

(2019年度)

# 1 英語問題 (90分)

(この問題冊子は22ページ, 6問である。)

## 受験についての注意

1. 試験監督者の指示があるまで, 問題冊子を開いてはならない。
2. 試験開始前に, 試験監督者から指示があったら, 解答用紙の右上の番号が自分の受験番号と一致することを確認し, 所定の欄に氏名を記入すること。次に, 解答用紙の右側のミシン目にそって, きれいに折り曲げてから, 受験番号と氏名が書かれた切片を切り離し, 机上に置くこと。
3. 試験監督者から試験開始の指示があったら, この問題冊子が, 上に記したページ数どおりそろっていることを確かめること。
4. 筆記具は, HかFかHBの黒鉛筆またはシャープペンシルに限る。万年筆・ボールペンなどを使用してはならない。時計に組み込まれたアラーム機能, 計算機能, 辞書機能を使用してはならない。また, スマートウォッチなどのウェアラブル端末を使用してはならない。
5. 解答は, 解答用紙の各問の選択肢の中から正解と思うものを選んで, そのマーク欄をぬりつぶすこと。
6. マークをするとき, マーク欄からはみ出したり, 白い部分を残したり, 文字や番号, ○や×をつけたりしてはならない。また, マーク箇所以外の部分には何も書いてはならない。
7. 訂正する場合は, 消しゴムでていねいに消すこと。消しきらずはきれいに取り除くこと。
8. 解答用紙を折り曲げたり, 破ったりしてはならない。
9. 試験監督者の許可なく試験時間中に退場してはならない。
10. 解答用紙を持ち帰ってはならない。
11. 問題冊子は必ず持ち帰ること。

- 1 [1]～[7]のパラグラフからなる以下の文章を読み、下の(1)～(15)の間に対する答えとして最も適切なものをそれぞれ(a)～(d)から1つ選びなさい。なお、\*印のついた語句については下に注が与えられている。

[1] MARGARET THATCHER was known for a voice that brooked no<sup>(1)</sup> disagreement. While still in opposition, she had taken elocution\* lessons to sound more forceful. Despite this, she was often interrupted in interviews as prime minister, and in 1982, three researchers set out to understand why.<sup>(2)</sup> They played clips from one of her interviews to a variety of people. The clips included segments that ended in interruption (while editing out the interruptions themselves). More often than not, those hearing the interrupted phrases thought that the prime minister was ending her conversational turn. It seems her interviewer had come to a similar conclusion.

[2] Why? Conversation, it turns out, is a finely tuned machine, as Nick Enfield, a linguist at the University of Sydney, suggests in "How We Talk". Humans mostly follow a rule called "no gap, no overlap", reacting to the end of a conversational turn by beginning their own in about 200 milliseconds—about the time it takes a sprinter to respond to the starting gun. This is all the more remarkable given that it takes about 600 milliseconds for someone to work out what they are going to say by mentally retrieving the words and organising how they are to be expressed.

[3] People, therefore, must plan to begin speaking before their conversation partner has stopped. That requires a fine attention to the cues signalling the end of a turn, such as a lengthening of syllables and a drop in pitch.<sup>(4)</sup> As it happens, using a downward shift of pitch is also a frequent piece of advice given to those who want to sound more authoritative—like Thatcher. The researchers studying the times she was interrupted found

precisely that a sharp drop in her pitch accurately predicted an interruption.

[4] Contrary to popular assumptions, many dynamics of the “conversational machine” are similar from culture to culture, something that Mr Enfield demonstrates by looking at both big and small languages in rich and poor countries alike. For example, take “no gap, no overlap”. The cross-cultural differences in this timing are small, and not always what stereotypes would suggest. Though the Japanese are often said to be<sup>(7)</sup> polite, they have one of the shortest gaps before starting conversational replies. In answering “yes” or “no” to a question, the Japanese, on average, even reply before the questioner’s turn is over.

[5] This is not because the Japanese are rude. Quite the opposite. Answering quickly moves the conversation along. In general, two people speaking try to help each other. And to a remarkable degree, they succeed. Take some of the words that are generally considered conversational detritus: “uh”, “um” and “mm-hmm”. “Uh” and “um” signal<sup>(8)</sup> to the other speaker that a turn is not quite finished, that the speaker is planning something more. This makes sense<sup>(9)</sup> only in the light of the split-second timing with which speakers take turns. Men use these pause-fillers more than women, being perhaps more eager to hold the floor.<sup>(10)</sup> (For unknown reasons they prefer “uh”, and women, “um”.) Those who tend not to use “um” and “uh” often just replace it with something else, like “so”, much derided as meaningless at the beginning of a statement.

[6] Like “um” and “uh”, humble “mm-hmm” and “uh-huh” are critical too. Listeners use them to show they have understood the speaker and are sympathetic. To show their importance, researchers concocted\* a devilish<sup>(13)</sup> experiment in which speakers were asked to tell about a near-death experience, while listeners were given a distracting task like pressing a button every time the speaker used a word starting with “T”. As a result,

the listener was less able to encourage the speaker with “mm-hmm”. This drove the speakers themselves to distraction. They paused more, used more “um” and “uh” themselves, and repeated the dramatic lines of their stories, desperate for affirmation that they had been understood.

[7] Cicero\* wrote a set of rules of conversation, which included taking turns and not going on too long. He thought he was the first to do so, but his rules have been rediscovered in culture after culture. They may be part of human beings' shared social instincts, a product of evolution. So, next time you find yourself in conversation with a bulldozer or a bore, you might feel sorry for them, rather than for yourself. They are lacking a basic human skill. From a certain point of view, what is fascinating about conversation is not how hard it is, but how well people subconsciously cooperate to make it seem easy.

出典：“The Importance of Pauses in Conversation,” *The Economist* (December 14th 2017)

〈注〉

elocution: 演説法, 朗読法, 発声法, 雄弁術

concoct: ～を企てる, ～を仕組む

Cicero: キケロ(106-43B.C.), 古代ローマの政治家・雄弁家・著述家

[1]について

- (1) Why does the author mention that Margaret Thatcher “brooked no disagreement”?
- (a) to show how a person can learn to speak more forcefully, given practice
  - (b) to introduce a well-known female politician as a figure of controversy
  - (c) to remind the reader that she was often involved in arguments
  - (d) to highlight that, despite being an assertive speaker, she was often interrupted
- (2) The underlined word “why” refers to \_\_\_\_\_.
- (a) the scientific study of language
  - (b) the purpose of interruptions
  - (c) the function of words like “um” and “uh”
  - (d) the reason Margaret Thatcher was often interrupted

[2]について

- (3) Why does the author refer to conversation as a machine?
- (a) to emphasize that conversations follow set rules and use precise timing
  - (b) to show that machines can predict when interruptions will occur
  - (c) to demonstrate that word retrieval is almost automatic in the mind
  - (d) to stress that people rarely have time to think before they begin speaking

[3]について

- (4) What are “a lengthening of syllables and a drop in pitch” given as examples of?
- (a) indicators of the end of a conversational turn
  - (b) ways to sound more authoritative without sounding rude
  - (c) predictors of an interruption
  - (d) signals to other speakers that the speaker is knowledgeable
- (5) What did the researchers conclude to be the reason Thatcher was often interrupted?
- (a) Her voice broke.
  - (b) Her voice got deeper.
  - (c) Her voice became slower.
  - (d) People disagreed with what she was saying.

[4]について

- (6) Which of the following best matches the author's opinion?
- (a) It is unfortunate that most people will assume things about other cultures without properly investigating them.
  - (b) Most people assume that cultures differing from their own are rude due to awkward conventions, but this is only partly true.
  - (c) Generally, people enjoy being with others from different cultures, despite having alternative beliefs.
  - (d) It is generally believed that such conversational conventions are different from culture to culture, but in fact they are similar.

- (7) From the underlined words “Though the Japanese are often said to be polite”, we can infer that the author thinks \_\_\_\_\_.
- (a) Japanese people are slow talkers
  - (b) the stereotype of politeness is not accurate
  - (c) we should never make judgements about a culture
  - (d) a short gap between turns could be rude in some cultures

[ 5 ]について

- (8) The word “detritus” could be replaced by \_\_\_\_\_.
- (a) tone
  - (b) junk
  - (c) standards
  - (d) requirements
- (9) Which description explains the underlined phrase “This makes sense”?
- (a) Due to the speed of conversational mechanics, such indicators are necessary.
  - (b) As a result of interruptions, people need a way to maintain conversations.
  - (c) Because we speak faster than we can think, we need a way to accommodate.
  - (d) Because conversations happen so quickly, humans need a break.
- (10) In this context the expression “hold the floor” is closest in meaning to \_\_\_\_\_.
- (a) encourage others to speak
  - (b) begin a new sentence
  - (c) continue a turn in the conversation
  - (d) allow others to communicate

- (11) What does the article suggest is the main function of “um” and “uh”?
- (a) to allow listeners a chance to join the conversation
  - (b) to show that the speaker is not sure what to say next
  - (c) to give the speaker time to think of what to say next without being interrupted
  - (d) to signal that a speaker is planning to end the conversation

[ 6 ] について

- (12) How is “uh-huh” different from “um” according to the paragraph?
- (a) It is used by the listener to show interest.
  - (b) It is used by the speaker to emphasize an important story.
  - (c) It shows irritation with the speaker.
  - (d) It is not different.

- (13) What does the author mean by the word “devilish”?

- (a) immoral
- (b) funny
- (c) ingenious
- (d) scandalous

[ 7 ] について

- (14) Why does the author mention Cicero?
- (a) to argue that Cicero is no longer relevant
  - (b) to highlight the historical interest in conversational dynamics
  - (c) to show that people have always used rules in speaking
  - (d) to present an ancient Roman perspective



[1]～[7]について

(15) Which of the following statements is correct?

- (a) Margaret Thatcher was interrupted because she was an aggressive speaker.
- (b) Conversational dynamics are based on split-second interruptions.
- (c) “Um”, “uh”, “mm-hmm” and interruption are not killers of conversation, but its lubricants.
- (d) People who say “uh-huh” are good conversationalists.

**2**

[1]～[6]のパラグラフからなる以下の文章を読み、下の(16)～(30)の間に対する答えとして最も適切なものをそれぞれ(a)～(d)から1つ選びなさい。なお、\*印のついた語句については下に注が与えられている。

[1] I have a theory that much recent tech\* development and innovation over the last decade or so has an unspoken overarching agenda. It has been about creating the possibility of a world with less human interaction. This tendency is, I suspect, not a bug—it's a feature. We might think Amazon was about making books available to us that we couldn't find locally—and it was, and what a brilliant idea—but maybe it was also just as much about eliminating human contact. The consumer technology I am talking about doesn't claim or acknowledge that eliminating the need to deal with humans directly is its primary goal, but it is the outcome in a surprising number of cases. I'm sort of thinking maybe it *is* the primary goal, even if it was not aimed at consciously. Judging by the evidence, that conclusion seems inescapable.

[2] This then, is the new norm. Most of the tech news we get barraged\* with is about algorithms\*, AI, robots, and self-driving cars, all of which fit this pattern. I am not saying that such developments are not efficient and

convenient; this is not a judgment. I am simply noticing a pattern and wondering if, in recognizing that pattern, we might realize that it is only one trajectory of many. There are other possible roads we could be going down, and the one we're on is not inevitable or the only one; it has been <sup>(19)</sup> (possibly unconsciously) chosen.

[3] I realize I'm making some wild and crazy assumptions and generalizations with this proposal—but I can claim to be, or to have been, in the camp that would identify with the unacknowledged desire to limit human interaction. I grew up happy but also found many social interactions extremely uncomfortable. I often asked myself if there were rules somewhere that I hadn't been told, rules that would explain it all to me. I still sometimes have social niceties\* "explained" to me. I'm often happy going to a restaurant alone and reading. I wouldn't want to have to do that all the time, but I have no problem with it—though I am sometimes aware of looks that say "Poor man, he has no friends." So I believe I can claim some insight into where this unspoken urge might come from.

[4] Human interaction is often perceived, from an engineer's mind-set, as complicated, inefficient, noisy, and slow. Part of making something "frictionless" is getting the human part out of the way. The point is not that making a world to accommodate this mind-set is bad, but that when one has as much power over the rest of the world as the tech sector does <sup>(24)</sup> over folks who might not share that worldview, there is the risk of a strange imbalance. The tech world is predominantly male—very much so. Testosterone\* combined with a drive to eliminate as much interaction with real humans as possible for the sake of "simplicity and efficiency"—do the math, and there's the future.

<sup>(25)</sup>

(中略)

[ 5 ] Minimizing interaction has some knock-on effects\*—some of them good, some not. The externalities of efficiency, one might say. For us as a society, less contact and interaction—real interaction—would seem to lead to less tolerance and understanding of difference, as well as more envy and antagonism. As has been in evidence recently, social media actually increases divisions by amplifying echo effects and allowing us to live in cognitive bubbles. We are fed what we already like or what our similarly inclined friends like (or, more likely now, what someone has paid for us to see in an ad that mimics content). In this way, we actually become less connected—except to those in our group.

[ 6 ] Social networks are also a source of unhappiness. A study earlier this year by two social scientists, Holly Shakya at UC San Diego and Nicholas Christakis at Yale, showed that the more people use Facebook, the worse they feel about their lives. While these technologies claim to connect us, then, the surely unintended effect is that they also drive us apart and make us sad and envious. I'm not saying that many of these tools, apps, and other technologies are not hugely convenient, clever, and efficient. I use many of them myself. But in a sense, they run counter to who we are as human beings.

出典：David Byrne, "Eliminating the Human," *MIT Technology Review*  
(August 15th 2017) (一部改変)

〈注〉

tech: technology

barrage: ～を浴びせる

algorithm: アルゴリズム《問題を解くための具体的な操作[手法]》

niceties: 微妙な[細かい]点

testosterone: テストステロン《男性ホルモン(剤)》

knock-on effects: ドミノ効果, 将棋倒し, 連鎖反応

[1]について

- (16) According to the author, recent innovations in technology \_\_\_\_\_.
- (a) are full of errors and faults
  - (b) have been creating more possible worlds
  - (c) have a hidden second motive
  - (d) are defined by new artificial intelligences
- (17) Why does the author say “not a bug—it’s a feature”?
- (a) to show that the trend he describes is not accidental
  - (b) to show that the trend he describes is significant
  - (c) to show that the trend he describes can easily be fixed
  - (d) to show that the trend he describes is irreversible
- (18) What does the author claim about “eliminating human contact”?
- (a) It is an unavoidable result of technological innovation.
  - (b) It is the primary, conscious, but unstated aim of modern tech development.
  - (c) It is an incidental side-effect of modern consumer technology.
  - (d) It is not a stated aim of modern tech development, but may still be an unconscious aim.

[ 2 ] について

- (19) Choose the word that best replaces "trajectory".
- (a) judgment
  - (b) aisle
  - (c) direction
  - (d) reaction
- (20) What does the author claim about the trend of tech being used to reduce human interaction?
- (a) People are basically interactive, and so this is not likely to continue.
  - (b) It is an inescapable result of people's laziness.
  - (c) People prefer to have easy, automatic interactions, and so it is a good thing.
  - (d) It is not a necessary part of technological advancement.

[ 3 ] について

- (21) How does the author describe himself in the first sentence of this paragraph?
- (a) He belongs to the camp that would prefer not to be identified.
  - (b) He understands the desire to be less sociable.
  - (c) He believes that he is sometimes a little crazy.
  - (d) He can easily notice people who do not like to interact with others.
- (22) What image does the author create of his personal social development?
- (a) He treated communication as a complex but satisfying game.
  - (b) He was very shy and hated to speak with strangers.
  - (c) He could be sociable when he was keeping his own company.
  - (d) He often found interpersonal interaction quite difficult or confusing.

[4]について

- (23) According to the author, what is a major aim in engineering modern technology?
- (a) It should be made to improve the pleasure of human interaction.
  - (b) It should be made to reproduce human interaction as perfectly as possible.
  - (c) It should be made to function smoothly and effectively.
  - (d) It should be made to create a feeling of masculinity.
- (24) What does the author argue about the “mind-set” of engineers?
- (a) It is a shining example and representative of most of humanity.
  - (b) It is basically antisocial.
  - (c) It is strangely unbalanced and illogical.
  - (d) It is a common way of thinking for most men and for many women as well.
- (25) Why does the author say “do the math, and there’s the future”?
- (a) to show that math is an essential subject for engineers
  - (b) to show that if we add together the previous observations, we can see where these developments are headed
  - (c) to show engineering inevitability creates a future with less “frictionless” human interaction
  - (d) to show how a reduction in human interaction results in a view of male engineers as antisocial and uncommunicative

[ 5 ]について

- (26) What does the author mean by the word "tolerance"?
- (a) tolerance of people who are hostile
  - (b) tolerance of a society with less interaction
  - (c) tolerance of a more technology-dependent world
  - (d) tolerance of other people in society
- (27) What are we "fed"?
- (a) a stream of orders
  - (b) our favourite food
  - (c) a selected diet of information
  - (d) news about our friends and associates
- (28) What is meant by "an ad that mimics content"?
- (a) an advertisement based on things our friends pay for
  - (b) an advertisement which appears not to be an advertisement
  - (c) an advertisement which does not teach us anything
  - (d) an advertisement which contains imitations

[ 6 ]について

- (29) The author mentions that social networks are also a source of unhappiness. What evidence does he provide?
- (a) a study that linked Facebook with feeling sick
  - (b) a study that linked Facebook with levels of satisfaction
  - (c) a study that linked Facebook with relationship problems
  - (d) a study that linked Facebook with positive life choices

- (30) What does the underlined sentence mean?
- (a) The author thinks that these technologies are not useful.
  - (b) The author thinks that these technologies have some positive aspects.
  - (c) The author thinks that these technologies have some human qualities.
  - (d) The author thinks that these technologies counteract the effects of being human.

**3** 以下の各文の意味を考えた時、文法・語法的な誤りのある箇所をそれぞれ(a)～(d)から1つ選びなさい。

- (31) Please place any articles of clothing, swimming and sporting equipment, personal belongings, also not money and jewelry, in the lockers.
- (32) Achieving good writing is a learning process. Start out by writing simple, clear prose—no words or expressions you not quite understand—just tell it like it is.
- (33) A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, in the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts.
- (34) Would you rather do something, or have something done to you? With the first choice, you are under control; with the second you are the subject of somebody's whim.
- (35) Some astonished questions about the nature of the universe have been raised by scientists studying the nature of black holes in space.



- (36) Every writer cannot face the problem of dealing with identical words or phrases appearing in the same sentence or an adjoining one.
- (37) Iran's supreme leader made clear that Mr. Trump's decision was, on his view, further proof that the United States could never be trusted to keep its word.
- (38) Popular music is more diverse than ever, driving as much by synthesizer as soaring guitar solos.
- (39) The project focuses on access for people with disabilities as well as for individuals whom the arts are not an option financially.
- (40) There are few artists working in these trying times which music can be described as transformative.

**4** 以下の文章を読み、文脈上、空所に入れるのもっとも適切な語または句をそれぞれ(a)~(d)から1つ選びなさい。

The Egyptian landscape has been changing for centuries. One area ( 41 ) dramatic change over the last 7,000 years is the Nile River basin. One of the most notable aspects of this transformation is the year-round irrigation of land for agricultural purposes, ( 42 ) a strict ( 43 ) on the annual flood. Conversion to continuous irrigation, which began around 1500 and was limited only by the level of technology, led ( 44 ) agricultural productivity. This ( 45 ) contributed to an increase in the population of the area.

Large-scale conversion of agricultural land ( 46 ) perennial irrigation

began in 1800 with the ( 47 ) of more modern technology. Water could be retained, raised, and ( 48 ) to summer crops with the aid of barrages constructed on the Nile below Cairo and at sites on 30,000 km of new canals. Large dams were built on the Nile at Aswan in 1902, 1912, and 1933. The final transformation to continuous irrigation was finished ( 49 ) the completion of the Aswan Dam in 1960. This full-scale change ( 50 ) a major shift and expansion in agriculture.

出典 : Steven M. Goodman, Peter Meininger, et al., eds. *The Birds of Egypt*  
(Oxford: Oxford University Press, 1989).

- (41) (a) having executed (b) suffering  
(c) which pursued (d) which has undergone
- (42) (a) rather than (b) and  
(c) instead (d) less than
- (43) (a) trust (b) damage  
(c) reliance (d) influence
- (44) (a) highly (b) to improved  
(c) to enhance (d) away
- (45) (a) still (b) in turn  
(c) alternately (d) curiously
- (46) (a) contained (b) over  
(c) implying (d) involving

- (47) (a) source (b) culmination  
(c) manageability (d) availability
- (48) (a) distributed (b) attributed  
(c) dropped (d) conserved
- (49) (a) in (b) with  
(c) of (d) as
- (50) (a) affected (b) brought about  
(c) gave (d) relieved

**5** 2つの英文の空所にはどちらも同じ単語が入る。もっとも適切なものをそれぞれ(a)~(d)から1つ選びなさい。

- (51) My grandmother likes ( ) stones such as rubies and diamonds.  
Do you know that clean water is a ( ) commodity in many parts of the world?  
(a) durable (b) firm (c) precious (d) sparkling
- (52) In a recycling ( ) in Belgium, it is possible to recycle 90% of a car's parts.  
They brought a potted ( ) as a housewarming gift for Keiko.  
(a) area (b) center (c) device (d) plant

(53) Two experts are working on this scientific (        ), and we expect some results very soon.

You need to (        ) your voice so that people sitting in the back rows can hear you.

- (a) plan                      (b) project                      (c) scheme                      (d) trend

(54) Legislation controlling food has one important (        ).

You must always (        ) high if you want to get ahead.

- (a) aim                      (b) attempt                      (c) motive                      (d) object

(55) Peter is the person who (        ) this year's art festival.

I only just (        ) to complete the task before the deadline.

- (a) controlled                      (b) directed                      (c) managed                      (d) produced

(56) Takeshi complained of (        ) pains in his stomach, and was admitted to hospital.

Dogs usually have an (        ) sense of smell and hearing.

- (a) awful                      (b) even                      (c) acute                      (d) urgent

6

(57)~(60)はひと続きの文章である。各文の下に与えられた(a)~(h)の語(句)を並べ替えて空所に入れ、日本語の文意に合う英文を作った場合、\*印の空所に入るべきものを選びなさい。なお、文頭に置かれる単語の頭文字は大文字に変えるものとする。

(57) Eric Wachsmanは、電気自動車の普及を妨げている大きな難題の一つに対しての解決策があるかもしれないと考えている。つまり、よりよいバッテリーの製作である。需要があることは十分明らかだ。メリーランド大学のこの科学者は、これまで「走行距離不安症」が消費者にとっての懸念事項の一つであったことを知っている。「あらゆるバッテリーからもっともっとエネルギーを引き出したいのです」と彼は語る。

Eric Wachsman thinks he might have an answer (     )(     )  
(     ) ( \* ) (     ) (     ) (     ) (     ) vehicles: building  
better batteries. The need is clear enough. The University of Maryland  
scientist knows that "range anxiety" has been one of the sticking points for  
consumers. "We want more and more energy out of every battery," he says.

- |               |                                 |
|---------------|---------------------------------|
| (a) electric  | (b) one of the great challenges |
| (c) hindering | (d) is                          |
| (e) the rise  | (f) to                          |
| (g) of        | (h) that                        |

- (58) しかし、バッテリー内で、可燃性の液体ではなく、固形セラミックを用いるため、Wachsman教授の計画が、近い将来に電気自動車に適用されることはないだろう。

But Professor Wachsman's big idea, ( ) ( ) ( ) ( ) ( ) ( \* ) ( ) in electric vehicles ( ) soon.

- (a) anytime (b) show up  
(c) a solid ceramic (d) flammable liquids  
(e) won't (f) using  
(g) inside the battery (h) rather than

- (59) 技術がうまく機能したとしても、その商業的な実現可能性を証明し、改良を加え、民間投資を引きつけるには、時間と労力がかかる。

( ) ( ) ( ) ( \* ) ( ), ( ) ( ) ( ) viability, refining it, and attracting private investment takes time and effort.

- (a) commercial (b) a (c) works (d) even  
(e) proving (f) its (g) when (h) technology

- (60) エネルギー研究を奨励する連邦政府のプログラムの一部であるWachsmanの計画は、クリーンエネルギー経済へと急速に舵を切ることによって地球温暖化の問題に取り組もうとしている数々の国が直面している、ある種の難しい現実を象徴しているのだ。

Wachsman's project, part of a federal program to stimulate energy research, symbolizes some of the difficult realities nations ( ) ( ) ( ) ( \* ) ( ) ( ) ( ) moving rapidly toward a clean energy economy.

- (a) seek (b) as  
(c) address (d) they  
(e) face (f) by  
(g) climate change (h) to



