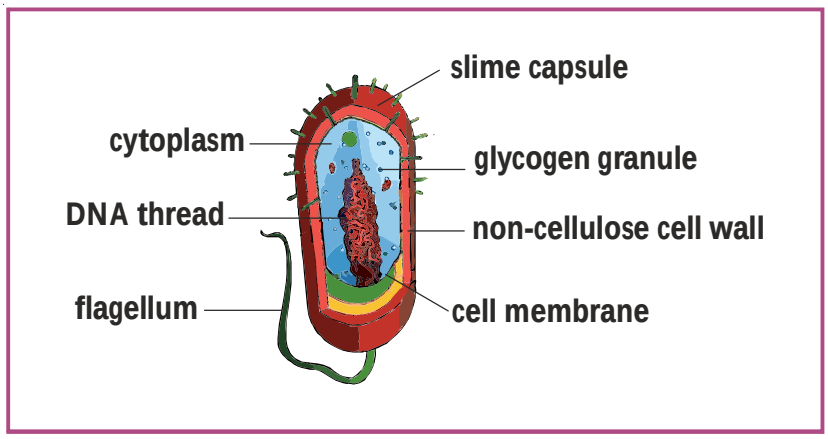
(iii) p - Flagella : Few long, thread-like structures for concerned with motility.

q - cilia : Many tiny hair-like structures for locomotion & food capture.

r - pili/fimbriae : Do not help in motility but help in attachment of bacterial cells. Some sex pili act as conjugation canals through which DNA from one cell passes into the other (pili are normally observed in Gm –ve bacteria)

s - pseudopodia : Finger shaped broad blunt, pseudo (false/temporary) structures help in locomotion and food capture.

04 **The following diagram shows a cell of living organism X.**



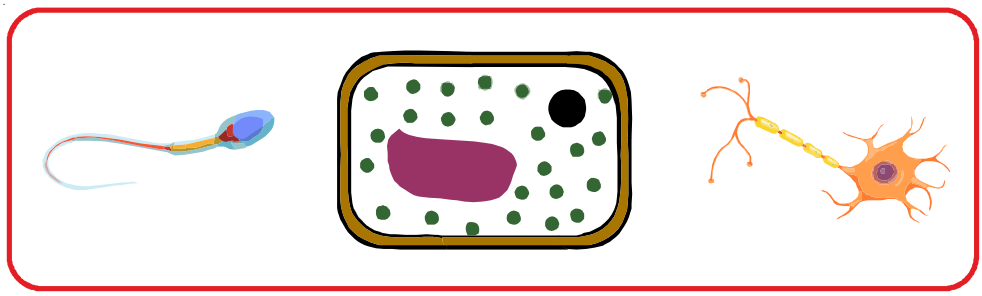
(a) Compare five differences between cell X and a typical plant and animal cells.

Structures	Cell X	Plant cell	Animal cell
Cell wall	Present	Cellulose cell wall	No cell wall
Flagellum	Present	Absent	Absent
Slime capsule	Present	Absent	Absent
Slime capsule	DNA thread	Distinct membrane bound nuleus	Distinct membrane bound nuleus
Granule	Contains glycogen	Contains starch	Only numerous fluid filled vacuoles present

(b) It was noticed that cell X had much more mitochondria than plant cells. Suggest a reason for this.

Cell X has a flagellum, most likely used for transportation/ movement. Hence it needs more mitochondria to enable more oxidation of food to produce energy for this movement.

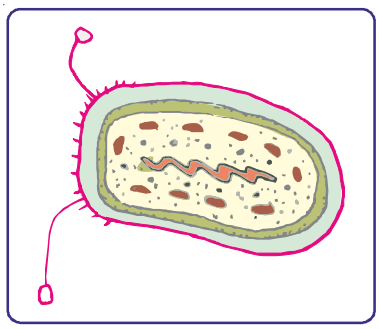
(c) State two ways in which cell X is similar to the three cells shown in the diagrams below.



All of the cells contain cytoplasm.

All of the cells have a cell membrane.

05 **(a)** **The phrase 'division of labour' is used to describe the organisation in multicellular organisms.**



(i) **Explain the meaning of this phrase in your own words.**

(ii) **What is the significance of this division of labour ?**

(b) **Scientists found this cell on a remote planet. Using your knowledge of cells, state whether it is of plant or animal origin, giving reasons for your answer.**

(a)

(i) Division of labor refers to the allocation of specific functions of the different parts of an organism among cells.

(ii) Since cells are specially designed to carry out particular functions, division of labor allows the organism to carry out its various functions simultaneously and efficiently. It would take a much longer time to carry out all the various processes in an organism. The organism is incapacitated and unable to multitask whenever its cells are occupied carrying out a particular function.

(b) It has both plant and animal origins.

The presence of a flagellum, cilia, feelers and numerous, small vacuoles give hint that it might be an animal cell.

However, it has a cell wall and chloroplasts that point toward it being a plant cell as only plants can photosynthesise.

Its cell membrane, cytoplasm and mitochondria are synonymous to booth plant and animal cell. It is a primitive cell as its DNA is not distinctly membrane bound in the form of a nucleus.