

2019年度
英 語
(問 題)

〈H31130018〉

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2～15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、試験開始後、解答用紙の氏名欄に氏名を正確に丁寧に記入すること。
 - (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（砂消しゴムは使用しないこと）。

マークする時	<input checked="" type="radio"/> 良い	<input type="radio"/> 悪い	<input type="radio"/> 悪い
マークを消す時	<input type="radio"/> 良い	<input type="radio"/> 悪い	<input type="radio"/> 悪い

5. 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。
6. 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。
7. いかなる場合でも、解答用紙は必ず提出すること。
8. 試験終了後、問題冊子は持ち帰ること。

I

次の1～10について、誤った英語表現を含んだ部分がある場合には a～d から誤りを1つ選び、誤りがない場合には e を選んで、マーク解答用紙にマークせよ。

1. During periods of prolonged heat and rain, the body loses energy and as a result we became more susceptible to illness. NO ERROR
a b c d e
2. The Highlands of Scotland have been a source of wonder and mystery for hundreds years and are reported to be home to ghosts and spirits that continue to live through. NO ERROR
a b c d e
3. In term of function, eyeglass frames have little purpose other than decoration and it does not matter what kind of decorative frames we choose to wear in order to see better. NO ERROR
a b c d e
4. A knowledge of mathematics is of great important to understanding economics. NO ERROR
a b c d e
5. Writing, to be effective, must closely follow the thoughts and intentions of the author, but not necessarily in the order in which these thoughts occur. NO ERROR
a b c d e
6. Some sociologists maintain that pressure to conform to group norms make individuals in a group behave similarly. NO ERROR
a b c d e
7. Sixty days was quite a short time for them to develop a device as complicated than that in those days. NO ERROR
a b c d e
8. Statistics in this report shows that our products are better accepted than our competitor's products in quality, but not in price. NO ERROR
a b c d e
9. In order to meet the growing demand in the Southeast Asian market, our company has increased its production capacity by an average of 20% every year. NO ERROR
a b c d e
10. In reaching their conclusions, committee members investigated each evidence very carefully. NO ERROR
a b c d e

According to a certain line of thinking, today's college students oppose the very idea of free speech. Those who hold to this premise cite plenty of examples: A Princeton professor canceled his seminar on hateful symbolism after he spoke the n-word in class, triggering a student walk-out. At the University of California-Berkeley students protested vociferously when a major right-leaning commentator came to campus. An appearance by Charles Murray, a theorist associated with controversial ideas on race, provoked an 1 at Middlebury College, ending with an assault on Murray and a professor.

The truth is that most students are not, however, out to silence free speech. Since November, the organization PEN America, a nonprofit devoted to defending freedom of speech, has convened four symposia on campus speech at the sites of some of the most pitched controversies: Berkeley, Middlebury, the University of Maryland and the University of Virginia. The debates taking place at these events suggest that what might appear to be a crisis of free speech on college campuses is actually rooted in issues of race and the need for inclusion among students who have long been excluded.

Efforts to quash speech are not the 2 of the battle most of these students are waging. Although speech-suppressing tactics are deeply misguided, they don't negate the legitimacy of other demands which are really at the root of the problem. To 3 a commitment to free speech among a diverse generation of students, we must focus on the essence of their grievances and explain why free speech protections are essential, rather than inimical, to those goals.

A rising population of non-white students brings new expectations about openness and equality on campus. Changing demographics—the Pew Research Center reports that Hispanic enrollment more than tripled between 1996 and 2012, and black enrollment grew by 72 percent—have yielded a critical mass of students more attuned to egalitarianism and insistent on being heard.

Concerns about the state of campus speech are of course valid: At times, the quest for inclusion inspires attempts to bar or punish speech perceived to impugn particular groups. A Knight Foundation survey found an increasing share of college students—61 percent (up from 54 percent in 2016)—saying they don't think they can speak their minds on campus. Faced with speakers they consider abhorrent, undergrads can be quick to take matters into their own hands, using shouts, jeers and stomps to drown out offenders. Critiques of campus activism often proceed from the misguided assumption that the most vocal students are coddled products of privilege, too sheltered by their parents to be able to tolerate uncomfortable ideas.

What we actually find is that on many campuses the students at the center of heated controversies are not the helicopter-parented offspring of the upper middle class. In many instances, protests have been led by non-white students, including leaders who do not come from particularly comfortable backgrounds. Their concerns have centered on eradicating persistent manifestations of discrimination that have outlasted decades of efforts at integration: slurs, racist incidents, stereotypes, social segregation, and entrenched norms shaped by and for the privileged. They are asking their universities to reorient their classrooms and communities to serve students of all backgrounds equally more than they are asking for free speech to be curtailed or censored.

Many of today's minority college students have experienced persistent racial and school segregation that can leave them unprepared to forge diverse friendships in college. They run up against barriers to entry and promotion in a professoriate that shapes course catalogues, reading lists and mentoring opportunities. They live with a myriad ways discriminatory attitudes can unconsciously manifest in dorms, encounters with campus security and even at Starbucks. They also grapple with socio-economic disparities that can shut students out of elite campus subcultures and career on-ramps like unpaid internships.

Compounding the problem, research reveals that most college students have little background in the First Amendment and cannot accurately identify what range of speech it protects. Basic education for all about these precepts, the rationale behind them and the role they have played in historic struggles for civil rights can help bridge those gaps. Students should also be educated about the dangers of empowering governments to police speech - and how such efforts have historically been exploited to the detriment of social-justice causes.

University leaders need to play a dual role: as hosts of forums for the widest range of ideas and as speakers in their own right. It is not enough for college presidents challenged by hate-mongers to throw up their hands and cry "First Amendment!" as if, after that affirmation, the Constitution then renders them mute. Faced with a planned speech by white-supremacist provocateur Richard Spencer last fall, the University of Florida cleverly allowed him to come to campus but encouraged a loud counter-campaign centered on the hashtag #GatorsNotHaters. Spencer spoke for 90 minutes before a half-empty room, his message overwhelmed by the mass of protesters outside who repudiated him. Offering a model for other schools, Florida deprived Spencer of what was presumably his main goal: the moral victory of claiming that he was wrongfully silenced. This approach allows for free speech but also makes it clear that many disagree with what is being said.

Our pitched battles over diversity, inclusion and free speech on campus—a microcosm of our polarized discourse on these issues in society—are not insoluble. The next generation is dominated by young adults determined to advance their notions of equality and justice, as previous generations have done. One of the greatest, and most often overlooked, dangers to free speech on campus is that it will come to be associated exclusively with those who aim to offend others. If that's the case, we could create a generation of Americans alienated from the principle of free speech, who believe that the protections of the First Amendment don't belong to them. By working to understand these students' life experiences, concerns and demands—and by demonstrating how those causes are advanced by robust protections for freedom of speech—we can help ensure that U.S. universities are open to all peoples and to all ideas.

(Adapted from *The Washington Post*)

1. Which one of the following words best fits 1 in the passage?
- a. assembly
 - b. appeal
 - c. inquisition
 - d. uproar
 - e. enthusiasm

2. Which one of the following words best fits 2 in the passage?
- heart
 - heat
 - threshold
 - place
 - end
3. Which one of the following words best fits 3 in the passage?
- advise
 - entertain
 - instill
 - endure
 - repeal
4. Which one of the following is closest in meaning to the word inimical?
- needless
 - obliged
 - favorable
 - unrelated
 - harmful
5. Which one of the following is closest in meaning to the word coddled?
- ignored
 - defended
 - spoiled
 - idealistic
 - underachieving
6. Which one of the following is closest in meaning to the word on-ramps?
- opportunities
 - placement
 - assurance
 - atonement
 - evolution
7. Which one of the following is closest in meaning to the phrase throw up their hands?
- leave out
 - turn out
 - panic
 - give up
 - cheer
8. According to this passage, which THREE of the following are true?
- Only well-known colleges and universities in the U.S. are facing challenges to free speech on campus.
 - Problems with free speech on campus are difficult to solve but do not reflect the larger problem of free speech within American society.

- c. Free speech on campus is an issue which is more important than equality of opportunity.
- d. Problems of free speech on campus are related to issues of racial discrimination.
- e. The increasing population of minority students on campus has drawn attention to the issue of free speech as a major point of division between different minority groups.
- f. Free speech cannot be promoted by silencing people who have extreme ideas.
- g. Protests against free speech often come from non-minority students.
- h. Hispanic enrollment is now overall slightly higher than black enrolment at U.S. colleges.
- i. Many enrolled in U.S. colleges are not familiar enough with the issue of free speech itself.
- j. The University of Florida example shows that limiting free speech is not always a bad idea.
- k. The next generation of young people on campus remains apathetic toward issues of free speech.
- l. Recent studies suggest that almost half of all students feel they cannot speak their minds on campus.

III

次の英文を読んで下の問いに答えよ。解答はマーク解答用紙にマークせよ。

On a cold January evening, Clare walks the streets of north London, armed with a file of addresses and maps. She wants to interview people for Britain's Labour Force Survey (LFS), which is the basis for a host of important economic statistics including the unemployment rate. Her job, like that of many surveyors across the developed world, has been getting harder.

Corralling interviewees has always been tough, particularly in London. Clare sometimes feels like a private detective as she befriends porters to enter gated communities. "It was the rule to be welcomed in, whereas now you can't count on it," she says. Of the five doorbells she rings, the most positive answer is that now is "not a good time." Clare is hopeful about the phone call arranged for the following day.

Response rates to surveys are plummeting all across the developed world. Last year only around 43% of households contacted by the British government responded to the LFS, down from 70% in 2001. In America the share of households responding to the Current Population Survey (CPS) has fallen from 94% to 85% over the same period. The rest of Europe and Canada have seen similar trends.

Poor response rates drain budgets, as it takes surveyors more effort to hunt down interviewees. In addition, a growing reluctance to give interviewers information threatens the quality of the data. Although politicians often complain about inaccurate election polls, when economic surveys are misleading there can be consequences for the public.

Household surveys derive their power from randomness. Since it is impractical to get every citizen to complete a long questionnaire regularly, statisticians interview what they hope is a representative sample instead. But some types of people are less likely to respond than others — people who live in flats rather than houses, for example. A study by Christopher Bollinger et al. matched data from the CPS with social-security records and found that poorer and very rich households were more likely to ignore surveyors

than middle-income ones. Survey results will be skewed if the types of people who do not answer are different from those who do, or if certain types of people are more unwilling to answer some questions or are more likely to fib.

Statisticians try to correct for these problems. They can adjust the weight given to the answers from underrepresented groups, or fill in blanks with imputed answers based on those from similar people. To check, they can compare results from household surveys with official administrative data, such as tax records.

Worryingly, mounting evidence suggests that some of these corrections are failing. A study by Bruce Meyer et al. found a widening gulf between the income people declare in surveys and what administrative records suggest. Research by Britain's Behavioural Insights Team, a research group, has also found that the gap between the number of calories that Britons consume and what they report in household surveys widened between 1974 and 2008. Another study by Garry Barrett et al. compared household data with national-accounts data between 1969 and 2010 in America, Britain, Canada and Australia. It found that for every percentage-point decline in the response rate, the share of spending captured by household surveys fell by 0.8 percentage points.

For decades, governments have relied on household surveys to set policy. Besides using them to gauge economic indicators, many rely on them for census data. In America, the allocation of over \$600bn of federal spending is based on the Census Bureau's estimates of the population. Undercounting even a single person can cost a government programme thousands of dollars.

Understanding why people shun surveys might help boost response rates. The most common reasons people give for refusing are that they do not care, that they worry about privacy or that they do not have the time (Clare reports that some non-respondents spend 20 minutes explaining how busy they are). Another factor could be a weakening sense of civic duty — voter participation has also been falling. Over-surveying may also be to blame: the share of Americans reporting that they had been surveyed in the past year more than quadrupled between 1978 and 2003. Meyer et al. speculate that what once "was a rare chance to tell someone about your life, is now crowded out by an annoying onslaught of telemarketers and commercial surveyors."

Statisticians have been experimenting with methods of improving response rates: new ways to ask questions, or shorter questionnaires, for example. In addition, some surveys offer monetary incentives to get the most reluctant interviewees to respond, but such persistence can have drawbacks. One study found that frequent attempts to contact interviewees raised the average response rate, but lowered the average quality of answers.

Statisticians have also been exploring supplementary data sources, including administrative data. Such statistics come with two big advantages. One is that administrative data sets can include many more people and observations than is practical in a household survey, giving researchers the statistical power to run more detailed studies. Another advantage is that governments already collect them, so they can offer huge cost savings over household surveys. For instance, Finland's 2010 census, based on administrative records rather than surveys, cost its government just €850,000 (\$1.1m) to produce. In contrast, America's government spent \$12.3bn on its 2010 census, roughly 200 times as much on a per-person basis.

Recent advances in computing mean that researchers can now process vast data sets. However, in many developed countries (those in Scandinavia are exceptions),

socioeconomic statistics are collected by several agencies, meaning that researchers who want to combine, say, health records with tax data, face formidable bureaucratic and legal challenges.

Governments in English-speaking countries are especially keen to experiment. In January HMRC, the British tax authority, started publishing real-time tax data as an “experimental statistic” for comparison with labour-market data from household surveys. Canada’s main statistical agency often uses programmes which are based in part on administrative records. Last year, Britain passed the Digital Economy Act, which will give its Office of National Statistics the right to requisition data from other departments and from private sources for statistics-and-research purposes. America is exploring using such data as part of its 2020 census.

Administrative data do have certain limitations. They are not designed for use in statistical analyses. A data set on income taxes may be representative of the population receiving benefits or earning wages, but not the population as a whole. Most important, some things cannot be captured in administrative records, such as well-being, informal employment and religious affiliation.

When administrative data offer no alternative, household surveys, warts and all, will have to suffice. Statisticians can only fix a biased survey based on other data. In some cases, the only other source available is another survey.

(Adapted from *The Economist*)

1. Which one of the following is closest in meaning to the word fib?
 - a. not be truthful
 - b. not be concerned
 - c. not be revealed
 - d. not be involved
 - e. not be contrived

2. Which one of the following is closest in meaning to the word imputed?
 - a. randomly chosen
 - b. fabricated
 - c. implicated
 - d. assigned
 - e. anonymous

3. Which one of the following is closest in meaning to the phrase crowded out?
 - a. made more forceful
 - b. made less spacious
 - c. made less ugly
 - d. made very unappealing
 - e. made very complicated

4. Which one of the following is closest in meaning to the phrase warts and all?
 - a. even with their malicious intent
 - b. even though they cause offense
 - c. in spite of their shortcomings
 - d. in spite of their designs
 - e. even with their generalities

5. According to this article, which THREE of the following are true?
- a. People who conduct surveys in industrialized economies need to protect themselves from aggressive attitudes by interviewees.
 - b. North London is one of the best places in the United Kingdom to conduct surveys.
 - c. Lower response rates help to reduce the costs associated with gathering information on the labour force.
 - d. It is hard to get accurate demographic and economic information because many people are reluctant to provide their personal information.
 - e. One way to compensate for missing data in surveys in developing countries is to make statistical adjustments to survey results.
 - f. Administrative data can be a useful substitute for household survey data, but in the past researchers have faced organizational difficulties in utilizing these together.
 - g. Administrative data offers extra sources of information about people and can reduce the cost of household surveys.
 - h. It is possible to improve average response rates and the average quality of answers in household surveys by offering additional payment to interviewees.
 - i. Administrative data cannot be a complete substitute for household survey data because the former cannot cover all types of people.
 - j. The disparity between figures obtained from household surveys and administrative data is shrinking because the response rates of household surveys are declining.
 - k. Local governments prefer random data in household surveys because the cost of collecting information on local residents is too high.
6. Which one of the following best describes the main point of this article?
- a. One way to raise response rates in developed countries is to inform people that participation in surveys is part of their civic duty.
 - b. Although technology can overcome problems related to analyzing data from multiple sources, human-created problems are posing new challenges for the use of survey data in developed countries.
 - c. There is no clear solution to fix the problem of low response rates in developed countries and household data is hard to obtain and difficult to supplement with other sources of data.
 - d. We should introduce successful approaches found in recent academic studies in order to boost response rates for household surveys in developed countries.
 - e. In order to raise response rates, those conducting household surveys in developed countries need to take into account the results of household surveys in developing countries.

IV

次の英文を読んで下の問いに答えよ。解答はマーク解答用紙にマークせよ。

The newly opened luxury Cordis hotel looks much like any other high-end hotel in Shanghai, with its glass-sided swimming pool, vast twin ballrooms and upscale spa. But the first Cordis hotel on mainland China boasts something that is genuinely rare in big Chinese cities: clean indoor air. All the air that enters the Cordis passes through two

levels of filtration and is continuously cleaned, while double-glazed windows remain closed to seal the fresh air inside. Pollution monitors are fitted in all 396 guest rooms and TV screens display PM2.5 levels. Air quality inside the rooms is typically around 10 times better than that outside. “I think people can sleep easier knowing that the air quality in their room is far superior to any other hotel, and far superior to what it is outside,” says John O’Shea, managing director of the Cordis.

While air pollution has long been on the nation’s mind, indoor air is a newer issue that has come to public attention recently. Even in very polluted cities, indoor air quality can be worse than the air outside. As well as PM2.5-heavy air entering homes and offices through open windows or poor insulation, high levels of formaldehyde, carbon dioxide and volatile organic compounds—gases that can be emitted by poor building materials, furniture, paints and adhesives—are an additional concern. “Indoor pollution is a very serious problem and health threat, not just in China but worldwide,” says Sieren Ernst, founder of environmental consultancy Ethics & Environment. “Most people spend 90% of their time indoors, and the exposures that we are getting from that time remain largely unexamined,” he claims.

The World Health Organization estimates that indoor and outdoor air pollution causes around 6.5 million premature deaths every year, while a comprehensive global 2017 study concluded that China and India accounted for about half of all premature deaths from pollution in 2015. Data analysis by the German Institute of Global and Area Studies found that working in an office with high-level filtration systems can, conversely, raise an employee’s life expectancy, estimating that staff working in such a clean indoor air environment gain an average of 6.3 days a year on people working in unfiltered workplaces.

There are also subtler but very important benefits to having clean indoor air. A landmark 2017 study from Harvard’s Center for Health and the Global Environment found occupants of high-performing green buildings had higher cognitive function, fewer symptoms of sickness and better sleep quality. Good indoor air can also help with staff retention: a recent survey concluded that 56% of surveyed staff in China use poor workplace health as a primary reason to change jobs. This suggests that in addition to improving the health of workers, clean air indoors also has the potential to bring with it a significant economic impact for companies because employees will not be as quick on the draw to leave as those who work in poor indoor air companies.

Public awareness in China is on the rise. In 2013, market research provider Euromonitor says there were 3 million air purifiers in China, in a market worth almost one billion dollars. As part of its 13th Five-Year Plan, Beijing mandated at least half of new urban buildings must be green-certified by 2020. As public interest and regulatory pressure for improving indoor air become stronger, Chinese businesses and institutions are rushing to be ahead of the curve. “We worked with a couple of schools [on indoor air quality] in Shanghai and Beijing in 2013 and 2014,” says Tom Watson, director of engineering at environmental consulting company PureLiving, which now works with around a third of Fortune 100 companies to clean up their office air. He notes “as soon as they made the changes it became their market differentiator” and that before long most of “the other schools had to follow suit.”

The rapid expansion of the clean air market also leaves it open to abuse, with unreliable marketing and questionable purifiers promising additional tricks such as the

ability to repel mosquitos. According to the Xinhua news outlet, a quarter of consumer air purifiers tested by a government inspection agency failed quality checks, and new state standards are reportedly in the pipeline.

At Shanghai's Cordis, O'Shea is hopeful the clean air will ultimately boost room prices by around 10%. "I think back to the days when everyone used to charge for the internet," he says. "Now the internet's like hot water — if you don't have high speed, fast, easy-access internet for free, then it's over," he says. O'shea is confident that the issue of indoor air quality will soon be the same. In his words, "if you can't guarantee your customers much better air quality than the competitors, it's going to be a fait accompli. It's already getting that kind of importance."

(Adapted from *The Guardian*)

1. Which one of the following is closest in meaning to the word high-end?
 - a. well-known
 - b. highly recommended
 - c. multi-storied
 - d. luxurious
 - e. previously owned

2. Which one of the following is closest in meaning to the word premature?
 - a. nascent
 - b. precocious
 - c. abrupt
 - d. early
 - e. unpredictable

3. Which one of the following is closest in meaning to the word landmark?
 - a. concrete
 - b. groundbreaking
 - c. fixed
 - d. detailed
 - e. controversial

4. Which one of the following is closest in meaning to the phrase regulatory pressure?
 - a. statistical findings
 - b. architectural requirements
 - c. maintaining balance
 - d. strengthening ties
 - e. administrative guidelines

5. Which one of the following is closest in meaning to the phrase in the pipeline?
 - a. being re-developed
 - b. urgently necessary
 - c. within building standards
 - d. on the way
 - e. blocked out

6. Which one of the following is closest in meaning to the phrase fait accompli?
- foregone conclusion
 - sudden development
 - complex situation
 - full-blown crisis
 - self-evident problem
7. Which one of the following can we infer from this passage?
- Officials in major Chinese cities, such as Shanghai, are today facing the impossible challenge of providing clean indoor air to their citizens.
 - There are health benefits and psychological benefits to having clean indoor air.
 - People who breathe polluted indoor air will inevitably have serious health issues.
 - Slightly over one-half of workers in Chinese companies are looking to change jobs.
 - The growth of the indoor air filter industry in China reflects the concerns of foreign companies with improving the health of both Chinese citizens and tourists.
8. According to this passage, which THREE of the following are true?
- Major hotels in China are at the forefront of improving the quality of indoor air.
 - The source of poor-quality indoor air is always poor-quality outdoor air.
 - The Chinese government requires that hotels which filter their indoor air have pollution monitors in each room.
 - In China, outdoor air pollution is not a new issue.
 - Volatile organic compounds from outside are a primary source of poor-quality indoor air.
 - Most companies involved with improving indoor air quality in China are foreign-based companies.
 - The issue of clean indoor air is already on the radar screen of the Chinese government.
 - By 2020, it is likely that half of all new buildings in China will be green-certified.
 - The excess in regulation of the clean indoor air market in China has caused the spread of unreliable and fraudulent air purifiers.
 - In the not too distant future, having clean indoor air will be crucial for the hotel business in China.
 - Developing countries comprised more than half of all premature deaths from pollution in 2015.

V

次の英文を読んで下の問いに答えよ。解答はマーク解答用紙にマークせよ。

For a field that was not well known outside of academia a decade ago, artificial intelligence (A.I.) has grown dizzyingly fast. Technological companies from Silicon Valley to Beijing are betting everything on it, venture capitalists are pouring billions into research and development, and start-ups are being created on what seems like a daily basis. If our era is the next Industrial Revolution, as many claim, A.I. is surely one of its driving forces.

It is an especially exciting time for researchers. In the early 2000s, computers were barely able to detect sharp edges in photographs, let alone recognize something as

loosely defined as a human face. But thanks to the growth of big data, advances in algorithms like neural networks and an abundance of powerful computer hardware, something momentous has occurred: A.I. has gone from an academic niche to the leading differentiator in a wide range of industries, including manufacturing, health care, transportation and retail. However, enthusiasm for A.I. might be preventing us from reckoning with its looming effects on society. Despite its name, there is nothing “artificial” about this technology—it is made by humans, intended to behave like humans and affects humans. So if we want it to play a positive role in tomorrow’s world, it must be guided by human concerns.

This approach could be called “human-centered A.I.” It consists of three goals that can help responsibly guide the development of intelligent machines. First, A.I. needs to reflect more of the depth that characterizes our own intelligence. Consider the richness of human visual perception. It’s complex and deeply contextual, and naturally balances our awareness of the obvious with a sensitivity to nuance. By comparison, machine perception remains strikingly narrow.

Sometimes this difference is trivial. For instance, an image-captioning algorithm once fairly summarized a photo as “a man riding a horse” but failed to note the fact that both were bronze sculptures. Other times, the difference is more profound, as when the same algorithm described an image of zebras grazing on a savanna beneath a rainbow. While the summary was technically correct, it was entirely devoid of aesthetic awareness, failing to detect any of the vibrancy or depth a human would naturally appreciate.

That may seem like a subjective or inconsequential critique, but it points to a major aspect of human perception beyond the grasp of our algorithms. How can we expect machines to anticipate our needs—much less contribute to our well-being—without insight into these “fuzzier” dimensions of our experience?

Making A.I. more sensitive to the full scope of human thought is no simple task. The solutions are likely to require insights derived from fields beyond computer science, which means programmers will have to learn to collaborate more often with experts in other domains. Such collaboration would represent a return to the roots of our field, not a departure from it. Younger A.I. enthusiasts may be surprised to learn that the principles of today’s deep-learning algorithms stretch back more than 60 years to the neuroscientific researchers David Hubel and Torsten Wiesel, who discovered how the hierarchy of neurons in a cat’s visual cortex responds to stimuli.

1, ImageNet, a data set of millions of training photographs that helped to advance computer vision, is based on a project called WordNet, created in 1995 by the cognitive scientist and linguist George Miller. WordNet was intended to organize the semantic concepts of English.

Reconnecting A.I. with fields like cognitive science, psychology and even sociology will give us a far richer foundation on which to base the development of machine intelligence; we can expect the resulting technology to collaborate and communicate more naturally, which will help us approach the second goal of human-centered A.I.: enhancing us, not replacing us.

Imagine the role that A.I. might play during surgery. The goal need not be to automate the process entirely. Instead, a combination of smart software and specialized hardware could help surgeons focus on their strengths—traits like dexterity and adaptability—while keeping tabs on more mundane tasks and protecting against human error, fatigue and distraction. Or consider senior care. Robots may never be the ideal

custodians of the elderly, but intelligent sensors are already showing promise in helping human caretakers focus more on their relationships with those they provide care for by automatically monitoring drug dosages and going through safety checklists. These are examples of a trend toward automating those elements of jobs that are repetitive, error-prone and even dangerous. What's left are the creative, intellectual and emotional roles for which humans are still best suited.

No amount of ingenuity, however, will fully eliminate the threat of job displacement. Addressing this concern is the third goal of human-centered A.I.: ensuring that the development of this technology is guided, at each step, by concern for its effect on humans. Today's anxieties over labor are just the start. Additional pitfalls include bias against underrepresented communities in machine learning, the tension between A.I.'s appetite for data and the privacy rights of individuals and the geopolitical implications of a global intelligence race.

Adequately facing these challenges will require commitments from many of our largest institutions. Universities are uniquely positioned to foster connections between computer science and traditionally unrelated departments like the social sciences and even humanities, through interdisciplinary projects, courses and seminars. Governments can make a greater effort to promote computer science education, especially among young girls, racial minorities and other groups whose perspectives have been underrepresented in A.I. Corporations should combine their aggressive investment in intelligent algorithms with ethical A.I. policies that temper ambition with responsibility.

No technology is more reflective of its creators than A.I. It has been said that there are no "machine" values at all; machine values are human values. A human-centered approach to A.I. means these machines don't have to be our competitors, but partners in securing our well-being. 2 autonomous our technology becomes, its impact on the world — for better or worse — will always be our responsibility.

(Adapted from *The New York Times*)

1. Which one of the following is closest in meaning to the phrase let alone?
 - a. more importantly
 - b. also
 - c. not to mention
 - d. and what is worse
 - e. unfortunately

2. Which one of the following is closest in meaning to the word momentous?
 - a. significant
 - b. unbridled
 - c. unprecedented
 - d. alarming
 - e. unsettling

3. Which one of the following is closest in meaning to the word profound?
 - a. nuanced
 - b. serious
 - c. complicated
 - d. subtle
 - e. aggravating

4. Which one of the following is closest in meaning to the word inconsequential?
- a. irrelevant
 - b. laudable
 - c. modest
 - d. elementary
 - e. erratic
5. Which one of the following words best fits 1 in the passage?
- a. On the other hand
 - b. Accordingly
 - c. Nevertheless
 - d. Likewise
 - e. In addition
6. Which one of the following is closest in meaning to the word mundane?
- a. very difficult
 - b. less important
 - c. cumbersome
 - d. routine
 - e. complex
7. Which one of the following is closest in meaning to the word foster?
- a. certify
 - b. impart
 - c. promote
 - d. round-off
 - e. unify
8. Which one of the following words best fits 2 in the passage?
- a. Once
 - b. Because
 - c. However
 - d. Although
 - e. For
9. Which one of the following best describes the main point of this passage?
- a. It is likely that one day A.I. will replace most jobs currently being done by human beings.
 - b. A.I. is important because it helps human beings to engage in self-reflection.
 - c. A.I. is useful because it can help link computer science with other academic disciplines.
 - d. The development of A.I. should reflect the interests and needs of human beings.
 - e. A.I. is useful primarily when it is able to simulate the cognitive processes of human beings.

