英　　語

問　題

2025年度

〈R07190017〉

注　意　事　項

1. 試験開始の指示があるまで、問題冊子および解答用紙には手を触れないこと。
2. 問題は２～11ページに記載されている。試験中に問題冊子の印刷不鮮明、ページの落丁・乱丁および解答用紙の汚損等に気付いた場合は、手を挙げて監督員に知らせること。
3. 解答はすべて、ＨＢの黒鉛筆またはＨＢのシャープペンシルで記入すること。
4. マーク解答用紙記入上の注意
   (1) 印刷されている受験番号が、自分の受験番号と一致していることを確認したうえで、氏名欄に氏名を記入すること。
   (2) マーク欄にははっきりとマークすること。また、訂正する場合は、消しゴムで丁寧に、消し残しがないようによく消すこと。

マークする時	●良い　◎悪い　◎悪い
マークを消す時	○良い　◎悪い　◎悪い

5. 記述解答用紙記入上の注意
   (1) 記述解答用紙の所定欄（２カ所）に、氏名および受験番号を正確に丁寧に記入すること。
   (2) 所定欄以外に受験番号・氏名を記入した解答用紙は採点の対象外となる場合がある。
   (3) 受験番号の記入にあたっては、次の数字見本にしたがい、読みやすいように、正確に丁寧に記入すること。

数字見本	0	1	2	3	4	5	6	7	8	9

6. 解答はすべて所定の解答欄に記入すること。所定欄以外に何かを記入した解答用紙は採点の対象外となる場合がある。
7. 問題冊子の余白等は適宜利用してよいが、どのページも切り離さないこと。
8. 試験終了の指示が出たら、すぐに解答をやめ、筆記用具を置き解答用紙を裏返しにすること。
9. いかなる場合でも、解答用紙は必ず提出すること。
10. 試験終了後、問題冊子は持ち帰ること。

Part I. Based on Text I, Text II, and Text III, choose the best option from a – d for questions 1 – 15.

Text I

[A] Social dilemmas are situations in which collective interests are at odds with private interests. In other words, they describe situations in which the fully selfish and rational behavior leads to an outcome smaller than the one the individuals would obtain if they acted collectively. Social dilemmas create then a tension between private interests and public interests, between selfishness and cooperation. Classically, several different social dilemmas have been distinguished, including the Prisoner's dilemma, Public Goods, the Tragedy of the Commons, and, more recently, the Traveler's dilemma. Each of these games has been studied by researchers from different disciplines, such as economists, psychologists, and political scientists, because of the intrinsic philosophical interest in understanding human nature and since many concrete and important situations, such as pollution, depletion of natural resources, and intergroup conflict, can be modelled as social dilemmas.

[B] The classical approaches explain tendency to cooperation dividing people in proself and prosocial types, or appealing to forms of external control, or to long-term strategies in iterated social dilemmas. But, over the years many experiments have been accumulated to show cooperation even in one-shot social dilemmas without external control. These and other earlier experiments have also shown that the rate of cooperation in the same game depends on the particular payoffs, suggesting that most likely humans are engaged in some sort of indirect reciprocity and the same person may behave more or less cooperatively depending on the payoffs. Consequently, the problem of making a predictive division in proself and prosocial types becomes extremely difficult, if not even impossible.

[C] From these experiments, we can argue two conclusions: first, the observation of cooperation in one-shot social dilemmas without external controls suggests that the origin of cooperation lies in the human nature; second, the fact that the rate of cooperation depends on the payoffs suggests that it could be computed, at least approximatively, using only the payoffs. The word *approximatively* stands for the fact that numerous experimental studies have shown that cooperation is based on a number of factors, such as family history, age, culture, gender, even university course, religious beliefs, and decision time. Therefore, we cannot expect a theory able to say, given only the payoffs, the individual-level rate of cooperation in a social dilemma. We can expect instead a model predicting quite accurately population average behaviour using the mean value of parameters that could be theoretically updated at an individual-level.

[D] In this article we make the first step in this direction: (1) we develop the first *predictive* model of cooperation; (2) we show that it explains a number of puzzling experimental findings that are not explained by the standard economic model, such as the fact that the rate of cooperation in the Prisoner's dilemma increases when the cost-benefit ratio decreases, the rate of cooperation in the Traveler's dilemma increases when the bonus/penalty decreases, the rate of cooperation in the Public Goods game increases when the per capita marginal return increases, the rate of cooperation in the Chicken game is larger than the rate of cooperation in the Prisoner's dilemma with *similar* payoffs; (3) we show that it makes satisfactorily accurate quantitative predictions of population average behaviour in social dilemmas.

[E] We mention that there are many other models that can be applied to explain deviation towards cooperation in social dilemmas, including the cognitive hierarchy model, the quantal level-k theory, the level k-theory, the quantal response equilibrium, the inequity aversion models and the noisy introspection model. Nevertheless, all these models use free parameters and so they are not predictive, but descriptive.

[F] The key idea behind the model is simple: since experiments suggest that humans have attitude to (X) by nature, we formalize the intuition that people do not act a priori as single agents, but they forecast how the game would be played if they formed coalitions and then act according to their most optimistic forecast.

[G] We anticipate that forecasts will be defined by making a comparison between incentive and risk for an agent to deviate (or defect) from the collective interest. This comparison leads to associate a probability to the event "*Agent i defects*". As mentioned, we will show that this procedure works satisfactorily well in the prediction of population average behavior. The problem in passing to individual-level predictions is that the event "*Player i defects*", given only the payoffs, is not measurable at an individual-level in any universal and objective sense and the dream is to use the factors mentioned above (family history, age, culture, incentives, iterations, etc.) to define parameters to update the measure of the event "*Player i defects*" at an individual-level. In fact, an attempt to extend the present model to iterated social dilemmas has been reported, leading to promising results: predictions tend to get close to experimental data as the number of iterations increases.

[Adapted from: Capraro, V. (2013). A Model of Human Cooperation in Social Dilemmas. *PLoS ONE, 8(8)*, e72427.]

Questions 1 – 9 refer to Text I.

1. Which of the following best describes a 'proself' action?
   a. acting in a professional manner towards oneself
   b. working actively with other 'selfs'
   c. acting in one's own self-interest
   d. seeking to maximize group payoff

2. Which of the following best defines the term 'payoffs' as it is used throughout the text?
   a. the monetary rewards individuals receive for their expectations in a game or social dilemma
   b. the potential outcomes that can result from choices made by participants in a social dilemma
   c. the measures of an individual's satisfaction derived from participating in a particular activity
   d. the relationship between an individual's actions and their impact on others in a given scenario

3. Why have classical approaches not been suitable for predicting when people will act cooperatively or not?
   a. In experiments, people may vary their level of cooperation depending on the anticipated reward.
   b. Few experiments have been done to look at how people cooperate in social dilemmas.
   c. People are divided into proself and prosocial types, but they keep this information private.
   d. Cooperation has remained difficult to define and to investigate in social experimentation.

4. Which of the following statements best reflects the idea of 'approximatively' as it is used in the text?
   a. An archer's arrows group closely around a target.
   b. A parachutist lands just short of the mark.
   c. Prisoners collaborate for the maximum payoff.
   d. A coalition of parties forms a government.

5. What does the author state as their contribution to explaining social dilemmas in the present work?
   a. They forecast how incentives and risks will appear and disappear in social dilemma scenarios.
   b. They predict how the individual-level rate of cooperation explains puzzling experimental findings.
   c. They explain how populations can be directed towards cooperation in social dilemmas.
   d. They propose a model of cooperation that aims to explain behavior at the level of populations.

6. Which of the following best fits in the blank labeled X in paragraph [F]?
   a. dilemmas
   b. prediction
   c. simplicity
   d. cooperation

7. Which of the following best describes the model proposed by the author?
   a. an evolutionary model that examines how cooperation and defection strategies evolve over time in response to environmental pressures and population dynamics
   b. a game-theoretic approach where individuals make decisions based on maximizing their individual payoffs, assuming others will also act rationally
   c. a predictive model of cooperation, in which humans forecast how games would be played if they formed coalitions, then act according to their most optimistic forecasts
   d. a cognitive hierarchy model that explores the role of social cognition in decision-making processes by examining how individuals perceive and respond to hierarchical structures within a group context

8. Which of the following is implied as a candidate for further investigation regarding the author's model?
   a. How the model can include information about individuals to better predict whether each cooperates.
   b. How a valid method of dividing people into proself and prosocial types can be determined.
   c. How agent defection directly influences the collective behavior of the group.
   d. Whether optimistic forecasts may be predictive as well as descriptive.

9. Paragraphs A – G can be grouped into two parts: (i) ABC and (ii) DEFG. Which of the following best describes the roles of these two parts?
   a. (i) explains various concepts as background and introduces the main problem to be solved and (ii) explains the author's solution to the problem as well as its limitations.
   b. (i) describes several social dilemmas that people face and how they resolve them and (ii) shows how these solutions to social dilemmas are valid due to people's roles as single agents.
   c. (i) gives the background of models of dilemmas in society according to researchers and (ii) lists the incentives and risks that individuals have to consider when solving a social dilemma.
   d. (i) discusses the classical approaches to understanding payoffs in game theory and (ii) describes how one predicts how an individual will behave within any given social dilemma.

Text II

Altruism is formally defined as unilaterally paying a cost $c \geq 0$ to give a benefit b to another and is traditionally measured using a Dictator game. Here a dictator is given an endowment $x > 0$ and must then decide how much, if any, to donate to a recipient who was given nothing. The recipient has no input in the process and simply accepts the donation. Givings in the Dictator game are usually considered as an appropriate measure of altruism and recent experiments have shown that indeed they positively correlate to altruistic acts in real-life situations.

The main difference between cooperation and altruism is that altruism is unilateral: there is no way to get rewarded. Another difference is that we allow altruist action at negligible cost. In other words, the important part is to create a benefit to someone else without getting anything back. Benevolence is an extreme form of altruism, where the final result of the act is that the recipient has a larger payoff of the actor.

Examples of benevolence in everyday life abound. The sharing of one's food causing the sharer to go hungry, campaigning on behalf of a VIP in order to promote their agenda, or something as trivial as 'liking' or sharing a status on social networks so as to increase the reputation of another.

[Adapted from: Capraro, V., Smyth, C., Mylona, K., & Niblo, G.A. (2014). Benevolent Characteristics Promote Cooperative Behaviour among Humans. *PLoS ONE 9(8)*, e102881.]

※ページ下部に出典を追記しております。

Questions 10 – 12 refer to Text I and Text II.

10. Which of the following best describes how Texts I and II differ in their approach to studying human behavior within social dilemmas?
    a. Text I uses quantitative predictions based on cultural factors, whereas Text II relies on qualitative observations of altruistic actions.
    b. Text I discusses cooperation across various games, while Text II focuses on altruistic actions through a specific experimental setup (Dictator game).
    c. While Text I investigates the impact of individual differences on population-level behaviors, Text II examines how these same factors influence decisions in a one-shot scenario.
    d. The texts present a unified theory that encompasses both cooperation and altruism within social dilemmas without distinguishing between them.

11. Which of the following correctly orders the four behavior types according to decreasing levels of concern for others in decision making?
    a. altruism, benevolence, proself, prosocial
    b. benevolence, altruism, prosocial, proself
    c. proself, prosocial, altruism, benevolence
    d. prosocial, altruism, proself, benevolence

12. Which of the following best expresses how the author's model in Text I might account for benevolence in social dilemmas?
    a. Some agents may act benevolently, but the population's behavior could still be predicted.
    b. Benevolence deviates from prosocial behavior, so average payoffs of the scenario cannot be predicted.
    c. Individual-level predictions for an actor's benevolent behavior is the same in every social dilemma.
    d. Benevolent acts are not consistent with the model.

Text III

In 1992, Northern Cod populations fell to 1% of historical levels, due in large part to decades of overfishing. The Canadian Federal Minister of Fisheries and Oceans, John Crosbie, declared a moratorium on the Northern Cod fishery, which for the preceding 500 years had primarily shaped the lives and communities of Canada's eastern coast. A significant factor contributing to the depletion of the cod stocks off Newfoundland's shores was the introduction of equipment and technology that increased landed fish volume. From the 1950s onwards, new technology allowed fishers to trawl a larger area, fish more in-depth, and for a longer time. By the 1960s, powerful trawlers equipped with radar, electronic navigation systems, and sonar allowed crews to pursue fish with unparalleled success, and Canadian catches peaked in the late-1970s and early-1980s. Cod stocks were depleted at a faster rate than could be replenished.

The trawlers also caught enormous amounts of non-commercial fish, which were economically unimportant but very important ecologically. This incidental catch undermined the stability of the ecosystem by depleting stocks of important predator and prey species.

Approximately 37,000 fishermen and fish plant workers lost their jobs due to the collapse of the cod

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※WEB 掲載に際し、以下のとおり出典を追記しております。

TextⅡ:

Text Ⅲ:
Collapse of the Atlantic northwest cod fishery Wikipedia
https://en.wikipedia.org/wiki/Collapse_of_the_Atlantic_northwest_cod_fishery

fisheries; many people had to find new jobs or further their education to find employment.

[Adapted from: Wikipedia contributors. "Collapse of the Atlantic northwest cod fishery." Wikipedia, The Free Encyclopedia, 1 May 2024. Accessed on 11 Jun. 2024.] ※3ページ下部に出典を追記しております。

Questions 13 – 15 refer to Text I, Text II, and Text III.

13. If fishermen are taken as the individual participants in this social dilemma, which of the following is true of the fishermen's actions with respect to the model described in Text I and the concepts described in Text II?
    a. They are consistent with the model because the fishermen apparently acted entirely out of self-interest.
    b. They are not consistent with the model because the fishermen apparently did not consider their actions within the context of a coalition.
    c. They are not consistent with the model because altruism does not seem to have been considered a course of action by individual fishermen.
    d. They are consistent with the model because the fishermen's behavior can be considered as a form of benevolence.

14. Which of the following statements using concepts introduced in Texts I and II is true of the cod overfishing problem?
    a. Fishermen in the 1950s onward understood the benevolence associated with group cooperation, leading to accurate forecasts of others' behavior.
    b. The prosocial acts of the Canadian government led to the altruism of some fishermen who gave up their jobs and left the industry.
    c. If many individual fishermen had behaved altruistically, the government would not have needed to declare a moratorium on cod fishing.
    d. If all of the fisherman had acted benevolently from the 1950s onward, then the problem would have been even worse.

15. Which of the following expresses a valid analysis of a point from Text III with respect to concepts in Text I and Text II?
    a. The capture of non-commercial species of fish other than cod was motivated by the altruism of the fishermen seeking to minimize prey species and maximize the cod populations.
    b. The Canadian government's declaration of a moratorium on cod fishing off the eastern coast of Canada was a benevolent act that saved the fishing industry in the long run.
    c. The introduction of technology that increased landed fish volume and allowed larger trawling areas, deeper fishing, and longer durations led to increased short-term payoffs for fishermen.
    d. The loss of jobs by many in the fishing industry was due to their defection from participating in the overfishing of cod during the 1970s and early 1980s.

Part II. Read the passage and rearrange the seven words in 1 – 5 in the correct order. Then choose from a – d the option that contains the third and fifth words.

Algorithms for finding prime numbers date back at least as far as ancient Greece, where mathematicians used a straightforward approach known as the Sieve of Eratosthenes. The Sieve of Eratosthenes works as follows: To find all the primes less than *n*, begin by writing down all the numbers from 1 to *n* in sequence. Then cross out $_1$(that / of / all / multiples / are / numbers / the) 2, besides itself. Take the next smallest number that hasn't been crossed out and cross out all multiples of that number. Keep going like this, and the numbers that $_2$(the / the / end / remain / are / at / primes).

For millennia, the study of prime numbers was believed to be one of the most useless branches of mathematics. But it lurched into practicality in the twentieth century, becoming pivotal in cryptography and online security. As it happens, it is much easier to $_3$(than / factor / multiply / them / primes / together / to) back out. With big enough primes—say, a thousand digits—the multiplication $_4$(done / be / fraction / in / a / can / of) a second while the factoring could take literally millions of years; this makes for what is known as a "one-way function." In modern encryption, for instance, secret primes known only to the sender and recipient $_5$(multiplied / to / create / huge / get / composite / together) numbers that can be transmitted publicly without fear, since factoring the product would take any eavesdropper way too long to be worth attempting. Thus, virtually all secure communication online—be it commerce, banking, or email—begins with a hunt for prime numbers.

[Adapted from: Christian, B. & Griffiths, T. (2016). *Algorithms to Live By: The Computer Science of Human Decisions*, William Collins.]

※WEB 掲載に際し、以下のとおり出典を追記しております。
Christian, Brian, and Tom Griffiths. Algorithms to Live by: The Computer Science of Human Decisions. William Collins, 2016, pp. 243–244.

1.	a. 3rd: are 5th: all	b. 3rd: numbers 5th: are	c. 3rd: that 5th: of	d. 3rd: numbers 5th: all
2.	a. 3rd: the 5th: are	b. 3rd: primes 5th: are	c. 3rd: primes 5th: remain	d. 3rd: the 5th: primes
3.	a. 3rd: to 5th: primes	b. 3rd: than 5th: together	c. 3rd: together 5th: to	d. 3rd: than 5th: them
4.	a. 3rd: a 5th: of	b. 3rd: fraction 5th: done	c. 3rd: a 5th: be	d. 3rd: done 5th: a
5.	a. 3rd: composite 5th: multiplied	b. 3rd: together 5th: create	c. 3rd: composite 5th: together	d. 3rd: multiplied 5th: huge

Part III. Answer the questions in Sections A and B.

Section A: Read the text and choose the best option from a – d for questions 1 – 6.

Among the questions that attracted interest in that fanatically inquisitive age was one that had puzzled people for (i) very long time—(A), why ancient clam shells and other marine fossils were so often found on mountaintops. How on earth did they get there? (x)Those who thought they had a solution fell into two opposing camps. One group, known as the Neptunists, were convinced that everything on the Earth, including seashells in improbably lofty places, could be explained by rising and falling sea levels. They believed that mountains, hills and other features were as old as the Earth itself, and were changed only when water sloshed over them during periods of global flooding.

Opposing them were the Plutonists, who noted that volcanoes and earthquakes, among other enlivening agents, continually changed (ii) face of the planet, but clearly owed nothing to wayward seas. (iii) Plutonists also raised awkward questions about where all (iv) water went when it wasn't in flood. If there was enough of it at the time to cover the Alps, then where, pray, was it during times of tranquility, such as now? Their belief was that the Earth was subject to profound internal forces as well as surface ones. (B), they couldn't convincingly explain how all those clam shells got (y)there.

(C) puzzling over these matters that Hutton had a series of (v) exceptional insights. From looking at his own farmland, he could see that soil was created by the erosion of rocks and that particles of this soil were continually washed away and carried off by rivers and streams and redeposited elsewhere.

[Adapted from: Bryson, B. (2003). *A short history of nearly everything.* Broadway Books.]

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1. Which of the blanks labeled i – v can be filled with the article 'T/the'?
   a. i, ii, and v only　b. i, iii, and iv only　c. ii, iii, and iv only　d. iii, iv, and v only
2. Which of the following best fits in the blank labeled A?
   a. namely　b. actually　c. for instance　d. indeed
3. Which of the following is most consistent with the meaning of '(x)Those who thought they had a solution'?
   a. puzzled people　b. Neptunists
   c. Plutonists　d. Neptunists and Plutonists
4. Which of the following best fits in the blank labeled B?
   a. For example　b. Therefore　c. However　d. Furthermore
5. Which of the following is most consistent with the meaning of '(y)there'?
   a. underwater　b. on mountaintops　c. in volcanoes　d. on the planet
6. Which of the following best fits in the blank labeled C?
   a. It was while　b. For the purpose of
   c. In addition to　d. Considering the result of

Section B: The six paragraphs [A] – [F] below make up a passage but are not properly ordered. Moreover, the five sentences (1) – (5) in paragraph [A] are not properly ordered, either. Read the passage and choose the best option from a – d for questions 7 and 8.

[A] (1) Although few studies have investigated the effect of mindset on acquiring musical skill, there is reason to think it could play a role.
(2) Although mindset correlated significantly with only one practice factor (organization of practice/ record keeping), it also correlated significantly with task motivation, which reflects a person's drive to master new material.
(3) This pattern of correlations is consistent with the hypothesis that mindset is related to one's propensity to practice, which in turn enhances skill acquisition.
(4) Smith (2005) examined correlations between mindset, goal orientation, and practice in 344 undergraduate instrumentalists.
(5) In turn, task motivation correlated significantly with a composite factor representing degree of engagement in a variety of practice activities.

[B] Domain-specific ability factors also appear to play an important role in the acquisition of musical skill. For instance, Ruthsatz et al. (2008) found that scores on the Advanced Measures of Music Audiation (Gordon, 1989), a measure of auditory discrimination ability, predicted music achievement in high school band members ($r = 0.22$, $p = .01$).

[C] Numerous studies have examined the relation between non-ability factors and skill acquisition in complex tasks. Recently, however, there has been a great deal of interest in whether skill acquisition can be predicted by people's beliefs, or mindset, about their abilities. In a series of studies, Dweck and colleagues reported that people with a growth mindset, who believe that their ability in a domain can be changed with effort, showed higher levels of achievement than people with a fixed mindset, who believe that their ability is unchangeable. Nevertheless, a recent meta-analysis by Sisk, Burgoyne, Sun, Butler, and Macnamara (2018) revealed that the average relationship between mindset and academic achievement is relatively weak ($r = 0.10$, $p < .001$).

[D] People differ in the rate at which they acquire complex skills. Music is no exception. As is well known, some people develop musical skill far more rapidly than others, with prodigies at one extreme, and people with congenital amusia at the other.

[E] There have been many reports of significant associations between domain-general ability factors and musical skill. For example, in a study of 178 high school band members, Ruthsatz, Detterman, Griscom, and Cirullo (2008) found that scores on a test of fluid intelligence (Raven's Advanced Progressive Matrices) correlated significantly with music achievement ($r = 0.25$, $p = .01$).

[F] What accounts for the striking inter-individual variability in acquiring musical and other complex skills? This question can be framed in terms of a distinction between ability and non-ability factors. Ability factors refer to stable skills or capacities and can be domain-general or domain-specific. Domain-general abilities (e.g., working memory capacity) can be brought to bear on a wide range of tasks, whereas domain-specific abilities (e.g., music aptitude) are applicable to a relatively narrow range of tasks. Non-ability factors include dispositional attributes such as personality, motivation, attitudes, interests, and beliefs. At least in theory, tests of ability factors capture maximal performance, whereas tests of non-ability factors capture typical performance.

[Adapted from: Burgoyne, A. P., Harris, L. J., & Hambrick, D. Z. (2019). Predicting piano skill acquisition in beginners: The role of general intelligence, music aptitude, and mindset. *Intelligence. 76*, 101383.] ※ページ下部に出典を追記しております。

7. Which of the following shows the best (most coherent) sentence order for paragraph [A]?
a. 4–1–3–2–5 b. 2–4–3–1–5 c. 1–4–2–5–3 d. 4–3–1–2–5

8. Which of the following shows the best (most coherent) paragraph order for the passage?
a. C–F–E–A–B–D b. D–F–B–E–A–C c. D–F–E–B–C–A d. F–D–B–E–C–A

Part IV. Read the texts in Sections A and B and answer the questions.

Section A: Choose the best option from a – d for questions 1 – 5.

Being able to detect and avoid fallacies has been viewed as a supplement to criteria of good reasoning. The knowledge of fallacies is needed to arm us against the most enticing missteps we might take with arguments. Following are some common fallacies.

The fallacy of *equivocation* is an argument which exploits the ambiguity of a term or phrase which has occurred at least twice in an argument, such that on the first occurrence it has one meaning and on the second another meaning. A familiar example is:

> The end of life is death. Happiness is the end of life. So, death is happiness.

'The end of life' first means ceasing to live, then it means purpose. That the same set of words is used twice conceals the fact that the two distinct meanings undermine the continuity of the reasoning, resulting in a *non-sequitur*.

The fallacies of *composition* and *division* occur when the properties of parts and composites are mistakenly thought to be transferable from one to the other. Consider the two sentences:

> a. Every member of the investigative team was an excellent researcher.
> b. It was an excellent investigative team.

Here it is 'excellence' that is the property in question. The fallacy of composition is the inference from (a) to (b) but it need not hold if members of the team cannot work cooperatively with each other. The (A) inference from (b) to (a)—the fallacy of division—may also fail if some essential members of the team have a supportive or administrative role rather than a research role.

There are a number of fallacies associated with causation. The most frequently discussed is *post hoc ergo propter hoc*. This fallacy ascribes a causal relationship between two states or events on the basis of temporal succession. For example,

> Unemployment decreased in the fourth quarter because the government eliminated the gasoline tax in the second quarter.

The decrease in unemployment that took place after the elimination of the tax may have been due to other causes; perhaps new industrial machinery or increased international demand for products.

[Adapted from: Hansen, H. (2023). Fallacies. In Edward N. Z. & Nodelman, U. (Eds.), *The Stanford Encyclopedia of Philosophy*.]

1. Which of the following best fits in the blank labeled A?
   a. equivalent b. reverse c. divisive d. separate

2. Which fallacy is evidenced by the commentators in the following scenario? "After a major TV news program was found guilty of spreading misinformation, many commentators argued that we should no longer trust media organizations."
   a. post hoc ergo propter hoc b. composition
   c. division d. equivocation

3. Which fallacy is evidenced by the critics in the following scenario? "Critics blamed the current administration for this year's economic recession, arguing that before the current administration took office, the nation had experienced three quarters of economic growth."
   a. post hoc ergo propter hoc b. composition
   c. division d. equivocation

4. What term is being equivocated in the following classic joke? "My dog has no nose." "Well, then, how does your dog smell?" "It smells awful!"
   a. awful b. dog c. nose d. smell

5. Which of the following is implied by the text?
   a. The equivocation and post hoc ergo propter hoc fallacies can be seen as opposites.
   b. The post hoc ergo propter hoc fallacy occurs most often in political discussions.
   c. A composition fallacy always co-occurs with a division fallacy.
   d. Care is needed because people may argue using fallacies such as equivocation.

Section B: Choose the best option from a – d for questions 6 – 10.

Research has found that human learning often follows a simple mathematical function. For example, visual tasks such as the improvement in time taken to read an inverted text or the time taken to identify multiple targets in a page of letters have been found to follow this function. It also appears to hold for motor tasks like those where the cursor needs to be placed on an object which appears on a computer screen.

This relationship between the number of times a task is completed and the time taken to complete the task is represented by Equation (1) below. That is, plotting the logarithm of the time to perform a task against the logarithm of the number of times the task has been completed yields a straight line. It is called the power law of practice:

$$T = aN^{-b}, \quad (1)$$

where T is the time to complete a task, N is the number of times the task has been completed, and a and b are positive constants.

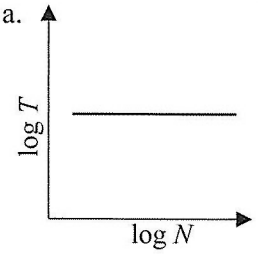
The implication is as the number of times a task is completed increases, the learning benefit diminishes. For example, perhaps there is a 10-second difference in the time taken to complete a task between the first and second practice. The difference in time taken might only be 1 second between the 100th and the 101st completion.

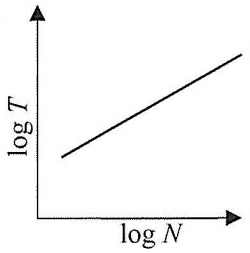
Suhaib (2018) attempted to determine if learning to type Japanese followed the power law of practice and found that the number of Japanese characters that non-native speakers could type in a minute increased as the participants practiced more. In the beginning they could only type an average of 10 characters per minute. By the time they had completed 10 trials, they could type 20 characters per minute. Finally, after 20 trials they were able to type 23 characters per minute.

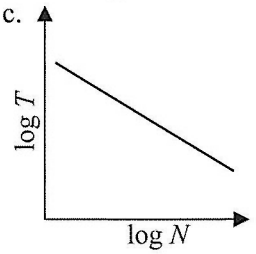
[Adapted from: Newell, A. & Rosenbloom, P. S. (2013). Mechanisms of skill acquisition and the law of practice. In *Cognitive skills and their acquisition*. Psychology Press.] ※ページ下部に出典を追記しております。

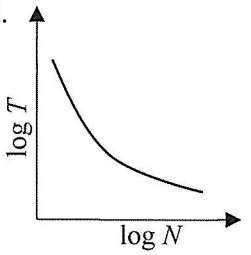
6. Which of the following activities would most typically follow the power law of practice for a beginner?
   a. following the school rules
   b. taking a break from homework
   c. cutting an onion into slices
   d. comprehending the theory of evolution

7. Which of the following graphs best represents the power law of practice?

a.


b.


c.


d.


8. Which of the following best describes the power law of practice?
   a. There is more improvement in the time to complete a task when one starts learning.
   b. Improvement in time to complete a task takes place gradually in the beginning.
   c. While failure is possible at the beginning, the chance of it decreases with time.
   d. Once a certain amount of practice is completed, one can do the task perfectly.

9. Do the results from Suhaib's (2018) study support the power law of practice?
   a. Yes, the number of trials completed by the participants increased throughout the experiment.
   b. No, the time taken to type a character increased towards the end of the experiment.
   c. No, the number of characters typed increased more towards the end of the experiment.
   d. Yes, the decrease in time taken to type a character was smaller at the end of the experiment.

10. Which of the following statements (i) – (iii) does the text imply about research practices in human learning?
   (i) Researchers investigate if human learning in new situations follows a mathematical function.
   (ii) To confirm the validity of a mathematical function, statistical computer trials are undertaken.
   (iii) Research is conducted by collecting data while observing humans doing learning tasks.

   a. (i) only
   b. (i) and (iii) only
   c. (ii) and (iii) only
   d. (i), (ii), and (iii)

Part V.

For questions 1 – 15, two definitions are given with one sample sentence each. Think of a word that matches both definitions and also fits in the blanks in both sentences. Convert each letter of the word into a number 1 to 4 according to the table below: number 1 represents letters *a* – *g*, 2 represents *h* – *m*, 3 represents *n* – *s*, and 4 represents *t* – *z*. Then choose the matching sequence of numbers from options a – d. For example, if the word you think of is *wise*, for which the first letter *w* is given, the remaining letters would be changed into *2* for *i*, *3* for *s*, and *1* for *e*. Hence, the correct answer would be *w231*.

Number	Letters
1	a, b, c, d, e, f, g
2	h, i, j, k, l, m
3	n, o, p, q, r, s
4	t, u, v, w, x, y, z

1. (i) unaffected by a particular disease because of either preventive measures or inherent resistance: The vaccine made them (*i*__) to the disease for life.
   (ii) protected from punishment or legal action due to special status or privilege: The ambassador was (*i*__) from prosecution under international law.

   a. *i*313322 b. *i*2313212 c. *i*4421334 d. *i*22431

2. (i) to attain a high level of accomplishment: His ability to adapt has allowed him to (*s*__) in a competitive industry.
   (ii) to become the next person to hold a particular position or title after someone else: The new principal will soon (*s*__) the retiring one.

   a. *s*411111 b. *s*41224 c. *s*23221 d. *s*3411112

3. (i) extremely important or essential for the existence of something: Education is (*v*__) for personal and professional growth.
   (ii) linked with life or important in keeping a person alive: The patient's (*v*__) signs were monitored closely during surgery.

   a. *v*134 b. *v*2412 c. *v*3312 d. *v*24313112

4. (i) to be equivalent or interchangeable, as when two items have identical properties or characteristics: The company's policies on employee benefits (*c*__) to industry standards.
   (ii) to exchange messages: He used to (*c*__) with his friends by sending handwritten letters.

   a. *c*11131123 b. *c*213214 c. *c*333133331 d. *c*232434

5. (i) a job or rank: The young lawyer had a high paying (*p*__) at a big law firm.
   (ii) a belief or assertion: The president's (*p*__) was that global warming was an important issue.

   a. *p*3324233 b. *p*134 c. *p*32231 d. *p*131244

6. (i) a set of words which conveys a meaning: The simple (*s*__) may contain a verb, nouns, and adjectives.
   (ii) to declare the punishment decided for someone who breaks the law: The defendant was (*s*__)*d* to fifteen years in federal custody.

   a. *s*32122131 b. *s*3433331 c. *s*1341311 d. *s*431131

7. (i) to break down food in the body to use as energy: I had a hard time (*d*__)*ing* the spicy food.
   (ii) a brief account or summary: This program gives you a (*d*__) of today's main news stories at the end.

   a. *d*33114 b. *d*21134 c. *d*234441 d. *d*324

8. (i) a meeting between the heads of government from several nations to address global problems: The world leaders held a (*s*__) to discuss climate change and its effects.
   (ii) the peak of a mountain or hill: The climbers finally made it to the (*s*__), exhausted but proud.

   a. *s*343323 b. *s*1341311 c. *s*222314134 d. *s*42224

9. (i) the branch of science dealing with motion: Classical (*m*__) is a required course for physics majors.
   (ii) the operational details of something: Biologists study the (*m*__) of the human body.

   a. *m*3433 b. *m*112121 c. *m*314233 d. *m*11213213

10. (i) to give someone some information or instructions so they are ready for something: The police (*b*__)*ed* the journalists on the latest developments in the ongoing investigation.
    (ii) lasting only a short period of time: My (*b*__) nap refreshed me for the rest of the day.

    a. *b*3211 b. *b*3334 c. *b*221342 d. *b*34121

11. (i) a regular gathering of an organization or business: People were excited to see the new product announcements at the annual technology (*c*__) in New York.
    (ii) a commonly-followed guideline or practice: For many decades, it was a (*c*__) in English writing that periods should be followed by two spaces, but commas by only one.

    a. *c*12343412 b. *c*334134233 c. *c*143311213 d. *c*2314233

12. (i) a distinctive quality or trait of something or someone, often making it unique or interesting: The museum's collection of rare artifacts is one of its most impressive (*f*__)*s*.
    (ii) to include something or someone as a prominent part of something else: The concert will (*f*__) famous musicians from around the world.

    a. *f*13323341 b. *f*11433 c. *f*114431 d. *f*2212223324

13. (i) to accept something unwillingly because one is not powerful enough: I had no choice but to (*s*__) to the company's demands.
    (ii) to present something formally for consideration or for a decision: It took him so long to (*s*__) his proposal for the new project.

    a. *s*334131 b. *s*41224 c. *s*3433322 d. *s*3232

14. (i) the boundary of something: I was really scared when I stood on the (*e*__) of the cliff.
    (ii) an advantage over something or someone: This new smartphone has an (*e*__) over its competitors.

    a. *e*111 b. *e*33341 c. *e*2322212 d. *e*314331234

15. (i) to become or make something fixed or attached to a surface: This magnet will (*s*__) to the refrigerator.
    (ii) a long thin piece of wood or other hard material: My friend uses a (*s*__) to walk when she's hiking.

    a. *s*3341142 b. *s*113112 c. *s*434 d. *s*4212

[End of Exam]