ANSWER ANSWER ANSWER ANSWER

Round: 4B

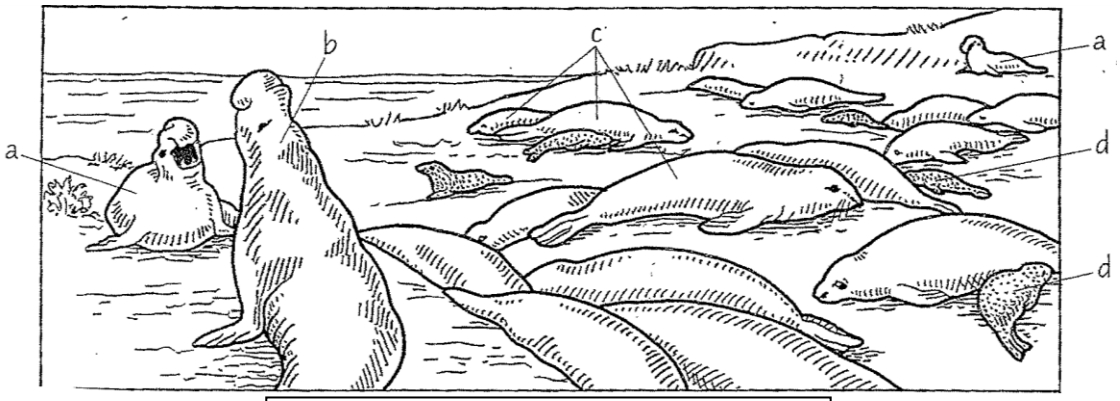

Figure 1: Rookery (from Niesen, 2000)

1. The animals shown in Figure 1 could be from what two (2) species? Common names are acceptable.
   Northern elephant seal OR Mirounga angustirostris (1 pt)
   Southern elephant seal OR Mirounga leonina (1 pt)

2. What is the geographic range of the smaller of the two species?
   Pacific coast of North America (Canada, USA, Mexico)

3. Identify the social roles of the animals labeled in Figure 1.
   a. *bull (1 pt)*
   b. *beachmaster (1 pt)*
   c. *cows (1 pt)*
   d. *pup (1 pt)*

4. When these animals molt, they rest on land. What is this process of resting on land called, and what function does it serve?
   A "haul-out" (1 pt) refers to the period of molting where seals rest on safe places on land. During the molt, seals are susceptible to the cold, so they must rest on land to stay warm (1 pt) until the outer layers of skin regrow and blood supply to the skin is again minimized.

5. What are two (2) purposes for the animal's large proboscis?
   The bull's proboscis is used for producing loud sounds, particularly during mating season (2 pts). The proboscis also serves to reabsorb moisture otherwise lost in exhalation (2 pts). This is important during mating season when bulls rarely leave the beach and must conserve body moisture.

ANSWER ANSWER ANSWER ANSWER

6. Explain two (2) adaptations that enable these animals to dive for up to two hours.

Accept any two (2) of the following (3 pts each; 6 pts total):

- *Elephant seals have a very large volume of blood compared to land mammals of the same size, which allows them to hold a large amount of oxygen*
- *They also have large sinuses in their abdomens to hold and store blood, increasing the available oxygen.*
- *They can store oxygenated blood in their muscles in the form of elevated myoglobin levels.*
- *Elephant seals have a higher proportion of red blood cells and hemoglobin than similar-sized land mammals, allowing them to store more oxygen.*