

RIPPLE ENGLISH

ACTIVE LEARNING PROGRAM

Workbook for:

“Pragmatic Life Science”

問題は解きっぱなしにしないで！

英語資格試験の学習は、**解いた後の復習**をしなければほとんど効果はありません。答え合わせをしておしまいせず、**テキストの音読練習やリスニング、多読学習などのインプット学習**を何度も反復して記憶に定着させましょう。ホームページからダウンロードできる音読練習用のテキストをぜひご活用ください。また、数日置いてから再度解き直すのも効果的です。答えを記憶してしまっているかもしれませんが、回答の根拠をなぞりながら繰り返し解くことで有効な復習になります！

Pragmatic Life Science

1. “There is no practical value in learning biology in my life.” To what extent do you agree with this statement? You might have heard the slightly different versions of this assertion that replace biology with history, philosophy, classics, and so on. Liberal arts, such as social science and natural science, may seem to lack **pragmatic** utility and nothing more than intellectual entertainment. You might rather want to learn tips for climbing up the career ladder or visualizing your way to being rich. Although it may seem less straightforward than books of the self-help genre, learning liberal arts can actually provide profound insights into humans and society that will support and enrich your life. For example, the knowledge of life science will deepen our insights into human nature and society, help you challenge the traditional idea about organizational management, and bring about essential humility and maturity. What kind of lessons can we draw from life science?

- (1) The word “pragmatic” in the passage is closest in meaning to
- A. apparent
 - B. essential
 - C. professional
 - D. practical
- (2) According to paragraph 1, which of the following is true?
- A. Liberal arts like biology have no practical value in everyday life.
 - B. Learning life science can challenge traditional management ideas.
 - C. Self-help books are more profound than liberal arts in understanding society.
 - D. Social sciences are only valuable for intellectual entertainment.

2. The common typical image of organizational management is probably command and control. It is a hierarchical system where upper managers are in charge of making decisions and taking responsibility for their decisions, and subordinates follow these commands and execute them. Today, many companies adopt this concept, but they don't necessarily have to work this way. Learning life science suggests another possibility of how organizations function.
3. In fact, some of the innovative business leaders use the metaphor of a living organism or an ecosystem when they talk about their organization. For example, our bodies consist of about 40 trillion cells that are working collaboratively but autonomously without any central command. The Human brain has 100 billion neurons, but there is no "president" neuron that directs and controls the function of other neurons. When we hear someone speak, neurons of the auditory cortex automatically start working. It doesn't receive a command from the prefrontal cortex nor have a discussion with the amygdala to form a consensus.
4. Likewise, some companies thrive without top-down management. Any member in these organizations, regardless of their position, is empowered to make decisions by themselves when they feel it's necessary, as long as they seek advice from people with expertise and people who will be impacted by the decision. Companies like Buurtzorg and Morning Star have successfully operated this way despite their scale of more than a thousand employees.

- (3) According to paragraph 2, what is the popular idea of corporate management?
 - A. Top executives give orders, and employees carry them out.
 - B. They make decisions collaboratively at all levels of the organization.
 - C. All employees are empowered to make independent choices without guidance from higher-ups.
 - D. They prioritize the use of innovative technology to automate the decision-making process.
- (4) According to paragraph 3, which of the following is NOT true?
 - A. Business leaders sometimes compare their organizations to living organisms.
 - B. The human brain functions under the command of a central "president" neuron.
 - C. Neurons in the auditory cortex begin working automatically when we hear someone speak.
 - D. The metaphor of an ecosystem is used to describe autonomous yet collaborative systems.
- (5) According to paragraph 4, what is a characteristic of companies like Buurtzorg and Morning Star?
 - A. They rely solely on top-down management for decision-making.
 - B. Only upper managers have the authority to make decisions.
 - C. Employees at all levels can make decisions, provided they consult relevant experts and stakeholders.
 - D. They struggle to manage effectively due to their size.

5. There is an exceptionally famous book called “The Selfish Gene” written by the biologist Richard Dawkins in 1976. The title of the book is somewhat misleading, giving us an impression that living organisms are inevitably selfish and egoistic. **But we often get him wrong.** He meant that it is genes that are selfish, not individual creatures. If we take a closer look, it often turns out that acts of apparent altruism of the individuals are actually selfishness of the gene in disguise. In other words, altruistic behavior by an individual for the benefit of the community sometimes coincides with the interests of genes.
6. Take an example of the stinging behavior of worker bees. This is an effective defense against honey robbers, but they are like kamikaze fighters. They die soon after the act of stinging. This suicide act appears altruistic on an individual level, but it is actually beneficial for the genes. A social insect colony is a huge family, usually all descended from the same mother, and all bees in the same colony share a similar set of genes. If the act of self-sacrifice benefits the other members of the colony, it makes sense in terms of survival and **propagation** of the genes. Altruism within a group often goes with selfishness between groups. Genes might be inherently selfish, but paradoxically, individuals can exhibit altruism because of the selfishness of genes.

(6) Which of the following text best expresses the essential information in the highlighted sentence?

But we often get him wrong.

- A. People frequently misunderstand Dawkins’ point, assuming he referred to individual organisms rather than genes.
- B. Dawkins was mistaken in his interpretation of selfishness and altruism in living organisms.
- C. The public often agrees with Dawkins’ idea that individual creatures are naturally selfish.
- D. Dawkins’ theory is often misquoted as claiming that altruistic actions never occur in nature.
- (7) The word “propagation” in the passage is closest in meaning to
- A. explosion
- B. proliferation
- C. domination
- D. extinction
- (8) According to paragraph 6, which of the following is true?
- A. Worker bees sting honey robbers to protect their own lives.
- B. The self-sacrifice of worker bees benefits the survival of their genes.
- C. Altruism among individuals in a colony is harmful for the genes.
- D. Genes are inherently altruistic, leading to selfish behaviors.

7. We Homo sapiens are quite interesting animals in terms of altruism. A number of studies on psychology and behavioral economics have demonstrated that we often disregard our personal economic rationality and behave in favor of other's interests. This is probably because humankind is a species that have survived and thrived by trusting and cooperating with each other.
8. Biologically speaking, there is nothing particularly special about our bodies and brains. We are genetically very similar to our closest relatives, chimpanzees and bonobos. Neanderthals possessed larger brains and bodies than Homo sapiens, and researchers speculate that they were superior to us in both physical and cognitive abilities. However, chimpanzees are locked up in zoos and Neanderthals became extinct while Homo sapiens enjoy unprecedented prosperity. This is because of the simple fact that we can cooperate more effectively than other species. Our ancestors effectively cooperated to hunt large mammals that any individual hunter could never bring down. Instead of everyone making both bows and spears only for themselves, people specialized in making either bows or spears and exchanged them, thereby each of them saved time. The same is true today. We are all dependent on the enormous network of cooperation, and nobody can live alone. What defines Homo sapiens is trust and cooperation. We have survived and thrived by trusting each other, sharing skills and knowledge with each other, and contributing to each other.
9. Thus, it is no wonder that we are genetically hardwired to be social. We feel happy when we receive gratitude from others. We get motivated and engaged in our job when we find its significance for society. We become even physically healthier when we have good relationships. You will inevitably come to realize that only caring about your own success or well-being never brings about happiness in the truest sense. This is not sentimental idealism, but biological reality.

(9) According to paragraph 8, what key factor has contributed to the success of Homo sapiens?

- A. Superior physical and cognitive abilities over Neanderthals and chimpanzees.
- B. The ability to live independently without relying on others.
- C. The capacity for effective cooperation, specialization, and mutual trust.
- D. Larger brains and bodies compared to other species.

(10) According to paragraph 9, which of the following is NOT true?

- A. We feel happier when we receive gratitude from others.
- B. Having good relationships contributes to our physical health.
- C. Caring only about your own success leads to true happiness.
- D. Feeling that your job is significant to society increases motivation.

10. There is a famous phrase that says, “nice guys finish last,” which means that those who behave kindly and trustfully will lose out in the end. But will they really? We can examine this **proposition** from a biological perspective. An American political scientist Robert Axelrod used the famous “Prisoner’s Dilemma” as a basis with some modifications, and he simulated on computers the reproductive competition of individuals taking various cooperative behaviors. In his simulation, when two individuals cooperate with each other, the both can benefit pretty well. When one intends to cooperate but the other betrays, the betrayer enormously benefits and the other loses out. When the two betray each other, both of them lose out a little. Each individual leaves a number of offspring in the next generation that is proportional to the size of the acquired benefits.
11. After a thousand generations of reproductive competitions, what type of behavior thrives and becomes dominant within the group? He ran the simulation several times, and in most cases, what succeeded the most was the strategy named “Tit for Tat,” in which individuals generally behave cooperatively but can betray in retaliation only when they are betrayed. As the generation proceeded, nasty betrayers disappeared from the group and nice cooperative individuals became dominant.
12. Some of the nasty strategies thrived for a while. When the group was already dominated by selfish individuals, other strategies were exploited and struggled to flourish. But their prosperity was usually short-lived. In evolutionary terms, a successful strategy is one that has become the majority in the cluster, and for a strategy to remain successful, it has to do well specifically when it is the majority. Selfish strategies can occasionally be the dominant one, but they often fail to persist because they cannot benefit from gathering and cooperating. At least in this simulation, nice guys finish first.

- (11) The word “proposition” in the passage CANNOT be replaced with
- A. statement
 - B. argument
 - C. theory
 - D. fact
- (12) According to paragraph 10, which of the following is true?
- A. When both individuals betray each other, they both benefit greatly.
 - B. A betrayer benefits the most when the other individual intends to cooperate.
 - C. Cooperating individuals lose out in every scenario.
 - D. The simulation shows that cooperative individuals are always unsuccessful.
- (13) According to paragraph 11, which behavior strategy became dominant in the simulations?
- A. Always betraying to maximize personal gain.
 - B. Cooperating only with individuals who have never betrayed.
 - C. Never cooperating to avoid being taken advantage of.
 - D. Generally cooperating, but retaliating when betrayed.
- (14) According to paragraph 12, which of the following is NOT true?
- A. Selfish strategies can occasionally dominate the group.
 - B. Selfish strategies struggle to maintain dominance in the long term.
 - C. In the simulation, cooperative strategies generally prevail over time.
 - D. A successful strategy in evolutionary terms is one that can dominate briefly.
- (15) Within the whole passage, all of the following are mentioned, EXCEPT
- A. The possibility of alternative organizational structures inspired by life science.
 - B. The stinging behavior of worker bees out of their compassion.
 - C. The concept of “selfish genes” as described by Richard Dawkins.
 - D. The evolutionary advantage of cooperative behavior in Homo sapiens.

Answers

- (1) D
- (2) B
- (3) A
- (4) B
- (5) C
- (6) A
- (7) B
- (8) B
- (9) C
- (10) C
- (11) D
- (12) B
- (13) D
- (14) D
- (15) B

(1) 文中の “pragmatic” と意味が最も近いのは

- A. apparent (明白な)
- B. essential (根本的な、不可欠な)
- C. professional (職業の、専門的な)
- D. practical (実用的な、実践的な)**

(2) 1段落の内容に合致するのは？

- A. Liberal arts like biology have no practical value in everyday life. (生物学などの教養学は日常生活において実用的な価値はない)
- B. Learning life science can challenge traditional management ideas. (生命科学を学ぶことで、伝統的な経営理念に異議を投げかけることができる)**
- C. Self-help books are more profound than liberal arts in understanding society. (社会を理解する上で、自己啓発本の方が教養学よりも奥が深い)
- D. Social sciences are only valuable for intellectual entertainment. (社会科学は知的な娯楽としてのみ価値がある)

(3) 2段落によると企業経営の一般的な考え方は何か？

- A. Top executives give orders, and employees carry them out. (最高経営責任者が命令を出し、従業員がそれを実行する)**
- B. They make decisions collaboratively at all levels of the organization. (組織のすべてのレベルで協力して意思決定を行う)
- C. All employees are empowered to make independent choices without guidance from higher-ups. (すべての従業員は、上層部の指示なしに独立した選択を行う権限を与えられている)
- D. They prioritize the use of innovative technology to automate the decision-making process. (意思決定プロセスを自動化するために革新的なテクノロジーの使用を優先している)

(4) 3段落の内容に合致しないのは？

A. Business leaders sometimes compare their organizations to living organisms. (ビジネスリーダーは、組織を生物に例えることがある)

B. The human brain functions under the command of a central “president” neuron. (人間の脳は、中枢の「社長」ニューロンの指示に従って機能する)

C. Neurons in the auditory cortex begin working automatically when we hear someone speak. (聴覚皮質のニューロンは、誰かが話しているのを聞くと自動的に働き始める)

D. The metaphor of an ecosystem is used to describe autonomous yet collaborative systems. (エコシステムの比喩は、自律的でありながら協力的なシステムを説明するために使用される)

(5) 4段落によると、Buurtzorg や Morning Star のような企業の特徴は何か？

A. They rely solely on top-down management for decision-making. (これらの企業は、意思決定をトップダウンの管理のみに依存している)

B. Only upper managers have the authority to make decisions. (上級管理職のみが意思決定権を持っている)

C. Employees at all levels can make decisions, provided they consult relevant experts and stakeholders. (関連する専門家や利害関係者に相談すれば、すべてのレベルの従業員が意思決定を行うことができる)

D. They struggle to manage effectively due to their size. (これらの企業は規模が大きいため、効果的な管理に苦労している)

(6) 下線部の意図をもっともよく表しているのは？

But we often get him wrong. (しかし我々はしばしば彼を誤解している)

A. People frequently misunderstand Dawkins’ point, assuming he referred to individual organisms rather than genes. (ドーキンスの論点は、遺伝子ではなく個々の生物について言及していると思いついて誤解されることがよくある)

B. Dawkins was mistaken in his interpretation of selfishness and altruism in living organisms. (ドーキンスは、生物の利己主義と利他主義の解釈を誤っていた)

C. The public often agrees with Dawkins’ idea that individual creatures are naturally selfish. (ドーキンスの、個々の生物は本来利己的であるという考えに同意する人は多い)

D. Dawkins’ theory is often misquoted as claiming that altruistic actions never occur in nature. (ドーキンスの理論は、自然界では利他的な行動は起こらないと主張していると誤って引用されることがよくある)

(7) 文中の “propagation (増殖)” と意味が最も近いのは

A. explosion (爆発)

B. proliferation (拡散、増殖)

C. domination (支配)

D. extinction (絶滅)

(8) 6段落の内容に合致するのは？

A. Worker bees sting honey robbers to protect their own lives. (働き蜂は自分の命を守るために蜂蜜泥棒を刺す)

B. The self-sacrifice of worker bees benefits the survival of their genes. (働き蜂の自己犠牲は遺伝子の存続に役立つ)

C. Altruism among individuals in a colony is harmful for the genes. (コロニー内の個体間の利他主義は遺伝子に有害だ)

D. Genes are inherently altruistic, leading to selfish behaviors. (遺伝子は本質的に利他的であり、個体の利己的な行動につながる)

(9) 8段落によると、ホモサピエンスの成功に寄与した主な要因は何か？

A. Superior physical and cognitive abilities over Neanderthals and chimpanzees. (ネアンデルタール人やチンパンジーよりも優れた身体能力と認知能力)

B. The ability to live independently without relying on others. (他人に頼らずに自立して生活する能力)

C. The capacity for effective cooperation, specialization, and mutual trust. (効果的な協力、専門化、相互信頼の能力)

D. Larger brains and bodies compared to other species. (他の種に比べて大きな脳と体)

(10) 9段落の内容に合致しないのは？

A. We feel happier when we receive gratitude from others. (他人から感謝されると幸せを感じる)

B. Having good relationships contributes to our physical health. (良好な人間関係は身体の健康に役立つ)

C. Caring only about your own success leads to true happiness. (自分の成功だけを気にすると、真の幸福につながる)

D. Feeling that your job is significant to society increases motivation. (自分の仕事为社会にとって重要であると感じると、モチベーションが高まる)

(11) 文中の“proposition (主張、説)”と置き換えが効かない語は

A. statement (主張)

B. argument (主張)

C. theory (理論、説)

D. fact (事実)

(12) 10段落の内容に合致するのは？

A. When both individuals betray each other, they both benefit greatly. (両者が裏切ると、両者とも大きな利益を得る)

B. A betrayer benefits the most when the other individual intends to cooperate. (裏切った側は、相手が協力するつもりどきに最も利益を得る)

C. Cooperating individuals lose out in every scenario. (協力する側は、どんなシナリオでも損をする)

D. The simulation shows that cooperative individuals are always unsuccessful. (シミュレーションでは、協力する側は常に失敗することがわかる)

(13) 11段落によれば、シミュレーションではどの行動戦略が支配的になったか？

A. Always betraying to maximize personal gain. (個人的な利益を最大化するために常に裏切る)

B. Cooperating only with individuals who have never betrayed. (裏切ったことのない人とだけ協力する)

C. Never cooperating to avoid being taken advantage of. (利用されるのを避けるために決して協力しない)

D. Generally cooperating, but retaliating when betrayed. (通常は協力するが、裏切られたら報復する)

(14) 12段落の内容に合致しないものは？

A. Selfish strategies can occasionally dominate the group. (利己的な戦略は、時折グループを支配することがある)

B. Selfish strategies struggle to maintain dominance in the long term. (利己的な戦略は、長期的には優位性を維持するのに苦労する)

C. In the simulation, cooperative strategies generally prevail over time. (シミュレーションでは、協力的な戦略が一般的に時間の経過とともに優位になる)

D. A successful strategy in evolutionary terms is one that can dominate briefly. (進化の観点から、成功する戦略とは、短期間で支配できる戦略だ)

(15) 全本文中で言及されていないのは

A. The possibility of alternative organizational structures inspired by life science. (生命科学によって示される別の組織構造の可能性)

B. the stinging behavior of worker bees out of their compassion. (同情の心から生まれる働き蜂の針刺し行動)

C. The concept of “selfish genes” as described by Richard Dawkins. (リチャード・ドーキンスが述べた「利己的遺伝子」の概念)

D. The evolutionary advantage of cooperative behavior in Homo sapiens. (ホモ・サピエンスにおける協力的行動の進化上の利点)

B: out of compassion (同情心から) の部分が誤り。遺伝子の利益に適う行動であると説明されているが、同情心から引き起こされる行動であるとは述べられない。