Unit 2 · Life and Life Process

WORKSHEET

Full marks 41

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 41

1 Key words [4]

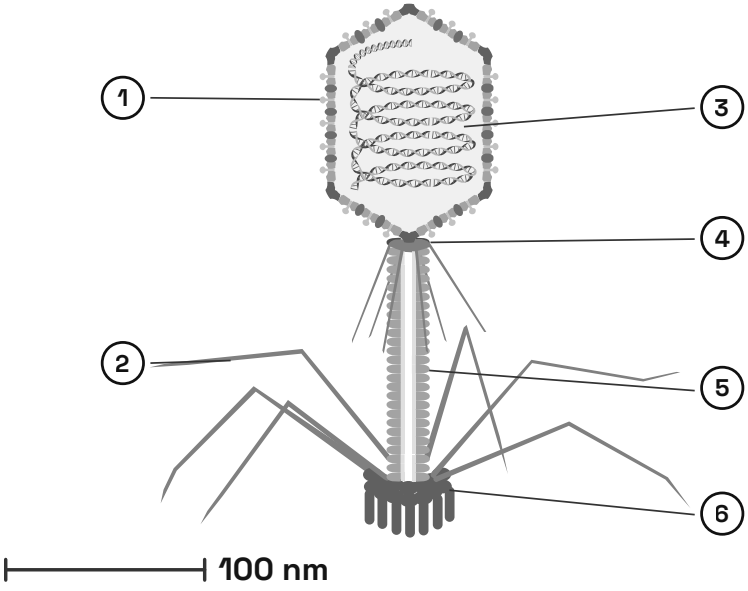
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

bacteriophage	**coenocytic**	**columella**	**mycology**	**phycology**	**pseudomycelium**
rhizoids	**septum**	**suspensor**	**zygospore**		

The study of fungi is called _____. A virus that infects bacteria is a _____. The new wall that grows across the middle of *E. coli* as it divides is the _____. A chain of yeast cells that haven't separated is a _____. *Mucor*'s hyphae have no cross walls, so its body is called _____. Its spores form round a dome-shaped, sterile _____. In sexual reproduction, a cross wall cuts a progametangium into a gametangium and a _____. The only diploid stage in *Mucor*'s life is the _____.

2 Label the diagram [3]

The diagram shows bacteriophage T4, cut open. Name the parts numbered 1 to 6. Each carries 0.5 mark.



1. _____ **2.** _____

3. _____ **4.** _____

5. _____ **6.** _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. The correct order of the steps of the lytic cycle is: [1]

a. penetration, attachment, maturation, biosynthesis, release
b. attachment, penetration, biosynthesis, maturation, release
c. attachment, biosynthesis, penetration, release, maturation
d. biosynthesis, attachment, penetration, maturation, release

ii. In binary fission of *E. coli*, the wall that grows across the middle of the cell is called the: [1]

a. columella **b.** septum
c. capsid **d.** bud scar

iii. The hyphae of *Mucor* are: [1]

a. septate and uninucleate **b.** septate and diploid
c. aseptate and multinucleate **d.** aseptate and uninucleate

iv. A zygospore of *Mucor* is formed by the fusion of: [1]

a. two sporangiospores **b.** two hyphae of the same strain
c. two gametangia of + and − strains **d.** a sporangium and a columella

v. One bacterium divides every 20 minutes. How many bacteria are there after 1 hour? [1]

a. 3 **b.** 6
c. 8 **d.** 20

4 True or false [3]

Write True or False after each sentence. If it is false, write it correctly. Each carries 0.5 mark.

i. The whole phage enters the bacterium during penetration. ☐

ii. A bud is smaller than the mother yeast cell when it starts. ☐

iii. A yeast cell is a prokaryote. ☐

iv. A zygospore's nuclei divide by meiosis when it germinates. ☐

v. *Mucor* has root-like rhizoids. ☐

vi. The + and − strains of *Mucor* are male and female. ☐

5 Very short answers [3]

Write very short answers to the following questions.

a. Write the formula for the number of bacteria after n generations. [1]

b. Name the bacteria in the root nodules of legumes that fix nitrogen. [1]

c. Why is phage T4 unable to infect the bacteria in curd? **[1]**

6 Short answers **[8]**

Write short answers to the following questions.

a. Give a reason: a virus is called an obligate parasite. **[2]**

b. Give a reason: the zygospore of *Mucor* helps it survive bad conditions. **[2]**

c. Write any two differences between binary fission and budding. **[2]**

d. Priya's cut loaf grows mold in two or three days in the monsoon but stays fresh for days in winter. It also keeps better in a fridge. Explain both. **[2]**

7 Long answer [4]

Write a long answer to the following question.

Describe the sexual reproduction of *Mucor mucedo*, from the meeting of two strains to the germination of the zygospore.

8 Numerical problems [8]

Solve the following problems. Show your working.

a. A sample of milk has 500 bacteria in it. They divide every 30 minutes. How many bacteria will it have after 3 hours? [2]

Answer:

b. A culture of bacteria grew from 1,000 cells to 64,000 cells in 2 hours. Find its generation time. [3]

Answer:

c. A phage infects a bacterium, and after 30 minutes the cell bursts, releasing 150 phages. If each of these infects a new bacterium and each of those cells releases 150 phages, how many phages are there after 1 hour, and how many bacteria have been killed? [3]

Answer:

9 Think [3]

A student says, “A virus is the smallest living thing, so it must reproduce by binary fission, like bacteria.” What is wrong with this?

10 Activity: Mold in a closed box (not marked)

Dampen a piece of bread or roti that has been left in the air for an hour, close it in a clear box, and keep it in a warm, dark place. Look through the closed lid each day and fill in the table. Never open the box near your face. Afterwards seal it in a plastic bag, throw it away and wash your hands.

Day	What I see (color, threads, dots)	How much is covered?
1		
2		
3		
4		
5		

Why do the pinheads turn black?