토플 적중 90 READING DAY 15.

Pre-Study

1. 점수 쑥쑥 동의어

1. resilient	
2. retrieve	
3. strew	
4. afford	
5. subjected to	
6. transitory	

bring back	quick to recover
exposed to	scatter
brief	provide

2. 한 눈 쑥쑥 지문 정리

Act 5-2 The Steam Engine in Britain

P1 England : demand timber ↑ But 공급 감소
➔ new source = coal ➔ steam engine 발명
P2 steam e. 발명 역사
P3 Savery : Beaumont's 것 개선 but two flaws
(vac, 물을 short distance 끌어올림 & weak chamber)
P4 Newcomen: Savery것 발전,성공
P5 현대 steam e.: Watt (New'comen's 수정)
P6 Watt 발명품 2개의 영향 : more power & factory 전력 공급

Lecture Actual Test 05-2 The Steam Engine in Britain

학습목표

- ◆ **지문을 미리 풀어보고, 정답 / 오답의 정확한 단서를 파악한다.**
- ◆ **특히, 오답률이 높은 문제를 철저히 분석한다. (2, 3, 4, 6, 11, 14)**

1. Actual Test 05-2 The Steam Engine in Britain

P1. To supplement their shipbuilding, timber was imported, but a new source of fuel had to be found. This need was met with coal, of which the British Isles had an ample supply. [As the coal miners delved ever deeper, however, **they** encountered a new problem with water seeping into the shafts, making the work dangerous and often impossible.] The creation of a viable steam engine ultimately not only resolved this dilemma, but also ushered in the modern industrial age.

1. The word **they** in paragraph 1 refers to
   (A) ships
   (B) miners
   (C) shafts
   (D) animals

P1. By the late 17th century, ~~~. 2-B Its rapidly growing population and 2-D expanding empire demanded huge amounts of timber to supply fuel to provide energy for homes and industry and wood for its mighty fleet of ships. Unfortunately, 2-A its own forests had already dwindled down far too low to meet the demand. To supplement their shipbuilding, ~~~. This need was met with coal, of which the British Isles had an ample supply. As the coal miners delved ever deeper, however, 2-C they encountered a new problem with water seeping into the shafts, making the work dangerous and often impossible. The creation of a viable steam engine ultimately not only resolved this dilemma, but also ushered in the modern industrial age.

2. According to paragraph 1, what is NOT one of the factors that led to the development of the steam engine in Britain?
   (A) The dwindling supply of timber in Europe
   (B) The growing population
   (C) The flooding in coal mines
   (D) The expanding British empire

P2. The concept of a steam powered engine actually dates back to 1st century Roman Egypt. [Writings describe a device called an aeolipile which created steam within a closed vessel and released it through opposite facing vents on a ball, making the ball rotate.] While illustrating the principle of steam power, this **primitive** example served no real purpose. Over the intervening centuries, more sophisticated designs were developed, ~~~. In 1606, a Spanish engineer ~~~~~~. Denis Pepin later designed a piston ~~~~~~. He saw that
the steam would need to be created in a separate boiler to create an automatic cycle of movement, but he took his research no further.

3. Why does the author mention aeolipile in paragraph 2?
   (A) To point out that the conceptual device served no real purpose
   (B) To explain Beaumont's source of inspiration for his steam operated pump
   (C) To prove that Roman Egypt was very advanced in science
   (D) To illustrate how long the concept of steam power has existed

4. The word **primitive** in paragraph 2 is closest in meaning to
   (A) nonindustrial
   (B) rudimentary
   (C) inadequate
   (D) reciprocal

P3. In 1698, Thomas Savery improved upon Beaumont's design, and came to the English miners' rescue. His machine consisted of a vessel where the water was boiled, and the steam was sent into a second chamber. When cold water was poured over the outside of the chamber, the steam rapidly condensed, creating a vacuum that opened the valve and sucked water up into the chamber. The valve only opened in this direction, so when it shut, it kept the water from falling back down the pipe. The water could then be drained off through a different valve.

P3. There were a few flaws with his design. Firstly, the vacuum could only pull water up from a short distance, so a series of pumps had to be used to draw water up to the surface. In addition, the condensing chambers had weak walls and sometimes exploded.

5. Based on paragraph 3, it can be inferred that
   (A) Savery's machine did not achieve commercial success
   (B) Savery incorporated Pepin's invention in his machine
   (C) Savery eventually overcame the limitations of the chamber
   (D) Savery's machine provided a final solution to the English miners

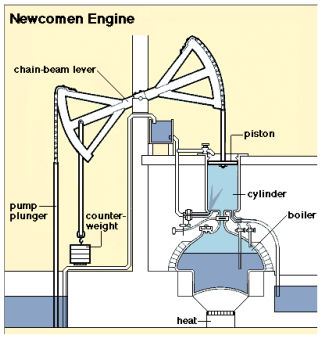
P3. His machine consisted of a vessel where the water was boiled, and the steam was sent into a second chamber. [When cold water was poured over the outside of the chamber, the steam rapidly condensed, creating a vacuum that opened the valve and sucked water up into the chamber.]

핵심정보: 1. cold water pour chamber 바깥
2. → steam condense
3. → vacum (open valve & suck water into chamber)

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

(A) Condensation of steam inside the chamber caused water to be sucked up into the vacuum.
(B) When the cold water poured over the chamber rapidly condensed, the vacuum created by this opened the valve and sucked water up into the chamber.
(C) The vacuum created by the condensation of steam allowed cold water to be sucked up into the chamber through the valve.
(D) When the cold water rapidly condensed the steam, the vacuum created inside the chamber caused water to be sucked up through the valve.

P4. In 1712, Thomas Newcomen took Savery's design and incorporated Pepin's piston. With his machine, the steam was driven into the piston chamber, and then a small injection of cold water condensed the steam creating a vacuum. However, instead of drawing up water into the chamber like in Savery's design, the vaccum pulled down the piston, which was attached to a chain. [This chain was connected to a beam on an axle, and a chain at the other end of the beam operated the pump. When a new charge of steam filled the piston, it would rise and a weight on the pump end of the beam reset the system.] Newcomen's steam engine could pull water up much farther, so it enjoyed great success, and over 100 had been installed by 1735.



7. According to paragraph 4, what was the main difference between Newcomen's and Savery's designs?

(A) Newcomen's engine relied on creating a vacuum in the chamber.
(B) Savery's engine could pull water up much farther than Newcomen's.

(C) Savery's engine drew up water directly into the vacuum chamber.
(D) Newcomen's engine was connected to a beam on an axle.

P5. Although Savery and Newcomen **inarguably** employed steam technology in their machines, the creation of the modern steam engine is usually attributed to one individual: James Watt. Watt was trained as an instrument maker in London and employed near Glasgow University. While there, he was asked to repair one of Newcomen's engines. As he worked, he realized why it was so inefficient: fuel, steam, and time were being wasted by having the steam condense inside of the piston. He remedied this by creating a separate condenser, and he partnered with Matthew Boulton.

8. The word **inarguably** in paragraph 5 is closest in meaning to
(A) incongruently
(B) indisputably
(C) irrevocably
(D) unlikely

9. What is the main purpose of paragraph 5?
(A) To describe the moment that triggered the creation of the modern steam engine
(B) To make a comparison between Newcomen's and Savery's steam engines
(C) To introduce James Watt's educational background
(D) To explain the reason why Newcomen's engine was inefficient compared to Watt's

P6. They subsequently created two more improvements that not only further increased the engine's power output, but also allowed the engines to be used to power factories in addition to pumps. The first was a double-acting engine, which used steam to push the piston both up and down. This used steam that formerly was wasted and provided more power. The second was a spinning device called a fly-ball governor. This device's rotation was used to open and close valves automatically, and it changed the engine's back-and-forth motion into a circular one. Before this invention, factories used water wheels to power their machines, but the rotating steam engine replaced them.

10. According to paragraph 6, what effect did Watt's innovations have in Britain? Click on two answers.
(A) They replaced water wheels in factories.
(B) They automated the manufacturing process in British factories.
(C) They reduced Britain's dependency on timber.
(D) They provided increased power output with the same amount of steam.

P6. Before this invention, factories used water wheels to power their machines, but the rotating steam engine replaced them. This meant that factories could be built away from rivers, and Britain's manufacturing output skyrocketed. These innovations are why James Watt is typically given the most **credit** for modern steam engines.

11. The word **credit** in paragraph 6 is closest in meaning to

(A) recognition
(B) respect
(C) remembrance
(D) weight

P6. Before this invention, factories used water wheels to power their machines, but the rotating steam engine replaced them. This meant that factories could be built away from rivers, and Britain's manufacturing output skyrocketed. These innovations are why James Watt is typically given the most credit for modern steam engines.

12. According to the passage, why is the creation of modern steam engine attributed to James Watt?

(A) He added a separate condenser to Newcomen's engines.
(B) He allowed factories to be built away from rivers.
(C) He made significant improvements to prior inefficient designs.
(D) He trained as an instrument maker at Glasgow University

13. Where would the sentence best fit?

→ Initially, they used manually powered pumps driven by animals, but this soon proved insufficient.

P1. By the late 17th century, England ~~. Its rapidly growing population and expanding empire demanded huge amounts of timber ~~. Unfortunately, its own forests had already dwindled down far too low to meet the demand. [■A] To supplement their shipbuilding, timber was imported, but a new source of fuel had to be found. [■B] This need was met with coal, of which the British Isles had an ample supply. [■C] As the coal miners delved ever deeper, however, they encountered a new problem with water seeping into the shafts, making the work dangerous and often impossible. [■D] The creation of a viable steam engine ultimately not only resolved this dilemma, but also ushered in the modern industrial age.

14. **Growing energy demands prompted England to turn from timber to coal and finally to the steam engine for a reliable source of energy, paving the way for the modern industrial age.**

● ● ●

P2 숲의 생존에 중요한 wildfire: dead p. 태워, 작은 불→큰 불 예방 (YS)
P3 YS의 생태보존을 위한 노력 : fire suppr.정책→disaster
P4 엄청난 피해의 YS fire
→ 화재관리정책의 허술함& 필요성
P5 prescri.fire중요성인식
P6 current policy:화재로 인한 위험 줄이면서 간섭 최소화

(A) Because there was an abundant supply of coal in the British Isles, England was temporarily saved from a potentially disastrous energy crisis.
(B) Newcomen improved Savery's design by introducing pistons, and this modification increased the effectiveness of the steam engine.
(C) Together, the double-acting engine and the fly-ball governor changed the engine's motion into a circular pattern.
(D) Utilizing steam power was a concept various engineers experimented with, but without significant application in real life.
(E) Watt's improvements to Newcomen's design transformed it into an efficient rotating steam engine, which contributed to the industrial age.
(F) Because Watt made it possible for the steam engine to be applied in factories, he is called the creator of the steam engine.

Tip!
Problem : Insertion 오답률 높아?
Solution :

1. 주어진 단서로 앞 / 뒤 내용을 충분히 생각하였나?
2. 글의 논리적인 흐름을 생각하였나?
   : General ➔ Specific
3. 네모 사이사이 문장 (대부분 한 단락 전체) 를 읽었는가?
   : Grouping 하면서 읽으면 더 효과적