Questions 21–30

Different fish species swim in different ways. Beginning in the 1920s, careful efforts have been made to classify and measure these various means of locomotion. Although the nomenclature and mathematics used to describe fish locomotion have become quite complex, the basic classification system is still largely the same as it was first outlined.

The simplest type of swim is "eel-form" (technically, "anguilliform," after the common eel *Anguilla*). As the name suggests, this swimming motion involves undulations, or wavelike motions, of the whole length of the fish's body, the amplitude of the undulation increasing toward the tail. These undulating motions generate a backward thrust of the body against the water, thereby driving it forward. Eel-form swimming is effective but not particularly efficient because the undulations increase the drag, or resistance in the water. It is employed, therefore, mostly by bottom dwellers that do not move quickly or efficiently. Not only eels but also blennies swim this way, as do flounders, which undulate vertically, top to bottom, rather than horizontally, and certain slow-moving sharks, such as the nurse and wobbegong shark.

Most roaming predators display "jack-form" swimming (technically, "carangiform," after the Carangidae family, which includes jacks, scads, and pompanos). Although there is some variation, in general they have certain features in common: a head like the nose of an aircraft, often sloping down on the top, and a tapered posterior that ends in a forked tail. That portion of the body that connects with the forked tail is narrowed. A jack, like other carangiform swimmers, is adapted for acceleration. It thrusts its rather stiff body from side to side, creating propulsion without much waving of the body, encountering less resistance than eel-form undulations produce. The forked pattern of the tail reduces drag; the narrowed portion of the body connected to the tail minimizes recoil, and thus helps keep the body still. Jack-form fish are efficient swimmers, as they must be to catch their prey.

The least efficient swimmers are those that move trunkfish style (technically, "ostraciform," after the family Ostraciidae, which includes trunkfishes and cowfishes). Like the jacks, they use their tails for propulsion, but in so inept and clumsy a manner as to make it clear that speed is not their objective. Puffer fish and porcupine fish swim in trunkfish style. Lacking speed, they must depend on body armor or the secretion of toxic substances for protection.

21. The word "suggests" in line 7 is closest in meaning to

    (A) implies
    (B) demands
    (C) describes
    (D) compares

22. The word "it" in line 10 refers to

    (A) tail
    (B) thrust
    (C) body
    (D) water

23. Which of the following does the author mention as the cause of the eel's inefficient swimming style?

    (A) The increased drag produced by the movement of the body
    (B) The eel's habit of usually swimming near the bottom of the water
    (C) The simple structure of the eel's body
    (D) The weakness of the backward thrust of the eel's tail

24. The word "employed" in line 12 is closest in meaning to

    (A) used
    (B) occupied
    (C) developed
    (D) provided

25. It can be inferred from the passage that blennies (line 13) are

    (A) bottom dwellers
    (B) sharks
    (C) predators
    (D) a type of eel

26. The word "minimizes" in line 25 is closest in meaning to

    (A) prevents
    (B) reduces
    (C) determines
    (D) repeats

27. What does the author mention about fish that are "jack-form" swimmers?

    (A) They usually prey on bottom-dwelling fish.
    (B) Their swimming style lets them catch prey effectively.
    (C) They have tails similar to those of eels.
    (D) Their highly flexible skeletal structure allows them to swim efficiently.

28. The word "objective" in line 30 is closest in meaning to

    (A) ability
    (B) preference
    (C) purpose
    (D) method

29. Which of the following fish would most likely emit a poisonous substance?

    (A) A nurse shark
    (B) A jack
    (C) A pompano
    (D) A puffer fish

30. Which of the following statements does the passage support?

    (A) A scientist today would use a system of classification for fish locomotion similar to that used in the 1920s.
    (B) Scientists today still do not understand the mechanics of fish locomotion.
    (C) Mathematical analysis of fish locomotion has remained largely unaltered since the 1920s.
    (D) The classification of fish locomotion has been simplified since it was devised in the 1920s.