

## **RAFFLES MUSEUM WORKSHOP** **SEMAKAU SHORE ECOLOGY WORKSHEET**

### **A. TIDES AND SHORE LIFE**

1. Tides are cyclical rise and fall of the sea level throughout the day. They are caused by a combination of the gravity of the \_\_\_\_\_ and \_\_\_\_\_ acting on the ocean.
  
2. The seashore environment is a challenging one. Organisms living in this habitat must be able to tolerate the extremes in environmental conditions caused by the tidal cycles.
  - a. Can you list two challenges faced by organisms during high tide?
    - i. \_\_\_\_\_
    - ii. \_\_\_\_\_
  
  - b. Can you list two challenges faced by organisms during low tide?
    - iii. \_\_\_\_\_
    - iv. \_\_\_\_\_

### **B. ZONES OF THE SEASHORE**

Three main zones may be distinguished on the seashore:

- i. Supralittoral zone
  - ii. Littoral or intertidal zone
  - iii. Sublittoral zone
- 
3. The supralittoral zone is that part of the shore just higher than the level of the highest tide. It regularly receives splashes of sea water, but is only submerged during stormy weathers and floods. Various challenges faced the organisms living here, including dryness, heat from the sun, salt sprays, exposure to air, and predation by birds and terrestrial animals.
    - a. Identify a plant that you can find in the supralittoral zone.  
\_\_\_\_\_
  
    - b. List two adaptations of this plant that allow it to survive well here.
      - i. \_\_\_\_\_
      - ii. \_\_\_\_\_

c. Identify an animal that you can find in the supralittoral zone.

\_\_\_\_\_

d. List two adaptations of this animals that that allow it to survive well here.

i. \_\_\_\_\_

ii. \_\_\_\_\_

4. The intertidal (or littoral) zone is the area that is exposed to the air at low tide and submerged in sea water at high tide. Various challenges faced the organisms living here, including waves, predation by birds and terrestrial animals, and high fluctuations in water levels, salinity and temperature.

a. The shallow water of the littoral zone supports considerable plant life. Primary productivity is relatively high. Two main groups of producers are the seaweeds and seagrasses. State two differences between seaweeds and seagrasses.

i. \_\_\_\_\_

ii. \_\_\_\_\_

b. List two reasons why seagrasses and seaweeds are important in the ecosystem.

i. \_\_\_\_\_

iii. \_\_\_\_\_

c. Sponges are plants, animals or non-living things? Why?

\_\_\_\_\_

\_\_\_\_\_

e. Identify three animals in the littoral zone and explain how each of them avoids being eaten by their predators.

i. \_\_\_\_\_

\_\_\_\_\_

ii. \_\_\_\_\_

\_\_\_\_\_

iii. \_\_\_\_\_

\_\_\_\_\_

- d. Name one scavenger that you can find in the littoral zone, and explain the role scavengers play in the ecosystem.

---

---

5. The sublittoral zone is the area just below the level of the lowest tide. The environment in the sublittoral zone is uniform in salinity, submergence, temperature, inundation and desiccation. As such, it is a safer environment compared to the supralittoral and littoral zones. Predation pressures by terrestrial and most airborne predators are also relatively lower. Thus, the sublittoral zone also supports the highest diversity of marine life.

- a. Most hard corals are colonies of tiny animals known as polyps. Each polyp produces around itself a hard skeleton made of calcium carbonate. The corals harbour symbiotic algae in their polyp known as zooxanthellae. Explain the relationship between the coral and algae, and it benefits them.

---

---

---

- b. Explain what is coral bleaching, and how will it affect the coral.

---

---

---

- c. List two animals in the sublittoral zone, and describe their feeding mechanism.

i. \_\_\_\_\_  
\_\_\_\_\_

ii. \_\_\_\_\_  
\_\_\_\_\_

- d. Identify an animal that is dully coloured, and another that is brightly coloured. How do their colours help them to survive well in their habitat?

i. A dull-coloured animal is the \_\_\_\_\_.  
The dull colour helps \_\_\_\_\_.

ii. A brightly-coloured animal is the \_\_\_\_\_.  
The bright colour helps \_\_\_\_\_.

### C. CONSERVING THE SEASHORE

6. Why are seashores important to us? Think of three reasons.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

7. List three human actions/activities that can bring harm to seashore organisms.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

8. What can you do to protect our seashores?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_