Unit 29 · Applications of Microbiology

WORKSHEET

Full marks 31

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 31

1 Key words [4]

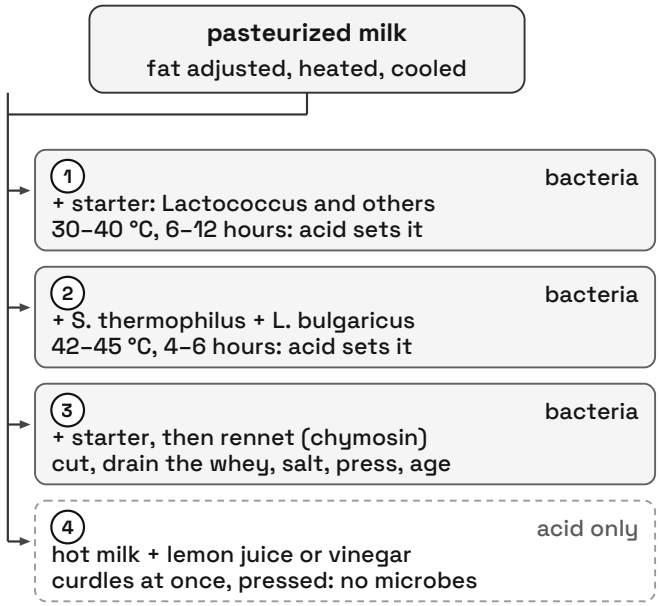
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

casein	**chymosin**	**cider**	**diacetyl**	**heterocysts**	**hops**	**koji**	**lactose**	**whey**	**wort**

Lactic acid bacteria turn the milk's sugar, _____, into lactic acid, and the acid makes the milk protein, _____, clump into a gel. In cheese making, rennet's enzyme, _____, clots the milk into a firm curd, and the liquid drained from the curd is the _____. In brewing, the sweet liquid separated from the spent grain in lautering is the _____. An alcoholic drink made from fermented apple juice, as in Marpha, is _____. In making soy sauce, the steamed soybeans and roasted wheat on which the mold grows are the _____. Cyanobacteria such as *Anabaena* fix nitrogen in thick-walled cells called _____.

2 Label the diagram [2]

The chart shows four dairy products made from the same pasteurized milk. From what is added and what happens, name the products 1 to 4. Each carries 0.5 mark.



1. _____ **2.** _____

3. _____ **4.** _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which drink is made by distilling wine? [1]

a. beer
b. rum
c. brandy
d. cider

ii. Why must barley be malted before brewing? [1]

a. to kill the bacteria on it
b. germination makes amylase, which turns the grain's starch into sugar the yeast can ferment
c. to make it bitter
d. to give it alcohol

iii. Why is drinking water tested for *E. coli* rather than for every pathogen? [1]

a. *E. coli* is the most dangerous water-borne pathogen
b. *E. coli* lives in the gut in huge numbers, so finding it shows the water has fecal contamination, and pathogens may be there too
c. other pathogens can't live in water
d. *E. coli* makes water cloudy

iv. A farmer pins Trichogramma cards in his tomato field. What kind of biocontrol agent is he using? [1]

a. a predator
b. a parasitoid
c. a pathogen
d. a biofertilizer

v. Why do mycorrhizae help a pine seedling grow in poor soil? [1]

a. the fungus fixes nitrogen from the air
b. the fungus kills the seedling's pests
c. the fungus's threads reach far into the soil and bring the roots phosphorus and water
d. the fungus makes the seedling photosynthesize

4 Short answers [9]

Write short answers to the following questions.

a. What is a biofertilizer? Name two biofertilizers that fix nitrogen. [2]

b. Curd and paneer are both made from milk. Why is curd a product of microbes but paneer is not? [2]

c. A bottle of wine is left open to the air for some weeks and turns sour. Explain, with an equation, what made it sour. **[2]**

d. Write three differences between ectomycorrhiza and endomycorrhiza. **[3]**

5 Long answers **[8]**

Write long answers to the following questions.

a. What is drinking water? Describe the steps of drinking water treatment. **[4]**

b. What is sewage? Describe briefly the steps of sewage treatment. **[4]**

6 Think [3]

In making yogurt, the milk is cooled to about 42–45 °C before the starter bacteria are added, and the yogurt is cooled again once it has set. Explain both steps, and say what would happen if the starter were stirred into boiling milk.

7 Activity: What water do families drink? (not marked)

Ask five families you know what water they drink and how they treat it. Also list the water-borne diseases common in your area.

Family	Where the water comes from	How it is made safe
1		
2		
3		
4		
5		

Water-borne diseases in your area: