

I. 次の文章に関して、空欄補充問題と読解問題の二つがあります。まず、[1]から[20]の空欄を埋めるのに、文脈的に最も適切な語を 1 から 3 の中から選び、その番号を解答欄(1)から(20)にマークしなさい。次に、内容に関する[21]から[30]の設問には、1 から 4 の選択肢が付されています。そのうち、文章の内容からみて最も適切なものを選び、その番号を解答欄(21)から(30)にマークしなさい。

Some people think that science and common sense are alike because science is a systematic and controlled extension of common sense, which is, in turn, a series of concepts and conceptual schemes satisfactory for practical uses. But science and common sense differ in two significant ways. First, their uses of conceptual schemes and theoretical structures are strikingly different. [1](1. Since 2. While 3. Now that) the man in the street uses “theories” and concepts, he ordinarily does so in a loose fashion. He often accepts fanciful explanations of natural and human phenomena. An illness, for instance, may be thought to be a punishment for sin. The scientist, on the other hand, systematically builds her theoretical structures, tests them for [2](1. internal 2. external 3. social) consistency, and subjects aspects of them [3](1. for 2. to 3. through) empirical testing. Furthermore, she knows that the concepts she is using are man-made terms that may or may not exhibit a close relation to reality.

Secondly, the scientist systematically and empirically tests her hypotheses. The man in the street certainly tests his “hypotheses,” too, but he tests them in what might be [4](1. defined 2. assumed 3. called) a selective fashion. He often “selects” evidence simply because it is consistent with his hypothesis. Take the stereotype: Fast food is bad for you. If some people believe this, they can easily “verify” their belief by noting that many kinds of fast food are unhealthy. [5](1. Exceptions 2. Rules 3. Objectives) to the stereotype, such as healthy or low-fat fast foods, are not taken into account. The true social scientist, knowing this “selection tendency” to be a common psychological phenomenon, carefully guards her research against her own preconceptions and predilections, and avoids selecting only the kinds of data that support her hypotheses. Most importantly, she is not content with an armchair exploration of a relation; she feels it [6](1. uncomfortable 2. obligatory 3. stressful)

to test her hypothesis against empirical reality. She thus emphasizes the importance of systematic, controlled, and empirical testing of her hypotheses.

There is little doubt that hypotheses are important and indispensable tools for scientific research. Indeed you can call hypotheses the [7](1. working 2. newly-devised 3. easy-to-access) instruments of theory. Hypotheses can be deduced from theory. If, for instance, we are working on a theory of aggression, we are presumably looking for causes and effects of aggressive behavior. We might have observed cases of aggressive behavior occurring after frustrating circumstances. The theory, then, might include the following proposition: Frustration produces aggression. From this proposition, we may deduce more specific hypotheses, such as the following: Preventing children from reaching goals they find desirable (thus causing frustration) will result in their fighting with each other (i.e., aggression); if children are deprived of parental love (causing frustration), they will react, in part, with aggressive behavior.

The use of the hypothesis in scientific investigation is similar to playing a game of chance. The rules of the game are [8](1. held forth 2. set up 3. taken over), and bets are made, in advance. One cannot change the rules after an outcome, [9](1. seldom 2. never 3. nor) can one change one's bet after making it. That would not be fair. One cannot throw the dice first and then bet. Similarly, if one gathers data first, then [10](1. selects 2. throws 3. spares) only a few data and comes to a conclusion on the basis of those few data, one has violated the rules of the scientific game. The game would not be fair because the investigator could easily [11](1. capitalize on 2. take over 3. give in), say, two significant relations out of five tested. What happens to the other three? They might be forgotten. But in a fair game every throw of the dice is counted, in the [12](1. game 2. hypothesis 3. sense) that one either wins or does not win on the basis of the outcome of each throw. The main point is that the purpose of hypotheses is to direct inquiry. As Darwin pointed out long ago, all observations have to be for or against some view, if they are to be of any use.

Hypotheses are derived from theory. A good theory produces good hypotheses. And yet, it is also hypotheses that make theories better and sounder. There are two aspects to handling hypotheses: hypothesis-making and hypothesis-testing. [13](1.

Distinguishing 2. Discounting 3. Defending) these aspects is the key to seeing how hypotheses can contribute to theory. For example, Freud had a theory of anxiety that included the concept of "repression." [14](1. By 2. On 3. To) repression, Freud meant the forcing of unacceptable ideas into the unconscious. Testing Freud's theory is thus a difficult matter, because the concepts of "repression" and the "unconscious" need to be defined in a measurable, empirical way. This is [15](1. part 2. some 3. most) of making a hypothesis and testing it empirically. If the concepts used in a hypothesis are operationally defined, that is, empirically testable, then a scientist can test the theory itself, and the theory can be improved upon. [16](1. Relative to 2. Depending on 3. Owing to) the outcome of the hypothesis-testing, one can determine whether to support the hypothesis or to reject it. The hypothesis-testing activity tests not only the hypothesis in question but also the validity of the theory under consideration.

Hypotheses are important in scientific investigation in that they can be tested and shown to be probably true or probably false. Isolated facts are not tested; only relations are tested. The fact that hypotheses are relational propositions is the main [17](1. way 2. reason 3. argument) they are used in scientific inquiry. They are, in essence, predictions of the form, "If A, then B," which we set up to test the relation between A and B. We [18](1. let 2. make 3. see) the facts have a chance to establish the probable truth or falsity of the hypothesis. A hypothesis is a prediction. It says that if x occurs, y will also occur. That is, y is predicted from x. If, then, x is made to occur, and it is observed that y also occurs, then the hypothesis is confirmed. This is more powerful evidence than simply observing, [19](1. with reservations 2. within the limit 3. without prediction), the co-varying of x and y. The scientist makes a bet that x leads to y. If, in an experiment, x does lead to y, then she wins the bet. She cannot just enter the game at any point and pick a perhaps accidental common occurrence of x and y. Games are not played this way. She must play according to the rules, and the rules in science are made to minimize error.

Hypotheses are an essential part of the rules of the game. The scientist disciplines the whole business by writing systematic and testable hypotheses. If an explanation cannot be formulated in the form of a testable hypothesis, then it can be

considered to be a [20](1. metaphysical 2. plausible 3. critical) explanation and thus not amenable to scientific investigation. As such, it is dismissed by the scientist as being of no interest.

Source: Adapted from Fred N. Kerlinger, *Foundations of Behavioral Research (2nd Edition)*

[21] In the article, the main point of comparing the use of a hypothesis to a game is to show that both of them

1. involve the risk of being wrong.
2. follow the rules of the game.
3. deal with random phenomena.
4. involve a zero sum game.

[22] The “selection tendency” is mentioned in the 2nd paragraph to explain the fact that

1. scientists select the data that support their hypothesis based on their predictions.
2. scientists select the best data because the data collected include a variety of uncontrolled factors.
3. people are affected by their pre-existing knowledge when interpreting things around them.
4. lay persons as well as scientists intentionally select certain data because they fit their intuitions.

[23] What is meant by the statement “The scientist makes a bet that x leads to y” in the 6th paragraph?

1. The scientist sometimes enjoys playing a game of chance.
2. The scientist cannot always determine which is the cause and which is the effect.
3. The scientist makes a prediction in the form of the hypothesis “if x, then y.”
4. The scientist makes a guess about the values of x and y.

[24] According to the article, which of the following statements about the relationship between theory and hypothesis in scientific investigation is not true?

1. Hypotheses are derived from theory.
2. Theories are made better by hypotheses.
3. The validity of theories is tested through hypothesis-testing.
4. Scientists start with hypotheses and then construct theories.

[25] In the 3rd paragraph, the relationship between frustration and aggression is used as an example to show that

1. a theory provides a framework for making hypotheses.
2. a hypothesis guides how a theory is constructed.
3. a proposition is different from a hypothesis.
4. a hypothesis is a statement about the results of a phenomenon.

[26] In the article, which of the following statements is true of the description of the Freudian theory of anxiety?

1. The concepts included in the theory are well-defined and interconnected.
2. Having a theory does not always result in well-defined concepts and testable hypotheses.
3. The concept of repression can be described independently of the notion of the unconscious.
4. The concept of anxiety has been made explicit with the use of the concept of repression.

[27] According to the 5th paragraph, hypothesis-making and hypothesis-testing are bridged by means of

1. the operational definition of concepts.
2. the refinement of theory.
3. the explanatory power of concepts.
4. the validity of the theory.

[28] What is the most appropriate interpretation of “hypotheses are relational propositions” in the 6th paragraph?

1. Hypotheses are closely related to propositions.
2. Hypotheses are statements that contain the relations between x and y.
3. Hypotheses are propositions related to other propositions.
4. Hypotheses are statements about the relations between different propositions.

[29] The statement “An illness, for instance, may be thought to be a punishment for sin” in the 1st paragraph is intended to show that

1. scientists do not accept superstitions no matter how plausible they are.
2. ordinary people tend to accept common views without question.
3. scientists should test the relationship between illness and punishment.
4. there are many views that cannot be tested on empirical grounds.

[30] Which of the following statements about scientists is not true according to this article?

1. Scientists believe that theoretical concepts reflect the real world.
2. Scientists maintain that their theories should be checked against empirical reality.
3. Scientists are aware that their hypotheses are not immune to their personal bias.
4. Scientists make predictions about the outcome of their research.

II. 次の文章に関して、空欄補充問題と読解問題の二つがあります。まず、[31]から[50]の空欄を埋めるのに、文脈的に最も適切な語を1から3の中から選び、その番号を解答欄(31)から(50)にマークしなさい。次に、内容に関する[51]から[60]の設問には、1から4の選択肢が付されています。そのうち、文章の内容からみて最も適切なものを選び、その番号を解答欄(51)から(60)にマークしなさい。

In 1996, the World Food Summit set a goal of halving the number of hungry people worldwide by 2015. In 2000, the United Nations as a whole adopted a set of goals which included halving poverty and hunger by the year 2015. The world came together in order to tackle the hunger problem. And yet, conditions have [31](1. deteriorated 2. rebounded 3. developed) in many places. Indeed, according to *The State of Food Insecurity in the World 2003*, the annual hunger report of the Food and Agriculture Organization (FAO) of the United Nations, the number of people suffering from hunger worldwide has begun to rise once more.

With a view to identifying the causes of this failure, the report begins with an analysis of countries that have, [32](1. deceptively 2. naturally 3. on the contrary), been successful in dealing with hunger. In Brazil and in China, rapid overall economic growth has led to significant growth of agriculture in particular. Both countries have made an [33](1. obligation 2. illustration 3. effort) to control population growth and develop human resources, and have relatively low rates of HIV infection.

Nevertheless, the number of hungry people has grown in many other regions. Drought, civil war and growing numbers of AIDS patients have led to stagnation in agricultural food production. HIV/AIDS has [34](1. robbed 2. attacked 3. downgraded) many developing countries of valuable labor, leading to poverty and hunger. In some developing countries, on the other hand, agricultural production has been expanded to an [35](1. unreasonable 2. appropriate 3. accumulated) level to support population growth, leading to environmental problems.

Subsequently, in September of 2006, there was a meeting at the Food and Agriculture Organization in Rome to identify ways to achieve the U.N. goal of halving hunger by 2015. At the meeting, all of the participants were asked how the pace of

reducing hunger could be accelerated, [36](1. even though 2. since 3. while) a 2005 review showed that progress was poor in most developing countries. Almost all the participants felt that the greatest threats to food security in the future come, first, from climate change (potential adverse changes in temperature, rainfall, and sea level), and, second, from the loss of biodiversity. There was a great deal of consensus on this issue among the diverse groups of representatives, including a farmer from Senegal, leaders of Oxfam and other non-governmental organizations, agricultural scientists, and food security specialists. The suggested ways to go forward [37](1. ranged 2. sprang 3. diverged) from faithful implementation of the Kyoto Protocol to acting on the provisions of biodiversity, climate, and the prevention of the spread of deserts.

The growing awareness of the impact of climate change and biodiversity on food security and hunger has produced some interesting approaches to the issue. M.S. Swaminathan, the Chair for Eco-technology in U.N.E.S.C.O., described what he considers to be a way to turn awareness into action. Speaking on "Agriculture on Our Spaceship Earth" in 1973, he proposed a strategy called "do ecology" to deal with problems in developing countries. The "do ecology" strategy revolves around activities which will [38](1. generate 2. curtail 3. conceal) an awareness of the economic possibilities of conservation and will thus help to reduce poverty. Two recent examples of "do ecology" below show its great potential.

First, the tsunami of December 2004 resulted in a severe loss of life and property along coastal Tamil Nadu in southern India, which is where Mr. Swaminathan lives. For 15 years [39](1. previously 2. since then 3. now), many residents of that district have been trying to persuade coastal communities not to destroy the mangrove forests along the coast. But the coastal people's preoccupations with their livelihood did not allow them to heed that request. The tsunami miraculously changed their outlook. Villages adjoining thick mangrove forests were saved from the fury of the tsunami because of the wave-breaking [40](1. impact 2. role 3. force) played by the mangroves. But in nearby villages, where mangroves had been destroyed either for fuel wood or to create fishponds, several hundred fishermen

died. This area is near the temple town of Chidambaram, [41](1. which 2. where 3. when) centuries ago the temple builders had chosen a mangrove species as the temple tree. Following the tsunami there was a sudden awareness of the reason for this choice, and local people now refer to mangrove trees as “life-savers.” What the residents could not achieve in 15 years by arguing that mangroves would serve as a natural, biological shield in the event of a flood, was thus achieved in a day.

The same tsunami [42](1. dictated to 2. concealed from 3. demonstrated to) farmers living near the shoreline the importance of conserving local varieties of rice. Several thousand hectares of rice fields along the coast became flooded with sea water. Most varieties of rice [43](1. survived 2. perished 3. mutated), but a few salt-resistant ones withstood the flood. This disaster, however, greatly helped to promote the conservation of local biodiversity, and now every farmer wishes to maintain a “seed bank” for the preservation of seeds belonging to diverse varieties. The disaster became an opportunity to prepare both fishing and farming communities to meet the [44](1. challenges 2. demands 3. diseases) that are directly linked to a rise in sea level. The biodiversity conservation movements in this area have now become community-driven.

A second example relates to the re-vitalization of the conservation traditions of tribal communities in the Eastern region of India. Fifty years ago, the tribal communities in the Koraput region of Orissa in eastern India were familiar with more than 1,000 varieties of rice, but at the turn of the century this [45](1. hope 2. moment 3. figure) had fallen drastically. The people’s “dying wisdom” was related to the vanishing of their crops.

It became clear that the only way these tribal families would once again start conserving biodiversity would be by connecting conservation to economics. A [46](1. dynamic 2. gradual 3. mechanical) program of participatory conservation and breeding, coupled with agricultural improvements, soon led to a big spurt in the production of “Kalajeera,” an aromatic local variety of rice, which is being snapped up by the market almost as soon as it is harvested. The same has started happening in southern India with medicinal varieties of rice used in traditional medical practice, and

with under-utilized grains in Tamil Nadu.

Indeed, the practice of “do ecology” can be [47](1. triggered 2. followed 3. symbolized) by an ecological disaster. Preaching does not help. We see this being demonstrated in areas of the Punjab too. Thirty years ago, when it was pointed out to Punjab farmers that their livelihoods would be threatened by the [48](1. modest 2. specified 3. excessive) use of chemical fertilizers and the over-exploitation of ground water, they listened politely, but did not change course. Now, in a despairing mood, they are ready to change. The adverse economics of unsustainable farming has led to indebtedness and occasional suicides. The timing has become [49](1. inappropriate 2. tricky 3. opportune) for farmers to take to conservation farming.

Developing countries with pervasive poverty and expanding populations should spread a “do ecology” approach which can [50](1. bring about 2. hold up 3. adhere to) both ecological and economic benefits. In addition to self-help efforts on the part of developing countries, there is also a need for still greater support from the developed nations. For this, Swaminathan has proposed another important strategy named “don’t ecology” for developed countries. This strategy relates to regulations and restrictions in areas such as carbon emissions and the unsustainable consumption of natural resources. These two strategies, “do ecology” and “don’t ecology,” should work hand in hand to deal with the growing damage to our life-support systems.

Source: Adapted from *The World in 2007*, a special edition of the *Economist* (2006)

[51] According to the article, world hunger has been on the increase despite

1. the United Nations having set out to cut it in half within the next several years.
2. the efforts of First-World countries to pour economic aid into the least-developed countries.
3. the remarkable improvements in agriculture and public health throughout developing countries.
4. the World Food Summit having provided relief assistance to famine-plagued areas.

[52] According to the article, those countries that have lowered their rate of hunger have

1. increased the supply of jobs, educational opportunities, and health facilities.
2. halved the number of people who are forced to live on less than \$1 per day.
3. halved the number people who must depend on external sources for food.
4. increased agricultural production and controlled the rate of HIV infection.

[53] According to the article, some causes of the growing rate of hunger in certain countries include

1. economic policies that control the prices of goods.
2. drought, civil war, and an increasing number of AIDS patients.
3. lack of anti-poverty measures along with unfair trade balances.
4. interventions by governments to stop new initiatives to provide food.

[54] Which of the following were identified as the most dangerous threats to food security by those present at the 2006 meeting of the Food and Agriculture Organization?

1. Climate change and loss of biodiversity.
2. Continuing external and internal conflicts.
3. Lack of means to develop human resources.
4. The existence of barriers to free trade.

[55] U.N.E.S.C.O. expert M.S. Swaminathan coined the term "Do ecology" to describe a set of activities that attempt to

1. improve productivity in the agricultural sector of developing countries.
2. improve our ability to predict and prevent natural disasters.
3. reconcile environmental conservation with practices that lead to economic advantage.
4. reduce unacceptable levels of emissions of pollutants and toxic wastes.

[56] According to Swaminathan, the main activities of “Don’t ecology” should be

1. reducing consumption and pollution by industrialized countries.
2. reducing the use of harmful agricultural pesticides and fertilizers.
3. increasing the use of natural products and ingredients in developing countries.
4. enhancing awareness of the benefits of natural, organic products in industrialized countries.

[57] Farmers in southern India who were impacted by the tsunami of 2004 realized that mangroves

1. would have disappeared entirely, had they not built a seawall to protect them.
2. could not survive unless humans used more environmentally sound techniques.
3. had been objects of religious veneration as well as sources of food for their ancestors.
4. had traditionally been appreciated for a very practical reason.

[58] As a result of the tsunami, many farmers in India now want to

1. conserve the remaining rice stocks to produce a surplus for the next disaster.
2. maintain a degree of diversity in their stocks of rice and rice seeds.
3. gradually expose the rice to seawater to increase its resistance to salt.
4. mix the old rice with new breeds that are brought in from outside.

[59] In the 10th paragraph, what is the example of the Punjab farmers mainly being used to illustrate?

1. It is important to alert local people to the future consequences of their ecological choices.
2. Sometimes an ecological problem can motivate people to change their attitudes toward agricultural practices.
3. Chemical fertilizers and over-exploitation of groundwater can lead to indebtedness.
4. Changing from unsustainable practices to conservation can take decades for some villages.

[60] Which of the following is closest to the idea of “adverse” economics mentioned in the article?

1. People will insist on their traditional ways of doing things even when those ways are unprofitable.
2. Misuse of the natural environment will eventually have negative consequences for the local economy.
3. Countries that do not safeguard their natural resources will be burdened with a “don’t ecology.”
4. Countries that do not have organic agriculture will not be able to participate in the “green revolution.”