PRACTICE SET 5

ARTISANS AND INDUSTRIALIZATION

Before 1815 manufacturing in the United States had been done in homes or shops by skilled artisans. As master craftworkers, they imparted the knowledge of their trades to apprentices and journeymen. In addition, women often worked in their homes part-time, making finished articles from raw material supplied by merchant capitalists. After 1815 this older form of manufacturing began to give way to factories with machinery tended by unskilled or semiskilled laborers. Cheap transportation networks, the rise of cities, and the availability of capital and credit all stimulated the shift to factory production.

The creation of a labor force that was accustomed to working in factories did not occur easily. Before the rise of the factory, artisans had worked within the home. Apprentices were considered part of the family, and masters were responsible not only for teaching their apprentices a trade but also for providing them some education and for supervising their moral behavior. Journeymen knew that if they perfected their skill, they could become respected master artisans with their own shops. Also, skilled artisans did not work by the clock, at a steady pace, but rather in bursts of intense labor alternating with more leisurely time.

The factory changed that. Goods produced by factories were not as finished or elegant as those done by hand, and pride in craftsmanship gave way to the pressure to increase rates of productivity. The new methods of doing business involved a new and stricter sense of time. Factory life necessitated a more regimented schedule, where work began at the sound of a bell and workers kept machines going at a constant pace. At the same time, workers were required to discard old habits, for industrialism demanded a worker who was alert, dependable, and self-disciplined. Absenteeism and lateness hurt productivity and, since work was specialized, disrupted the regular factory routine. Industrialization not only produced a fundamental change in the way work was organized; it transformed the very nature of work.

The first generation to experience these changes did not adopt the new attitudes easily. The factory clock became the symbol of the new work rules. One mill worker who finally quit complained revealingly about "obedience to the ding-dong of the bell—just as though we are so many living machines." With the loss of personal freedom also came the loss of standing in the community. Unlike artisan workshops in which apprentices worked closely with the masters supervising them, factories sharply separated workers from management. Few workers rose through the ranks to supervisory positions, and even fewer could achieve the artisan's dream of setting up one's own business. Even well-paid workers sensed their decline in status.

In this newly emerging economic order, workers sometimes organized to protect their rights and traditional ways of life. Craftworkers such as carpenters, printers, and tailors formed unions, and in 1834 individual unions came together in the National Trades' Union. The labor movement gathered some momentum in the decade before the Panic of 1837, but in the depression that followed, labor's strength collapsed. During hard times, few workers were willing to strike[1] or engage in collective action. And skilled craftworkers, who spearheaded the union movement, did not feel a particularly strong bond with semiskilled factory workers and unskilled laborers. More than a decade of agitation did finally bring a

workday shortened to 10 hours to most industries by the 1850s, and the courts also recognized workers' right to strike, but these gains had little immediate impact.

Workers were united in resenting the industrial system and their loss of status, but they were divided by ethnic and racial antagonisms, gender, conflicting religious perspectives, occupational differences, political party loyalties, and disagreements over tactics. For them, the factory and industrialism were not agents of opportunity but reminders of their loss of independence and a measure of control over their lives. As United States society became more specialized and differentiated, greater extremes of wealth began to appear. And as the new markets created fortunes for the few, the factory system lowered the wages of workers by dividing labor into smaller, less skilled tasks.

1. Strike: A stopping of work that is organized by workers

Directions: Now answer the questions.

1. Which of the following can be inferred from the passage about articles manufactured before 1815?

   Ⓐ They were primarily produced by women.
   Ⓑ They were generally produced in shops rather than in homes.
   Ⓒ They were produced with more concern for quality than for speed of production.
   Ⓓ They were produced mostly in large cities with extensive transportation networks.

PARAGRAPH 2

The creation of a labor force that was accustomed to working in factories did not occur easily. Before the rise of the factory, artisans had worked within the home. Apprentices were considered part of the family, and masters were responsible not only for teaching their apprentices a trade but also for providing them some education and for supervising their moral behavior. Journeymen knew that if they perfected their skill, they could become respected master artisans with their own shops. Also, skilled artisans did not work by the clock, at a steady pace, but rather in bursts of intense labor alternating with more leisurely time.

2. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect answer choices change the meaning in important ways or leave out essential information.

   Ⓐ Masters demanded moral behavior from apprentices but often treated them irresponsibly.
   Ⓑ The responsibilities of the master to the apprentice went beyond the teaching of a trade.
   Ⓒ Masters preferred to maintain the trade within the family by supervising and educating the younger family members.
   Ⓓ Masters who trained members of their own family as apprentices demanded excellence from them.

PARAGRAPH 3

The factory changed that. Goods produced by factories were not as finished or elegant as those done by hand, and pride in craftsmanship gave way to the pressure to increase rates of productivity. The new methods of doing business involved a new and stricter sense of time. Factory life necessitated a more regimented schedule, where work began at the sound of a bell and workers kept machines going at a constant pace. At the same time, workers were required to discard old habits, for industrialism demanded a worker who was alert, dependable, and self-disciplined. Absenteeism and lateness hurt productivity and, since work was specialized, disrupted the regular factory routine. Industrialization not only produced a fundamental change in the way work was organized; it transformed the very nature of work.

3. The word "disrupted" in the passage is closest in meaning to

Ⓐ prolonged
Ⓑ established
Ⓒ followed
Ⓓ upset

PARAGRAPH 4

The first generation to experience these changes did not adopt the new attitudes easily. The factory clock became the symbol of the new work rules. One mill worker who finally quit complained revealingly about "obedience to the ding-dong of the bell—just as though we are so many living machines." With the loss of personal freedom also came the loss of standing in the community. Unlike artisan workshops in which apprentices worked closely with the masters supervising them, factories sharply separated workers from management. Few workers rose through the ranks to supervisory positions, and even fewer could achieve the artisan's dream of setting up one's own business. Even well-paid workers sensed their decline in status.

4. In paragraph 4, the author includes the quotation from a mill worker in order to

Ⓐ support the idea that it was difficult for workers to adjust to working in factories
Ⓑ show that workers sometimes quit because of the loud noise made by factory machinery
Ⓒ argue that clocks did not have a useful function in factories
Ⓓ emphasize that factories were most successful when workers revealed their complaints

5. All of the following are mentioned in paragraph 4 as consequences of the new system for workers EXCEPT a loss of

Ⓐ freedom
Ⓑ status in the community
Ⓒ opportunities for advancement
Ⓓ contact among workers who were not managers

PARAGRAPH 5

In this newly emerging economic order, workers sometimes organized to protect their rights and traditional ways of life. Craftworkers such as carpenters, printers, and tailors formed unions, and in 1834 individual unions came together in the National Trades' Union. The labor movement gathered some momentum in the decade before the Panic of 1837, but in the depression that followed, labor's strength collapsed. During hard times, few workers were willing to strike or engage in collective action. And skilled craftworkers, who spearheaded the union movement, did not feel a particularly strong bond with semiskilled factory workers and unskilled laborers. More than a decade of agitation did finally bring a workday shortened to 10 hours to most industries by the 1850s, and the courts also recognized workers' right to strike, but these gains had little immediate impact.

6. Which of the following statements about the labor movement of the 1800s is supported by paragraph 5?

   Ⓐ It was successful during times of economic crisis.
   Ⓑ Its primary purpose was to benefit unskilled laborers
   Ⓒ It was slow to improve conditions for workers.
   Ⓓ It helped workers of all skill levels form a strong bond with each other.

PARAGRAPH 6

Workers were united in resenting the industrial system and their loss of status, but they were divided by ethnic and racial antagonisms, gender, conflicting religious perspectives, occupational differences, political party loyalties, and disagreements over tactics. For them, the factory and industrialism were not agents of opportunity but reminders of their loss of independence and a measure of control over their lives. As United States society became more specialized and differentiated, greater extremes of wealth began to appear. And as the new markets created fortunes for the few, the factory system lowered the wages of workers by dividing labor into smaller, less skilled tasks.

7. The author identifies "political party loyalties" and "disagreements over tactics" as two of several factors that

   Ⓐ encouraged workers to demand higher wages
   Ⓑ created divisions among workers
   Ⓒ caused work to become more specialized
   Ⓓ increased workers' resentment of the industrial system

PARAGRAPH 1

Before 1815 manufacturing in the United States had been done in homes or shops by skilled artisans. **(A)** As master craftworkers, they imparted the knowledge of their trades to apprentices and journeymen. **(B)** In addition, women often worked in their homes part-time, making finished articles from raw material supplied by merchant capitalists. **(C)** After 1815 this older form of manufacturing began to give way to factories with machinery tended by unskilled or semiskilled laborers. **(D)** Cheap transportation networks, the rise of cities, and the availability of capital and credit all stimulated the shift to factory production.

8. **Directions:** Look at the part of the passage that is displayed above. The letters **(A)**, **(B)**, **(C)**, and **(D)** indicate where the following sentence could be added.

   This new form of manufacturing depended on the movement of goods to distant locations and a centralized source of laborers.

   Where would the sentence best fit?

   Ⓐ Choice A
   Ⓑ Choice B
   Ⓒ Choice C
   Ⓓ Choice D

9. **Directions:** Complete the table below by indicating which of the answer choices describe characteristics of the period before 1815 and which describe characteristics of the 1815–1850 period. **This question is worth 3 points.**

Before 1815	1815–1850
•	•
•	•
	•

Answer Choices

[A] A united, highly successful labor movement took shape.
[B] Workers took pride in their workmanship.
[C] The income gap between the rich and the poor increased greatly.
[D] Transportation networks began to decline.
[E] Emphasis was placed on following schedules.
[F] Workers went through an extensive period of training.
[G] Few workers expected to own their own businesses.

PRACTICE SET 6

SWIMMING MACHINES

Tunas, mackerels, and billfishes (marlins, sailfishes, and swordfish) swim continuously. Feeding, courtship, reproduction, and even "rest" are carried out while in constant motion. As a result, practically every aspect of the body form and function of these swimming "machines" is adapted to enhance their ability to swim.

Many of the adaptations of these fishes serve to reduce water resistance (drag). Interestingly enough, several of these hydrodynamic adaptations resemble features designed to improve the aerodynamics of high-speed aircraft. Though human engineers are new to the game, tunas and their relatives evolved their "high-tech" designs long ago.

Tunas, mackerels, and billfishes have made streamlining into an art form. Their bodies are sleek and compact. The body shapes of tunas, in fact, are nearly ideal from an engineering point of view. Most species lack scales over most of the body, making it smooth and slippery. The eyes lie flush with the body and do not protrude at all. They are also covered with a slick, transparent lid that reduces drag. The fins are stiff, smooth, and narrow, qualities that also help cut drag. When not in use, the fins are tucked into special grooves or depressions so that they lie flush with the body and do not break up its smooth contours. Airplanes retract their landing gear while in flight for the same reason.

Tunas, mackerels, and billfishes have even more sophisticated adaptations than these to improve their hydrodynamics. The long bill of marlins, sailfishes, and swordfish probably helps them slip through the water. Many supersonic aircraft have a similar needle at the nose.

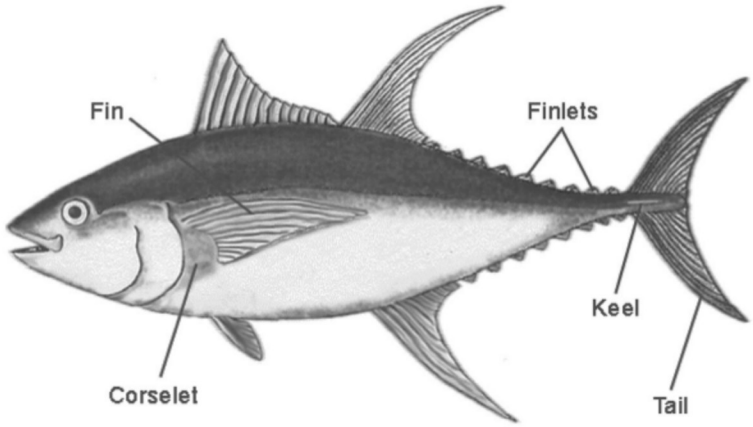
Most tunas and billfishes have a series of keels and finlets near the tail. Although most of their scales have been lost, tunas and mackerels retain a patch of coarse scales near the head called the corselet. The keels, finlets, and corselet help direct the flow of water over the body surface in such a way as to reduce resistance (see the figure). Again, supersonic jets have similar features.

Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. In fact, tunas must swim to breathe. They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

One potential problem is that opening the mouth to breathe detracts from the streamlining of these fishes and tends to slow them down. Some species of tuna have specialized grooves in their tongue. It is thought that these grooves help to channel water through the mouth and out the gill slits, thereby reducing water resistance.

There are adaptations that increase the amount of forward thrust as well as those that reduce drag. Again, these fishes are the envy of engineers. Their high, narrow tails with swept-back tips are almost perfectly adapted to provide propulsion with the least possible effort. Perhaps most important of all to these and other fast swimmers is their ability to sense and make use of swirls and eddies (circular currents) in the water. They can glide past eddies that would slow them down and then gain extra thrust by "pushing off" the eddies. Scientists and engineers are beginning to study this ability of fishes in the hope of designing more efficient propulsion systems for ships.

The muscles of these fishes and the mechanism that maintains a warm body temperature are also highly efficient. A bluefin tuna in water of 7°C (45°F) can maintain a core temperature of over 25°C (77°F). This warm body temperature may help not only the muscles to work better, but also the brain and the eyes. The billfishes have gone one step further. They have evolved special "heaters" of modified muscle tissue that warm the eyes and brain, maintaining peak performance of these critical organs.



Directions: Now answer the questions.

PARAGRAPH 1

Tunas, mackerels, and billfishes (marlins, sailfishes, and swordfish) swim continuously. Feeding, courtship, reproduction, and even "rest" are carried out while in constant motion. As a result, practically every aspect of the body form and function of these swimming "machines" is adapted to enhance their ability to swim.

1. The word "enhance" in the passage is closest in meaning to
   - (A) use
   - (B) improve
   - (C) counteract
   - (D) balance

PARAGRAPH 3

Tunas, mackerels, and billfishes have made streamlining into an art form. Their bodies are sleek and compact. The body shapes of tunas, in fact, are nearly ideal from an engineering point of view. Most species lack scales over most of the body, making it smooth and slippery. The eyes lie flush with the body and do not protrude at all. They are also covered with a slick, transparent lid that reduces drag. The fins are stiff, smooth, and narrow, qualities that also help cut drag. When not in use, the fins are tucked into special grooves or depressions so that they lie flush with the body and do not break up its smooth contours. Airplanes retract their landing gear while in flight for the same reason.

2. Why does the author mention that "Airplanes retract their landing gear while in flight"?

   Ⓐ To show that air resistance and water resistance work differently from each other
   Ⓑ To argue that some fishes are better designed than airplanes are
   Ⓒ To provide evidence that airplane engineers have studied the design of fish bodies
   Ⓓ To demonstrate a similarity in design between certain fishes and airplanes

PARAGRAPH 4

Tunas, mackerels, and billfishes have even more sophisticated adaptations than these to improve their hydrodynamics. The long bill of marlins, sailfishes, and swordfish probably helps them slip through the water. Many supersonic aircraft have a similar needle at the nose.

3. According to paragraph 4, the long bills of marlins, sailfish, and swordfish probably help these fishes by

   Ⓐ increasing their ability to defend themselves
   Ⓑ allowing them to change direction easily
   Ⓒ increasing their ability to detect odors
   Ⓓ reducing water resistance as they swim

PARAGRAPH 6

Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. In fact, tunas must swim to breathe. They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

4. According to the passage, which of the following is one of the reasons that tunas are in constant motion?

   (A) They lack a swim bladder.
   (B) They need to suck in more water than other fishes do.
   (C) They have large muscles for breathing.
   (D) They cannot open their mouths unless they are in motion.

PARAGRAPH 7

One potential problem is that opening the mouth to breathe detracts from the streamlining of these fishes and tends to slow them down. Some species of tuna have specialized grooves in their tongue. It is thought that these grooves help to channel water through the mouth and out the gill slits, thereby reducing water resistance.

5. Which of the sentences below best expresses the essential information in the highlighted sentence in the passage? Incorrect answer choices change the meaning in important ways or leave out essential information.

   (A) These fishes often have a problem opening their mouths while swimming.
   (B) The streamlining of these fishes prevents them from slowing down.
   (C) The streamlining of these fishes tends to slow down their breathing.
   (D) Opening the mouth to breathe can reduce the speed of these fishes.

PARAGRAPH 8

There are adaptations that increase the amount of forward thrust as well as those that reduce drag. Again, these fishes are the envy of engineers. Their high, narrow tails with swept-back tips are almost perfectly adapted to provide propulsion with the least possible effort. Perhaps most important of all to these and other fast swimmers is their ability to sense and make use of swirls and eddies (circular currents) in the water. They can glide past eddies that would slow them down and then gain extra thrust by "pushing off" the eddies. Scientists and engineers are beginning to study this ability of fishes in the hope of designing more efficient propulsion systems for ships.

6. According to the passage, one of the adaptations of fast-swimming fishes that might be used to improve the performance of ships is these fishes' ability to

   Ⓐ swim directly through eddies
   Ⓑ make efficient use of water currents
   Ⓒ cover great distances without stopping
   Ⓓ gain speed by forcing water past their gills

PARAGRAPH 9

The muscles of these fishes and the mechanism that maintains a warm body temperature are also highly efficient. A bluefin tuna in water of 7°C (45°F) can maintain a core temperature of over 25°C (77°F). This warm body temperature may help not only the muscles to work better, but also the brain and the eyes. The billfishes have gone one step further. They have evolved special "heaters" of modified muscle tissue that warm the eyes and brain, maintaining peak performance of these critical organs.

7. According to paragraph 9, which of the following is true of bluefin tunas?

   Ⓐ Their eyes and brain are more efficient than those of any other fish.
   Ⓑ Their body temperature can change greatly depending on the water temperature.
   Ⓒ They can swim in waters that are much colder than their own bodies.
   Ⓓ They have special muscle tissue that warms their eyes and brain.

PARAGRAPHS 5 AND 6

Again, supersonic jets have similar features.

(A) Because they are always swimming, tunas simply have to open their mouths and water is forced in and over their gills. **(B)** Accordingly, they have lost most of the muscles that other fishes use to suck in water and push it past the gills. **(C)** In fact, tunas must swim to breathe. **(D)** They must also keep swimming to keep from sinking, since most have largely or completely lost the swim bladder, the gas-filled sac that helps most other fish remain buoyant.

8. **Directions:** Look at the part of the passage that is displayed above. The letters **(A)**, **(B)**, **(C)**, and **(D)** indicate where the following sentence could be added.

   Consequently, tunas do not need to suck in water.

   Where would the sentence best fit?

   Ⓐ Choice A
   Ⓑ Choice B
   Ⓒ Choice C
   Ⓓ Choice D

9. **Directions:** Complete the table below by indicating which features of fishes are associated in the passage with reducing water resistance and which are associated with increasing thrust. **This question is worth 3 points.**

Reducing Water Resistance	Increasing Thrust
•	•
•	•
•	

Answer Choices

A The absence of scales from most of the body
B The ability to take advantage of eddies
C The ability to feed and reproduce while swimming
D Eyes that do not protrude
E Fins that are stiff, narrow, and smooth
F The habit of swimming with the mouth open
G A high, narrow tail with swept-back tips