Microbiology and Biotechnology

Mandatory experiment 19.1

To investigate the presence of micro-organisms in air and soil

- *Apparatus required:* 3 sterile Petri-dishes, each containing sterile nutrient agar; innoculating loop; Bunsen burner; incubator
- *Also required:* sample of soil; marker pen

Method

1. You are provided with three Petri-dishes containing sterile nutrient agar. Label the dishes *A*, *B* and *C*. (The dishes and agar are sterile which means there are no organisms of any kind present.)
2. Lift the lid off dish *A* and leave it in the laboratory for ten minutes. This exposes the agar to the air. Then put the lid back on.
3. Heat the inoculating loop in the Bunsen flame to sterilise it. Allow to cool. Open the lid of dish *B* just wide enough to sprinkle a sample of soil across the surface of the agar, *Fig. 19.3*. Replace the lid.
4. Leave dish *C* unopened. This dish acts as a control.
5. Place the dishes, upside down, in an incubator at 25°C for 48 hours. The dishes are placed upside down to prevent condensation from blocking our view of the micro-organisms that grow.

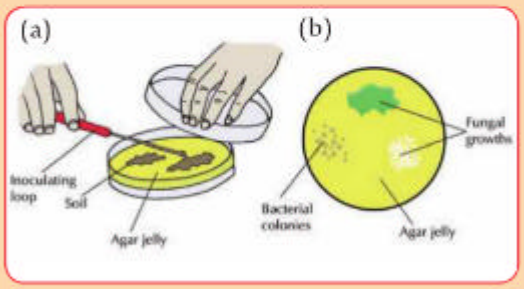

Fig. 19.3(a) Scattering soil on an agar dish. (b) Colonies of bacteria and fungi on agar.

Results

Bacteria grow in groups or **colonies** of many thousands of cells. These can be seen as shiny, circular blobs on the surface of the agar. Fungi tend to appear as fluffy, hairy or mouldy growths.

Dish *A*: bacterial and fungal colonies will be visible.

Dish *B*: bacterial and fungal colonies will be visible around the clumps of soil.

Dish *C*: the dish will have no growths present.

Conclusion

There are micro-organisms present in air and soil.