

Standard Grade Biology

Biotechnology

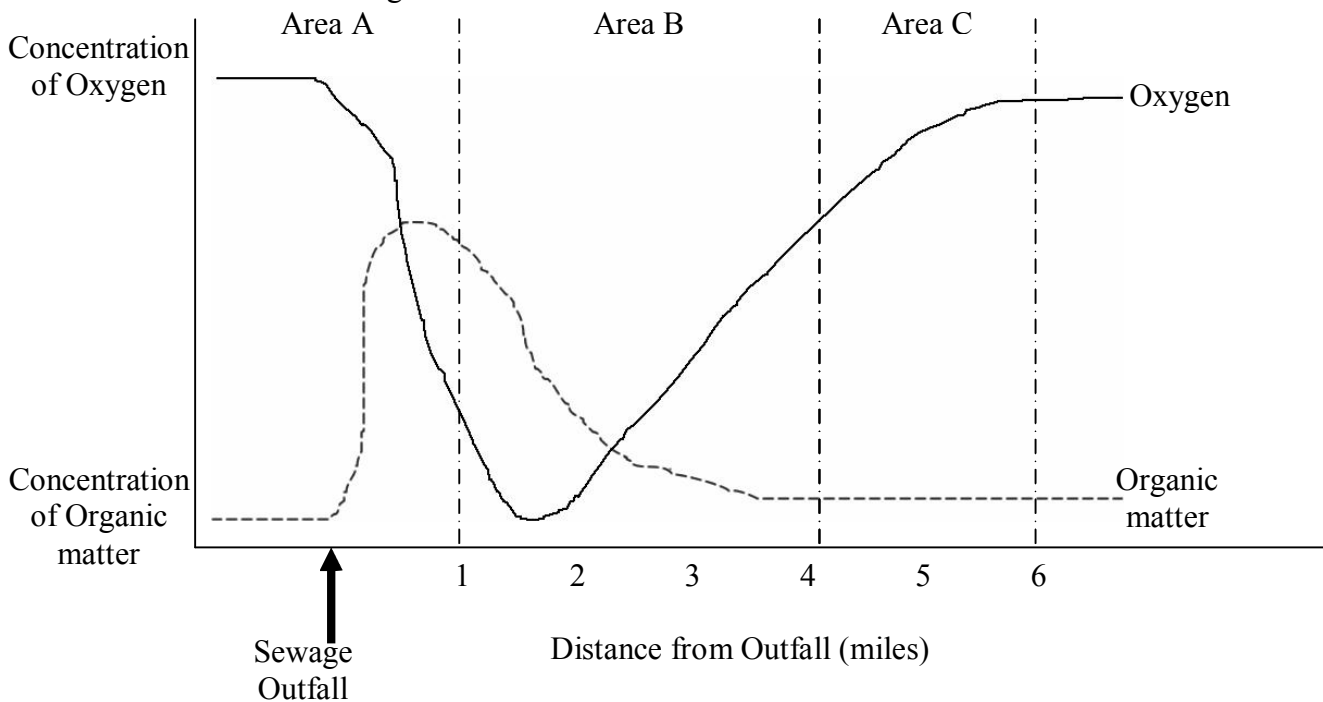
Problems and Profit with Waste

1. The disposal of untreated sewage causes damage to the environment. Give two such examples. (2)
2. Give two examples of diseases spread by untreated sewage. (2)
3. Name two products of fermentation. (2)
4. Describe the principal precautions to be taken during laboratory work with micro-organisms. (3)
5. Copy and complete the following sentences using the words in the word bank.

oxygen	harmless	sewage	bacteria	air
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In the activated sludge method of sewage treatment, the _____ is mixed with a thick “broth” of _____ and protozoa which feed on the organic material. _____ is bubbled through the mixture to provide an ample supply of _____ and the micro-organisms decay the material into products which are _____ to the environment.

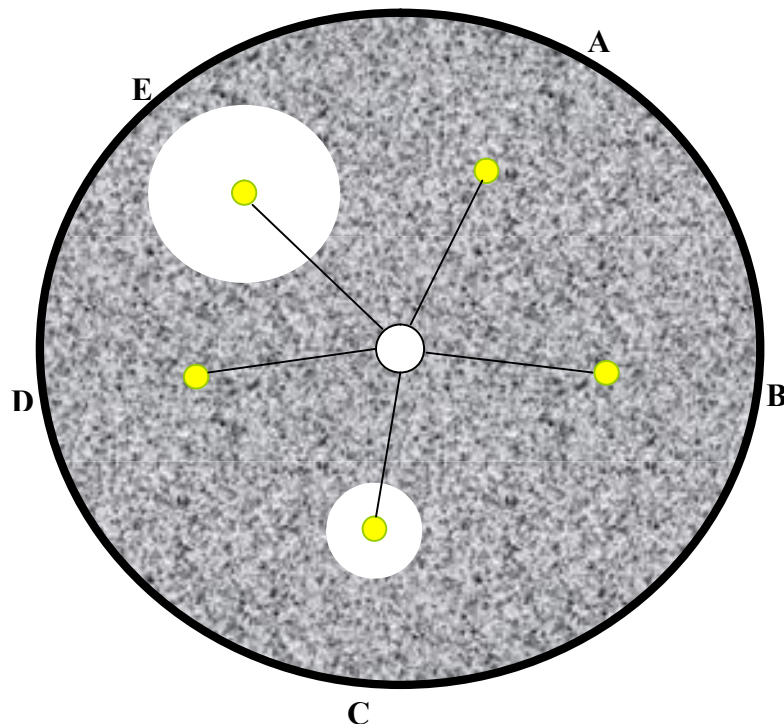
6. The following graph shows the oxygen and organic matter concentrations in a stretch of river below a sewage outfall. (3)



- (a) In which area is the oxygen concentration the lowest?
- (b) In which area is the breakdown of organic matter lowest?

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- (c) Give a reason why you think it is lowest in this region. (1)
- (d) How far is it downstream before the river recovers? (1)
- (e) The river runs quickly over stones in area B. How might this help to clean the river? (1)
7. A hospital laboratory technician isolated a culture of bacteria from a patient who was suffering from food poisoning. The bacteria were tested with several antibiotics using a multodisc. The results are shown below.



- (a) Which antibiotics would be least successful? (1)
- (b) Which antibiotic might be the most successful in treating this disease? (1)
- (c) Give a reason for your answer to (b). (1)

Total = 20