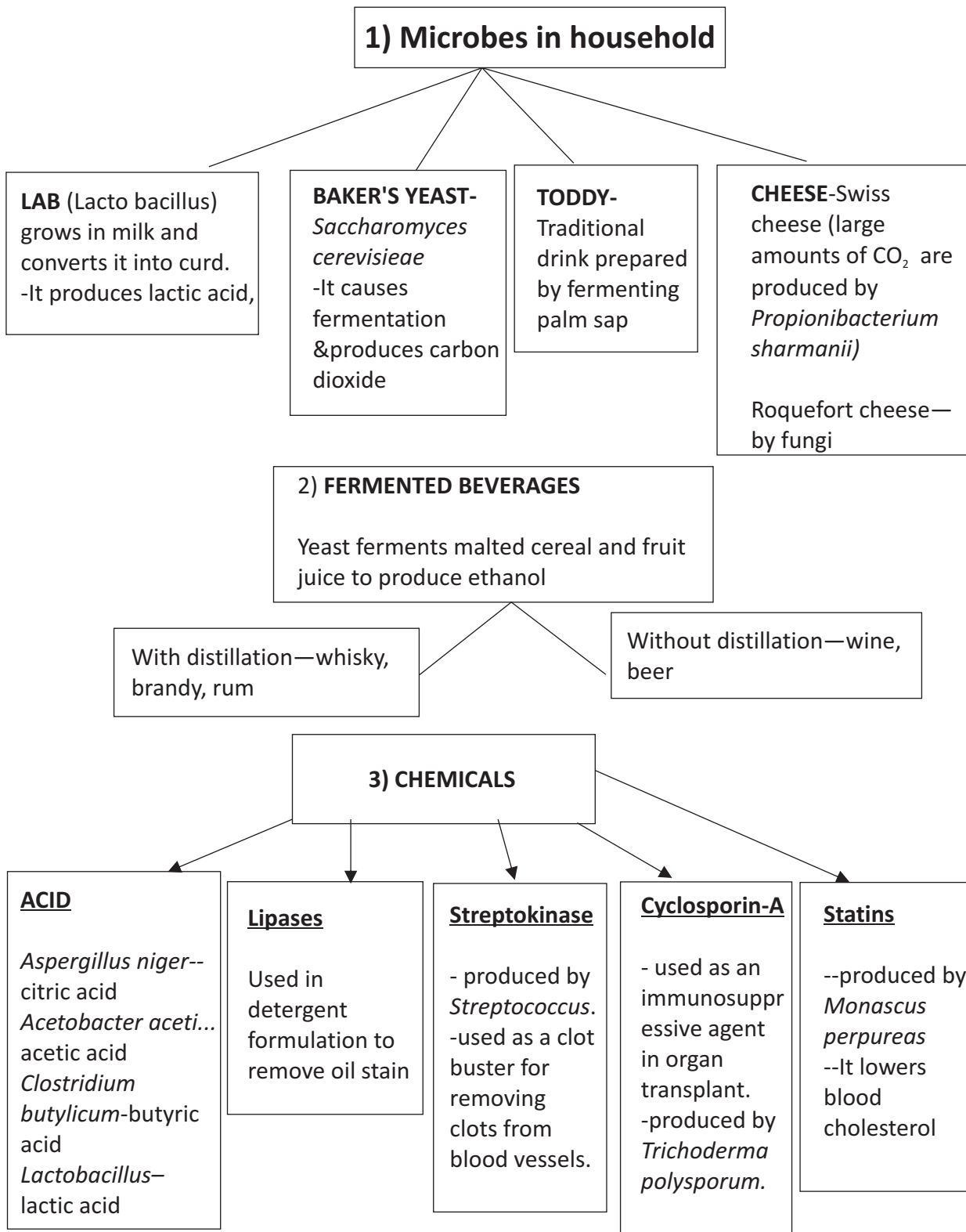


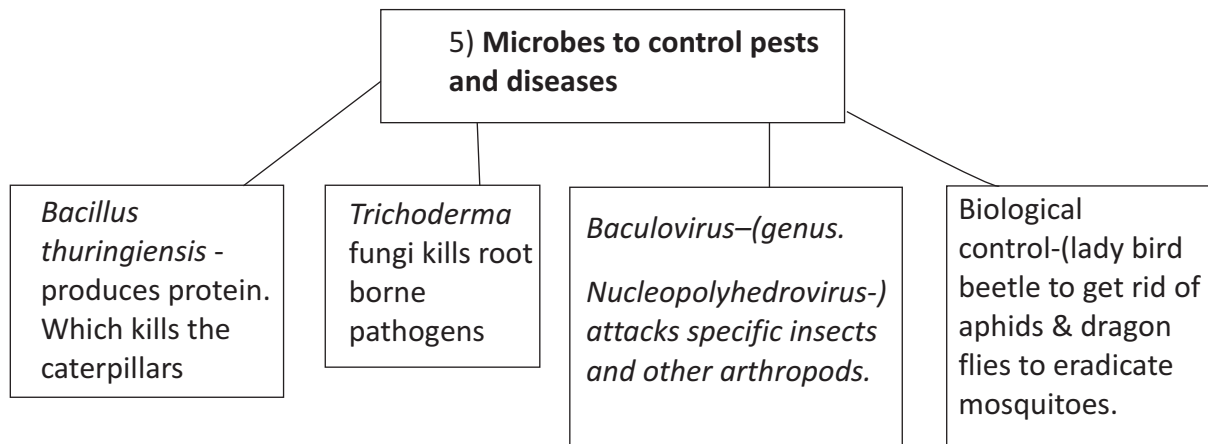
**CHAPTER: 10 MICROBES IN HUMAN WELFARE**  
**(KEY POINTS)**

S.No.		TermExplanation
1	BOD	Biochemical Oxygen Demand
2	GAP	Ganga Action Plan
3	YAP	Yamuna Action Plan
4	KVIC	Khadi and Village Industries Commission
5	LAB	Lactic Acid Bacteria
6	Baculovirus	Pathogens that attack insects and other arthropods
7	Effluent	The product of primary treatment of sewage
8	Fermentors	A very large vessel where microbes are grown on an industrial scale.
9	Flocs	mass of mesh like structure formed by Bacteria and fungi
10	Prions.	The proteinaceous infectious agent
11	Methanogens -	Bacteria producing methane
12	STPs	Sewage Treatment Plants
13	IARI	Indian Agricultural Research Institute
14	IPM	Integrated Pest Management

**CHAPTER: 10 MICROBES IN HUMAN WELFARE**  
(FLOW CHART)



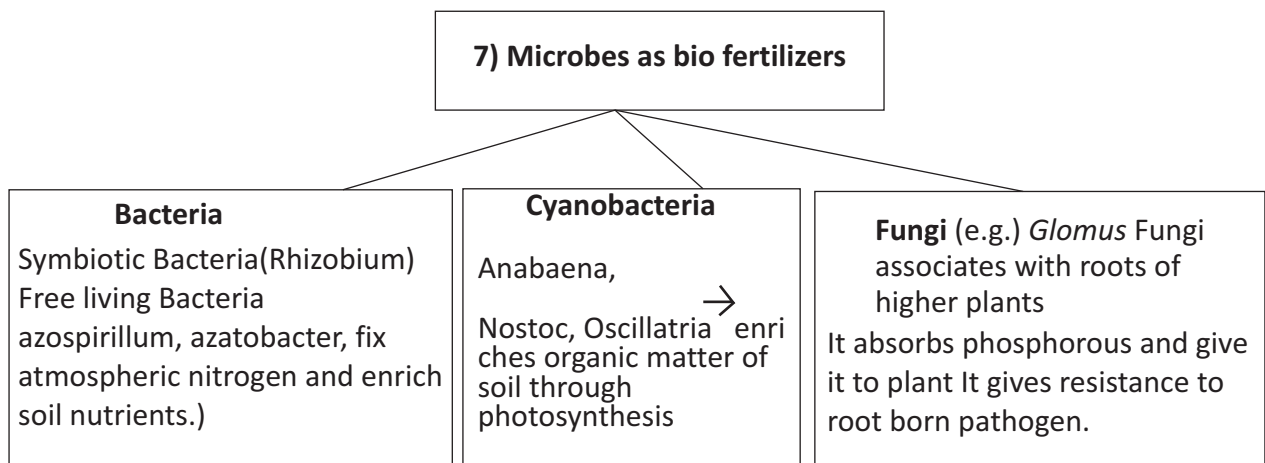
4) **ANTIBIOTICS** (Penicillin -It is produced by *Penicillium notatum*)



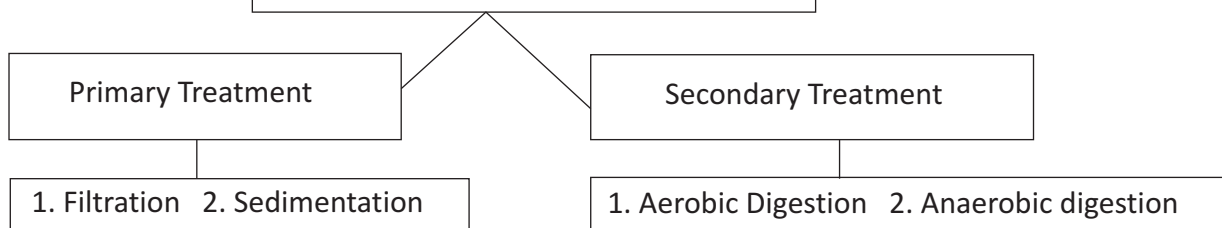
**6) Microbes -- production of Bio-Gas**

methanogens (e.g.) Methanobacterium.  
Act on cellular material to produce methane, seen in anaerobic sludge digesters, rumen of cattle, flooded rice field & in cattle dung.

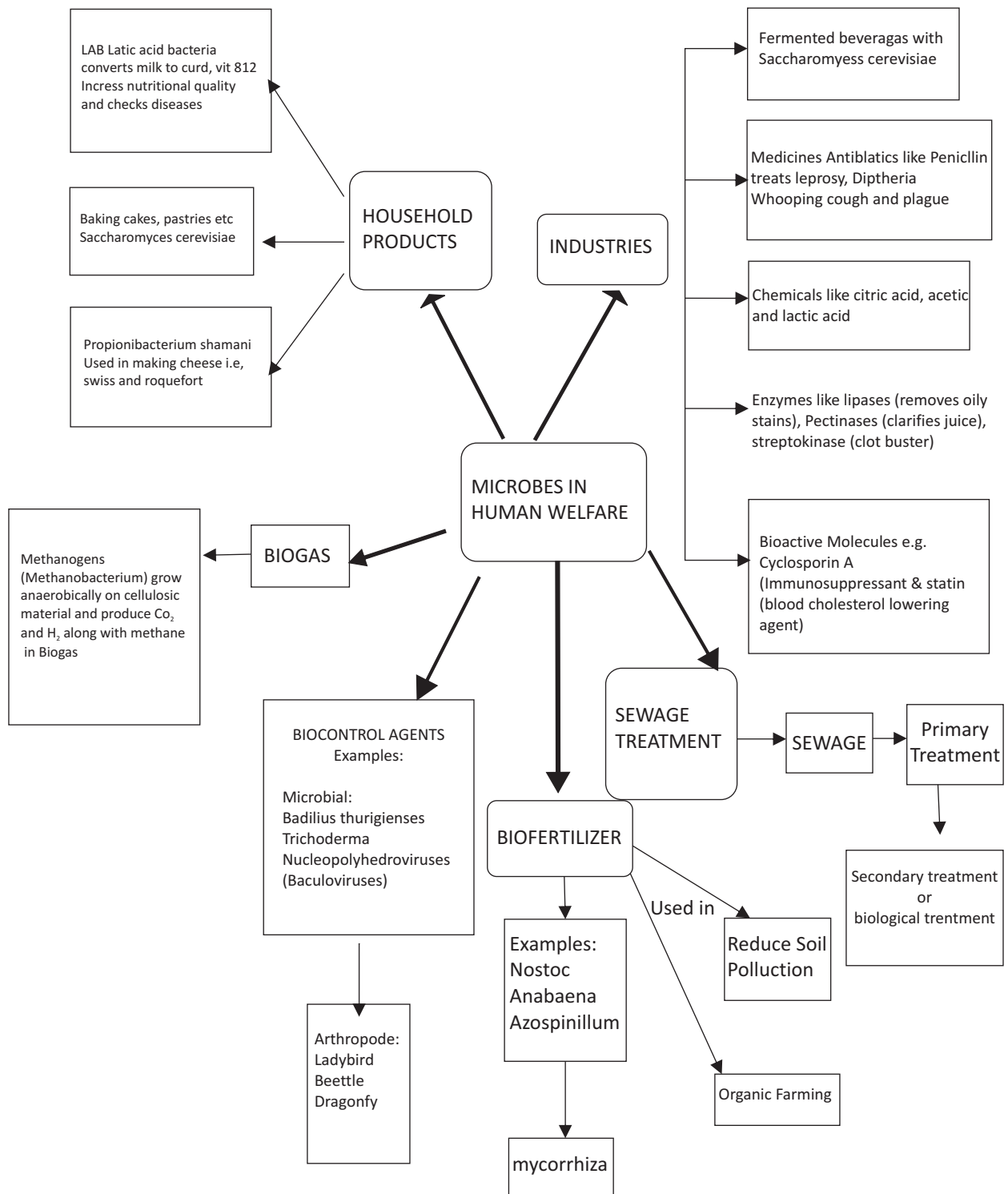
**7) Microbes as bio fertilizers**



**8) Microbes used in sewage treatment**



## CHAPTER: 10 MICROBES IN HUMAN WELFARE (CONCEPT MAP)



## CHAPTER: 10 MICROBES IN HUMAN WELFARE

### (QUESTION BANK)

1. How does a small amount of curd added to fresh milk convert it into curd? Mention a nutritional quality that gets added to the curd.
2. Why is secondary treatment of water in sewage treatment plant called biological treatment?
3. An antibiotic called .Wonder Drug. was used to treat the wounded soldiers of America during World War-II. Name the drug and the scientist who discovered it.
4. You have observed that fruit juice in bottles bought from the market is clearer as compared to those made at home. Give reason.
5. Alexander Fleming discovered .Penicillin, but its full potential as an effective antibiotic was established by other scientists. Name the two scientists.
6. Name the plant whose sap is used in making .Toddy.. Mention the process involved in it.
7. Name two alcoholic drinks produced in each of the following ways. (i) by distillation and (ii) without distillation.
8. Lactic Acid Bacteria (LAB) is commonly used in the conversion of milk into curd. Mention any two other functions of LAB that are useful to humans.
9. How do mycorrhizae function as biofertilisers? Explain with example.
10. Cyanobacteria (Nostoc, Anabaena) are used as bio fertilisers in certain crop fields. Name such one crop. Also, mention the names of two other microorganisms which perform the same function.
11. Which Ministry of Govt. of India had initiated Ganga Action Plan and Yamuna Action Plan? What are the objectives of these plans?
12. Fill in the blanks spaces a, b, c, d, e, and f, given in the following table

S. No.	Name of Organism	Commercial Product	Application
1	<i>Penicillium notatum</i>	Penicillium	(a)
2	(b)	Lactic acid	Making Curd
3	<i>Streptococcus</i>	Clot buster enzyme	(c)
4	<i>Trichoderma polysporum</i>	(d)	Immuno suppressive agent
5	<i>Saccharomyces cerevisiae</i>	Ethanol	(e)
6	(f)	Swiss cheese	Food Product

13. What is biochemical oxygen demand (BOD) test? At what stage of Sewage treatment this test is performed? BOD level of three samples of water labelled as A, B and C are 30 mg/ L, 10mg/L and 500 mg/L respectively. Which sample of water is most polluted?

14. Given below is the Flow chart of Sewage treatment. Fill in the blank spaces marked .a. to .f..
15. What are biofertilisers? A farmer is advised to add a culture of bacterium in the soil before sowing the crop. Name the bacterium in the culture. How is this bacterium useful to the crop?
16. What are statins? Name the microorganism that produces this substance. How is it medically important?
17. How does primary sludge differ from activated sludge? What type of changes in the sludge is carried out in anaerobic sludge digester? Give the composition of biogas produced in the sewage treatment plant.
18. Tina went to a supermarket with her mother to buy rice. They saw that two types of products are available. one is organically grown & second is conventionally grown. The organically grown crops are costlier so Tina's mother does not want to purchase it.
- (I ) Which rice should be purchased? Why/
- (ii) What values are exhibited by Tina?
19. After a rainy day Shruti found many dragonflies flying over stagnant water. She thinks these flies come to drink water.
- i) Is Shruti's explanation correct? Give your views.
- ii) What values are shown by Shruti?
20. Manoj was going home from school. On his way he saw a 'panipuri' vendor cleaning the dishes with bare hands & then serving the customers with the same hands without washing hands with a soap or wearing plastic gloves. Manoj went to the vendor & told him the need for washing hands before touching any eatables. The vendor hushes him away & tells him there is no harm as he has rinsed his hands with water
- (a) In the given situation, whom do you think has the correct perspective? Justify your answer by giving reasons
- Suggest few ways by which cleanliness can be promoted.

**CHAPTER: 10 MICROBES IN HUMAN WELFARE**  
**(ANSWER KEY)**

Q.No	Value points	Marks
1	A large number of lactic acid bacteria are found in small amount of curd which multiply and convert the milk into curd by producing the lactic acid, The nutritional quality improves by increasing Vitamin B12	1
2	In this treatment Organic wastes of sewage water are decomposed by certain microorganisms in presence of water	1
3	Penicillin, Alexander Fleming	1
4	Bottle juices are clarified by the use of pectinase and proteases	1
5	Ernest chain and Howard Florey	1
6	Palm tree, by fermentation	1
7	(i) Whisky, brandy, rum . by distillation (ii) Wine, beer . without distillation	1+1=2
8	(i) LAB in human intestine synthesizes Vitamin B12. (ii) LAB in human stomach checks the growth of harmful microbes	1+1=2
9	Mycorrhiza are fungi associated with the roots of plants. Many members of genus Glomus form mycorrhiza. These fungal symbiont absorbs water and minerals like phosphorus from the soil and provide them to the plant	4x1/2=4
10	Paddy (Rice Crop), Rhizobium and Azotobacter	1+1=2
11	The Ministry of Environment and Forests. The objective of Ganga Action Plan and Yamuna Action Plan is to save these rivers from pollution. It was proposed to build a large number of sewage treatment plants. So that only treated sewage may be discharged into these rivers	1+1+1=3
12	a) to kill disease causing bacteria (b) Lactobacillus (c) remove clots from blood vessels (d) Cyclosporin A (e) Beverage/medicines (f) Propionibacterium sharmanii	6x1/2=3
13	The BOD test measures the rate of uptake of oxygen by microorganisms in a sample of water. Biological treatment or Secondary treatment Sample . C. is most polluted because it has highest BOD level among the three samples of water.	1+1+1=3
14	a) Primary treatment (b) Aeration (c) Floccs (d) Biochemical Oxygen Demand (BOD) (e) Activated sludge (f) Water bodies like river stream.	6x1/2=3

15	Biofertilisers are organisms that enrich the nutrient quality of the soil. Azotobacter/Azospirillum (free living) This bacterium fixes atmospheric nitrogen into organic forms, which is used by the plants as nutrient.	1+1+1=3
16	Statins are cholesterol reducing agents. They are produced by Monascus purpureus (Yeast) They act by Competitively inhibiting the enzymes responsible for synthesis of cholesterol and are used as blood cholesterol lowering agents.	1/2+1/2+1+1+=3
17	Primary sludge is all solids like soil, small pebbles that settle down in settling tank during primary treatment of sewage. Activated sludge is the sediment of bacterial flocs. in settling tank during biological treatment. Flocs are masses of bacteria held together by slime and fungal filaments. A part of activated sludge is used as inoculum in aeration tank and remaining is passed into a large tank called anaerobic sludge digester. In this tank, other kind of bacteria which grow anaerobically, digest the bacteria, fungi and biomass in the sludge. Biogas that produced in Sewage treatment plant is a mixture of methane, hydrogen and Carbon dioxide	2+1+2=5
18	Organically grown rice, since bio fertilisers & bio pesticide are used, which are not harmful to health. sensitivity & awareness about use of harmful chemicals, Decision making, c) critical thinking	1+1+2=4
19	No, dragonflies come to eat mosquito larvae & act as bio control agents Awareness about environment, critical thinking	1+1+2=4
20	(a) Concern for everyone's health is correct. Tiny microbes do not get cleaned up by just water & most of the microbes are disease causing.  (b) By pasting posters in public places regarding importance of cleanliness. Educating people about the harms of uncleanness, With advertisements in media like television, newspapers etc.	1=1=2