## 英語Ⅰ（選択）

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[40]の空所を埋めるのに、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（40）にマークしなさい。次に、内容に関する[41]から[45]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（41）から（45）にマークしなさい。

1    First articulated in a 1965 white paper by Ivan Sutherland, titled "The Ultimate Display," augmented reality (AR) lay beyond our technical capacities for 50 years. That changed when smartphones began providing people with a combination of cheap sensors, powerful processors, and high-bandwidth networking—the trifecta needed for AR to generate its spatial illusions. Among today's emerging technologies, AR [31](1. lags behind   2. falls flat   3. stands out) as particularly demanding—for computational power, for sensed data, and, I'd argue, for attention to the danger it poses.

2    Unlike virtual-reality (VR) gear, which creates for the user a completely synthetic experience, AR gear adds to the user's perception of her environment. To do that [32](1. effectively   2. manually   3. incidentally), AR systems need to know where in space the user is located. VR systems originally used expensive and fragile systems for tracking user movements from the outside in, often requiring external sensors to be set up in the room. But the new generation of VR accomplishes this through a set of techniques collectively known as simultaneous localization and mapping (SLAM). These systems [33](1. diminish   2. harvest   3. advocate) a rich stream of observational data—mostly from cameras affixed to the user's headgear, but sometimes also from sonar, lidar, structured light, and time-of-flight sensors—using those measurements to update a continuously evolving model of the user's spatial environment.

3    For safety's [34](1. account   2. sake   3. part), VR systems must be restricted to certain tightly constrained areas, lest someone blinded by VR goggles tumble down a staircase. AR doesn't hide the real world, though, so people can use it anywhere. That's important because the purpose of AR is to add helpful (or perhaps just entertaining) digital illusions to the user's perceptions. But AR has a second, less appreciated, [35](1. origin   2. facet   3. sect): It also functions as a sophisticated mobile surveillance system.

4    This second quality is what makes Facebook's recent Project Aria experiment so [36](1. unattainable   2. unnerving   3. unsophisticated). Nearly four years ago, Mark Zuckerberg announced Facebook's goal to create AR "spectacles"—consumer-grade devices that could one day rival the smartphone in utility and ubiquity. That's a substantial technical ask, so Facebook's research team has taken [37](1. an incremental   2. an elemental   3. a static) approach. Project Aria packs the

sensors necessary for SLAM within a form factor that resembles a pair of sunglasses. Wearers collect copious amounts of data, which is fed back to Facebook for analysis. This information will presumably help the company to refine the design of an eventual Facebook AR product.

5　　　　The concern here is obvious: When **it** comes to market in a few years, these glasses will transform their users into data-gathering [38](1. contenders　2. proponents　3. minions) for Facebook. Tens, then hundreds of millions of these AR spectacles will be mapping the contours of the world, along with all of its people, pets, possessions, and peccadilloes. The prospect of such intensive surveillance at planetary scale presents some tough questions about who will be doing all this watching and why.

6　　　　To work well, AR must look through our eyes, see the world as we do, and record what it sees. There seems no way to avoid this [39](1. firm tradition　2. soft option　3. hard reality) of AR technology. So, we need to ask ourselves whether we'd really welcome such pervasive monitoring, why we should trust AR providers not to misuse the information they collect, or how they can earn our trust. Sadly, there's not been a lot of consideration of such questions in our rush to [40](1. embrace 2. emulate　3. embellish) technology's next big thing. But it still remains within our power to decide when we might allow such surveillance—and to permit it only when necessary.

　　　　—Based on Pesce, M. (2020). "Augmented reality and the surveillance society," *IEEE Spectrum.*

[41] Which of the following is *NOT* stated in the 1<sup>st</sup> paragraph?

1. Despite the inherent challenges, AR is now an established technology.

2. There is a concern that AR is not an entirely safe form of technology.

3. Since its conception, it has taken a long time to realize the potential of AR.

4. Smartphones were especially instrumental in the development of AR.

[42] According to the 2<sup>nd</sup> paragraph, AR is different from VR in that

1. VR need not have access to the posture and location of the user.

2. AR does not present the user with an alternate, simulated world.

3. VR integrates virtual experience with the outside world seamlessly.

4. AR employs more advanced technology to create realistic experience.

[43] In the 3<sup>rd</sup> paragraph, the author states that

1. VR systems should be used in more limited spaces than AR systems.

2. VR systems are safer than AR systems in most situations.

3. AR systems are less likely than VR to be used to monitor public spaces.

4. AR systems are not as valued as VR systems by ordinary users.

[44] In the 5<sup>th</sup> paragraph, what does "__it__" refer to?

1. Facebook

2. Project Aria

3. SLAM

4. VR technology

[45] Which of the following best captures the purpose of the 6<sup>th</sup> paragraph?

1. To contradict the information on AR presented in the preceding paragraphs.

2. To question the sustainability and practicality of AR in our lives.

3. To propose caution on how AR is used and accepted into people's lives.

4. To provide additional information on the uses of AR technology.

# 英語 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、[46]から[55]の空所を埋めるのに、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 (46) から (55) にマークしなさい。次に、内容に関する[56]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 (56) から (60) にマークしなさい。

1　　　Seven countries have laid claim to parts of Antarctica and many more have a presence there. Why do they all want a piece of this frozen wasteland? I pick a path between rock pools and settle my bottom on a boulder. A spectacular, silent view unfolds across a mountain-fringed bay. Then there is a flash in the shallows by my feet—an arrow of white and black. What on earth is that fish? My slow brain [46](1. ponders　2. plummets　3. protrudes), as before my eyes a gentoo penguin slips out of the water, steadies itself on a rock, eyes me cheekily, squawks and patters off into the snow.

2　　　Antarctica is the hardest place I know to write about. Whenever you try to pin [47](1. on　2. up　3. down) the experience of being there, words dissolve under your fingers. There are no points of reference. In the most literal sense, Antarctica is inhuman. Other deserts, from Arabia to Arizona, are peopled: humans live in or around them, find sustenance in them, shape them with their imagination and their ingenuity. No people shape Antarctica. It is the driest, coldest, windiest place in the world.

3　　　So why, then, have Britain, France, Norway, Australia, New Zealand, Chile and Argentina drawn lines on Antarctica's map, [48](1. smashing through　2. carving up　3. slicing across) the empty ice with territorial claims? Antarctica is not a country: It has no government and no indigenous population. [49](1. Nonetheless　2. Likewise　3. Instead), the entire continent is set aside as a scientific preserve. The Antarctic Treaty, which came into force in 1961, enshrines an ideal of intellectual exchange. Military activity is banned, as is prospecting for minerals. Fifty states—including Russia, China and the US—have now ratified the treaty and its associated agreements. Yet one legacy of earlier imperial expeditions, when the British explorer Ernest Shackleton (1874-1922) and the rest battled blizzards to plant their flags, is national greed.

4　　　Science drives human investigation in Antarctica today, yet there's a reason why geologists often take centre-stage. Governments really want to know what's under the ice. Whisper the word: oil. Some predictions suggest the amount of oil in Antarctica could be 200 billion barrels, far more than Kuwait or Abu Dhabi. Antarctic oil is extremely difficult and, at the moment, [50](1. prohibitively　2. presumably　3. pragmatically) expensive to extract—but it's impossible to predict what the global economy will look like in 2048, when the protocol banning Antarctic prospecting comes up for renewal. [51](1. By　2. For　3. With) that stage, an energy-hungry world could be desperate.

5    The Antarctic Treaty has put all territorial claims into suspension, but that hasn't stopped rule-bending. The best way to get a [52](1. backdrop   2. toehold   3. headhunt) on what may lie beneath is to act as if you own the place. One of the things nation-states do is stamp passports—so when Antarctic tourists visit the British station at Port Lockroy, they can have their passport stamped. This is despite the fact that international law doesn't recognise the existence of the British Antarctic Territory—indeed, both Chile and Argentina claim the same piece of land, and have their own passport stamps at the ready. Another thing states do—or used to—is operate postal services.

6    At Ukraine's Vernadsky base, I wrote myself a postcard, bought a decorative Ukrainian stamp with a cow on it, and dropped it into their post box. It took two months to arrive—not bad, from the ends of the earth. But tourist fun hides all the flag-waving. Russia has made a point of building bases all round the Antarctic continent. The US operates a base at the South Pole, which conveniently [53](1. signifies   2. surrenders   3. straddles) every territorial claim. This year China built its fourth base. Next year it will build a fifth.

7    All Antarctica's 68 bases are professedly peaceful research stations, established for scientific purposes—but the ban on militarisation is widely flouted. Chile and Argentina, [54](1. in contrast   2. for instance   3. of course), both maintain a permanent army presence on the Antarctic mainland, and the worry is that some countries are either not reporting military deployment, or may instead be recruiting civilian security contractors for essentially military missions. Antarctic skies are unusually clear and also unusually free from radio interference—they are ideal for deep-space research and satellite tracking. But they are also ideal for establishing covert surveillance networks and remote control of offensive weapons systems.

8    Many governments reject Antarctica's status quo, built on European endeavour and entrenched by Cold War geopolitics that, some say, give undue influence to the superpowers of the past. Iran has said it intends to build in Antarctica, Turkey too. India has a long history of Antarctic involvement and Pakistan has approved Antarctic expansion—all in the name of scientific cooperation. But the status quo [55](1. depends on   2. covers up   3. phases out) self-regulation. The Antarctic Treaty has no teeth. Faced with intensifying competition over abundant natural resources and unforeseen intelligence-gathering opportunities, all it can do—like my penguin—is squawk, and patter off into the snow.

—Based on Teller, M. (2014). *BBC News.*

[56] What comparison does the author make between Antarctica and other deserts in the 2<sup>nd</sup> paragraph?

1. People are more able to discover food and drink for nourishment in other deserts.

2. Weather conditions in the former provide a more sustainable living environment.

3. People are attracted to the latter because the populations are more creative and innovative.

4. A lower population density ensures a continuous lack of development in Antarctica.

[57] Which of the summaries below best expresses the information in the first sentence from the 5<sup>th</sup> paragraph?

1. Countries have mostly been obeying the treaty's rules on territorial claims; however, flexibility on restrictions will be required in future.

2. Despite the temporary stoppage of territorial claims resulting from the treaty, countries are still manoeuvring for influence.

3. The treaty allows for limited territorial claims; nevertheless, adhering to these limitations is likely to cause friction between states.

4. Although the treaty permanently bans territorial claims, regulations will not prevent state collaboration in the area.

[58] Which of the following statements does _NOT_ reflect the information contained in the 7<sup>th</sup> paragraph?

1. A few countries extensively disregard the ban on military activities in Antarctica.

2. Supposedly, every settlement in Antarctica is for scientific research.

3. The Antarctic atmosphere provides a perfect environment for the deployment of military systems.

4. Some nations are not being honest about the work carried out by their citizens in Antarctica.

[59] What does the author claim about the Antarctic Treaty?

1. The treaty intentionally ignores the interests of traditionally dominant powers.

2. The treaty fails to predict military or espionage intentions in the region.

3. The treaty encourages too much competition between nations for local resources.

4. The treaty lacks authoritative power and is essentially ineffectual.

[60] Which of the following would be the best title for this article?

1. Antarctica's Ecosystem Has Richer Variety than You Think

2. Humankind Starts to Develop the Last Frontier in Antarctica

3. Why Do So Many Nations Want a Piece of Antarctica?

4. How Can We Turn Antarctica into an International Science Lab?

## 英語Ⅲ

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、[61]から[80]の空所を埋めるのに、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（61）から（80）にマークしなさい。次に、内容に関する[81]から[90]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（81）から（90）にマークしなさい。

1    In 1950, New York and Tokyo were the only urban agglomerations on the planet with populations in excess of 10 million. By 2030, the number of megacities is projected to surpass 40, with seven of the world's top ten megacities in Asia. Cities of around 2-5 million are also becoming far more [61](1. commonplace   2. peripheral   3. stagnant) and will present challenges and opportunities for policy makers.

2    This is a metropolitan century. Already today, more than 50% of the world's population lives in cities. This figure is projected to reach 85% by 2100. Within 150 years, the urban population [62](1. will have been   2. will have   3. will be) increased from less than 1 billion in 1950 to 9 billion by 2100. In much of Europe and North America, most of the urbanisation and basic city forms have already been set. Developing and emerging countries, however, have an unprecedented [63](1. window of opportunity   2. uphill battle   3. game plan) to shape their urban futures.

3    If the world is to meet ambitious goals, we need to work with cities. Whether it is for meeting the UN targets of limiting global warming or achieving the 17 Sustainable Development Goals, cities must be [64](1. ruled out   2. put in place   3. front and centre) of our efforts. Now more than ever, the world needs to understand urbanisation and its consequences for economic, social and environmental performance, and the New Urban Agenda of Habitat III in October 2016 can become a milestone by setting the agenda for the next 20 years.

4    Cities strongly influence the prosperity and well-being of city residents as well as people in rural areas. As such, they should be a national policy [65](1. management   2. priority   3. committee). Workers in cities have higher productivity and wages, an effect that increases with city size. With the right approach, cities can therefore contribute to productivity growth, even in less advanced countries. Non-urban regions, particularly those close to large cities, tend to be more prosperous and record higher economic growth than regions that are more remote. There are many reasons for this, but even smaller cities are important for rural areas by serving as market towns and centres of service provision.

5    Cities do not operate in [66](1. functionality   2. tandem   3. isolation); they are part of a system of cities. OECD (Organisation for Economic Co-operation and Development) countries with multiple large cities, such as Germany, instead of concentration in one or two dominant cities, tend to

have higher per capita GDP. After all, a larger number of major metropolitan areas means a greater part of the national territory can benefit from proximity to a major city. [67](1. To summarize 2. Moreover 3. However), the presence of several big cities may reduce the likelihood that a shock in any one place seriously hurts national performance. Furthermore, in Europe where cities tend to be smaller, it is possible to replicate some of the productivity bonus of big cities by being well connected instead. In our metropolitan age, interconnected cities are therefore key.

6    [68](1. Generally 2. As a result 3. Still), some cities struggle to realise that potential in terms of prosperity, innovation and well-being. Even some large OECD cities—such as Birmingham or Detroit—underperform their national economies. During the dozen years up to the global financial crisis, 15 of the worst performing OECD regions in terms of growth were [69](1. predominantly 2. prematurely 3. potentially) urban. There is also the particular challenge of addressing inequality within cities. Large cities are often characterised by highly successful business districts alongside [70](1. magnets 2. pockets 3. pitfalls) of very high unemployment and even poverty. Inequality between rich and poor tends to be higher in larger cities, and this gap appears to have widened in recent decades. In other words, policies to address inequality should also focus on cities. But policies should not only focus on the problems but consider the potential of cities, too. Policies all too often target only what are deemed to be particularly "problematic" cities or neighbourhoods. The broader needs of cities are often poorly catered to, including the role they can play in the national (and indeed international) economy.

7    National policies have a profound impact [71](1. on 2. against 3. from) cities, and must be increasingly seen through an "urban lens". National urban policy frameworks need to consider the wider range of policies that are important for cities, not only those labelled "urban". Given the large number of ministries with portfolios that influence city development, many countries have inter-ministerial committees to improve dialogue on urban issues. [72](1. Originally 2. Eventually 3. Typically) these should include transport, housing, economy, finance and the environment.

8    National governments [73](1. estimate 2. eliminate 3. establish) most of the ground rules for cities. National (and, in some federal systems, state/provincial) legislation typically defines city responsibilities, powers and, crucially, revenue sources. Attention to the basic legislative framework for cities is essential but is too often overlooked, even though these frameworks influence, if not determine, what a mayor can do and what incentives she/he has to proceed. The trouble is, different strands of policy often work at cross-purposes with one another. [74](1. Similarly 2. In addition 3. For example), property tax systems in many OECD countries may favour single-family homes over multi-occupancy dwellings or owner-occupied housing over rental accommodation. The evidence shows that preference for single-family units stimulates costly sprawl, while privileging home

ownership tends to reduce labour-market efficiency. Both have impacts on inequality. Moreover, such tax systems can undermine other national and city-level policies intended to curb sprawl, improve labour-market efficiency and [75](1. reduce   2. protect   3. define) inequalities.

9        Another issue is fragmentation of government. In the Paris region they call it the "mille-feuilles," after a famous multi-layered custard pastry. Or take the greater Chicago tri-state metropolitan area, for example, which is home to no fewer than 1,700 governmental authorities of various kinds. Even relatively modest-sized metropolitan areas are [76](1. rarely   2. often   3. sporadically) fragmented. This not only makes policy making difficult, but hurts both productivity and inclusiveness, as narrow interests are often privileged over the common good and weaker interests are easily overlooked. For a given population size, a metropolitan area with twice the number of municipalities is found to [77](1. fade   2. miss   3. cross) out on 6% of its potential economic productivity each year. Some of this loss can be [78](1. mitigated   2. enhanced   3. distorted) if institutions such as metropolitan authorities can ensure certain important decisions are taken in the interest of the whole metropolitan area. However, setting up such cross-jurisdictional institutions may require new legislation or wider government incentives and support.

10       National governments can therefore play a [79](1. confidential   2. crucial   3. captivating) role in devising better policies for cities if they have a coherent framework in place to help them. Different cities and countries will have different needs depending on their development levels, structure and preferences, but all countries [80](1. should   2. would   3. will) at least examine the urban impact of their policies, not just in areas such as national transport infrastructure planning and the environment, but in policy domains often left to cities but in which national governments typically intervene, such as housing. In short, coherent national urban policies can not only help to make our cities prosperous, livable, inclusive and sustainable, but our countries and our planet too.

—Based on Ahrend, R. (2016). "Building better cities: Why national urban policy frameworks matter," *OECD Observer*.

[81] New York and Tokyo are mentioned at the start of the article to

1. provide historical context for the rapid rise of population in those cities.

2. show a contrast between American and Japanese urban centers.

3. highlight the continuous proliferation of highly populated urban areas.

4. illustrate the complex global nature of urbanization in the 20$^{th}$ century.


[82] The author uses the phrase "This is a metropolitan century" in the 2$^{nd}$ paragraph in order to

1. contrast European and North American cosmopolitan populations.

2. argue that poorer nations will experience significant urban population growth.

3. reinforce the fact that urbanization is occurring at a faster rate in developed countries.

4. make it clear that the majority of people today reside in cities.


[83] In the 3$^{rd}$ paragraph, what is meant by "milestone"?

1. a landmark to celebrate a new era

2. a turning point in urban planning

3. a mechanism by which cities expand

4. a monument that urbanites admire


[84] Which of the sentences below best summarizes the information contained in the 4$^{th}$ paragraph?

1. Economic productivity of big cities should be a major focus of national urban policy.

2. The affluence and welfare of residents in both urban and non-urban areas is affected by cities.

3. People who live in secluded areas have fewer opportunities to work in service industries.

4. Big cities are home to more workers with significantly higher salaries than rural areas.


[85] It can be inferred from the 5$^{th}$ paragraph that

1. countries with networked cities tend to have stronger and more stable economies.

2. smaller European cities tend to exhibit better economic performance than larger cities.

3. Germany has the highest per capita GDP compared to other OECD member states.

4. the EU economy is dominated by the coordinated economic activities of capital cities.


[86] According to the 6$^{th}$ paragraph, which of the following is _**NOT**_ mentioned about cities?

1. Economic disparities have been expanding in cities which are larger in size.

2. Some major urban areas do not match the economic achievements of the state.

3. Cities with large wealth gaps have been overlooked by urban policy makers.

4. Some cities do not recognize the benefits of bridging economic activities.

[87] In the 7<sup>th</sup> paragraph, why does the author use the term "urban lens"?

1. to provide a transition from national policy city frameworks to government decision-making

2. to emphasize that government ministries must be based in urban centers

3. to point out the importance of focusing on national policy from a city perspective

4. to introduce a range of problems that need to be addressed by urban planners

[88] The author's purpose of using the term "mille-feuilles" in the 9<sup>th</sup> paragraph is to

1. demonstrate the decentralized, stratified nature of executive structures.

2. show that the relationships between economic productivity and city populations are often layered.

3. indicate that French and American government structures are very different.

4. provide an example of the problems associated with effectively managing metropolitan areas.

[89] The author uses the word "coherent" twice in the final paragraph. Which of the following words match both usages?

1. structurally complex

2. reasonably aware

3. aesthetically balanced

4. logically sound

[90] Which of the following statements would the author most probably support?

1. Local, and not national policy makers must make decisions on urban housing projects.

2. Collaboration and partnerships between cities is more likely to create regional tensions.

3. Nations should prioritize job creation measures in cities over rural areas.

4. Effective national urban policies benefit not just cities, but the state as a whole.