2018 年度入学試験問題　206

情報科学部A方式

1 限 英　　語 (90 分)

〈注意事項〉

1. 試験開始の合図があるまで，問題冊子を開かないこと。
2. 解答はすべて解答用紙に記入しなさい。
3. マークシート解答方法については以下の注意事項を読みなさい。

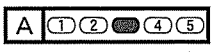
マークシート解答方法についての注意

マークシート解答では，鉛筆でマークしたものを機械が直接読みとって採点する。したがって解答はHB の黒鉛筆でマークすること(万年筆，ボールペン，シャープペンシルなどを使用しないこと)。

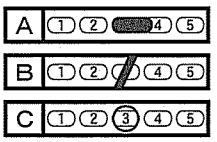
記入上の注意

1. 記入例　　解答を 3 にマークする場合。

(1) 正しいマークの例



(2) 悪いマークの例



枠外にはみださないこと。

○でかこまないこと。

2. 解答を訂正する場合は，消しゴムでよく消してから，あらためてマークすること。
3. 解答用紙をよごしたり，折りまげたりしないこと。
4. 問題に指定された数よりも多くマークしないこと。

4. 問題冊子のページを切り離さないこと。

問１　次の下線部(1)から(6)について，その発音が，選択肢①～⑧の下線部と同じ発音であるものをそれぞれ選べ。ただし，同じ選択肢を二度使用してはならない。

He was the **o**nly student to take the examination. As soon as he was given the exam (1) paper, he first **rea**d the fr(2)**o**nt (3) page and started to look at the l**a**beled parts one by one. After 15 minutes, he felt tired, so he had to br(4)**ea**the deeply. When he was told that he had only five minutes left, he was b(5)**u**sy checking the most difficult section. In the end, he was able to complete (6) everything in time.

① pr**ou**d　② sh**ou**lder　③ st**ea**k　④ c**ei**ling

⑤ appr**o**ve　⑥ **i**mage　⑦ c**ou**sin　⑧ pl**ea**sant

問２　次の(1)から(10)の空欄に入れるのに最も適切なものを，それぞれ①～④のうちから一つ選べ。

(1) I don't have much money, so I can't afford [　　] in a hotel.

① to have stayed　② staying

③ stay　④ to stay

(2) Remember to switch off the light before [　　] the room.

① you leave　② to leave

③ you left　④ your leaving

(3) My mother was out last night, so I [　　] dinner for myself.

① must have cooked　② had to cook

③ must cook　④ had cooked

(4) The students had all finished the test, so the teacher let them [　　] home early.

① gone　② going　③ to go　④ go

(5) Eri: Do you have a dictionary?

Jane: Yes, I think I have [　　] in my bag.

① it　② one　③ that　④ this

(6) We were [ ] we could hardly stand up.

① tired so that ② tired so as

③ so tired as ④ so tired that

(7) Kana [ ] a lot of presents back here to Japan from her trip to New Zealand.

① brought ② took ③ got ④ fetched

(8) If you went to bed earlier, you [ ] so tired.

① wouldn't be ② aren't

③ hadn't been ④ weren't

(9) Our manager asked us what [ ] to improve business.

① we thought should we do ② did we think we should do

③ we thought we should do ④ did we think should we do

(10) My grandfather has worked at his company [ ] over 40 years.

① since ② during ③ from ④ for

問3 次の文章は，本を読むことの利点を述べている。(1)から(6)の空欄に入れるのに最も適切なものを，それぞれ①～④から一つ選べ。

Here are Six Reasons Why You Should Read More Books

1. It Develops Your Verbal Abilities

Although reading doesn't always make you a better communicator, those who read tend to have a more varied range of words [(1)]. The more books you read, the more words you will learn, giving you a wider range of vocabulary to use in everyday life.

① that are used in speaking more than in written English

② than those who appear to be fluent speakers of a language

③ to express how they feel and what they want to say

④ which they may have difficulty in using correctly

2. It Improves Your Focus and Concentration

Unlike blog posts and news articles, sitting down with a book takes long periods of focus and concentration, which at first is hard to do. Being fully engaged in a book involves closing off the outside world and focusing entirely on the text, [(2)] .

① without paying attention to the details of the content

② which over time will strengthen your power of attention

③ especially if you do not find the topic interesting

④ although few people find this useful to begin with

3. It Improves Your Imagination

You are only limited by what you can imagine, and the worlds described in books, as well as other people's views and opinions, will help you expand your understanding of what is possible. When you read a written description of an event or a place, [(3)] , instead of having the image placed in front of you when you watch television.

① the writer is able to transmit an exact picture of what is described

② your mental picture of it may be entirely mistaken

③ your mind is responsible for creating that image in your head

④ you are freed from the difficulty of imagining it for yourself

4. It Makes You Interesting and Attractive

Having a library of information that you have picked up from non-fiction reading will be useful in any academic or scholarly conversation. You will be able to participate and add to the conversation [(4)]. You will be able to engage a wider variety of people in conversation and in turn improve your knowledge and conversation skills.

① by changing the topic to one you find more interesting
② with quotations from some of your favorite novels
③ instead of having to make excuses and leave
④ even if you know very little about the subject

5. It Improves Your Memory

In her book, *Proust and the Squid: The Story and Science of the Reading Brain,* Maryanne Wolf explains that "Typically, when you read, you have more time to think." Reading gives you a unique pause button for comprehension and insight. Generally, with oral language "when you watch a film or listen to a CD, you don't press pause." [(5)].

① Reading slows you down, which means that you may take much longer to understand the details of a story
② The increased activity in reading keeps your memory sharp and your learning capacity quick
③ However, if you read frequently, your reading habits may affect the way you watch and listen
④ As a result, you may find it hard to remember all the details of what you read

6. It Is Enjoyable

All the benefits of reading mentioned so far are a bonus result of the most important benefit of reading: its entertainment value. If it were not for the entertainment value, reading would be a boring task. [(6)]. Much more exciting than watching a movie or a TV show (although they have their many benefits as well), a good book can keep us amused while developing our life skills.

① Even if we can't wait to find out how a story ends, we need to read patiently so that we don't miss the details

② The main aim of reading is to become a better person; still, that doesn't mean it can't be fun

③ But in fact reading is not only fun; it has all the added benefits that we have discussed so far

④ Books are like relationships: the more work we put into them, the more satisfaction we will get from them

問4　次の(1)から(3)のパラグラフ(段落)には，まとまりを良くするために取り除いたほうがよい文が一つある。取り除く文として最も適切なものを，それぞれ下線部①～④から一つ選べ。

(1) What exactly is an intelligent decision? Imagine you touch a stove and it's hot and your hand burns. Two days later, you are in front of another stove. Would you touch the stove without thinking? ①Not touching the stove the second time is an example of intelligence, the ability to gain and apply knowledge and skills. ②Remembering your hand was burned the first time is not intelligence. ③Intelligence is the ability to take your memory then do something based on the details of the memory. ④With intelligence, we can store large amounts of information in our brain. Scientists and programmers are busy trying to enable computers to have artificial intelligence, the ability to gain and apply knowledge and skills.

(2) To teach computers how to be intelligent, researchers train them to play old video games and win. ① However, it is widely recognized that children spend too much time playing intelligent video games. ② Games provide a limited universe with a set of rules. ③ Computers play the games and use trial and error to figure out different ways to win, in the same way as we do when playing these games. ④ They use memory to build on successes and learn from mistakes.

(3) There are interesting projects with computers and artificial intelligence. For example, the Wikipedia online reference site uses artificial intelligence to help in its article-editing process. ① Its software identifies articles that contain incorrect information. ② Readers can also enjoy exciting new stories in Wikipedia every day. ③ Human editors are freed up to focus on more complicated tasks while the software handles everyday tasks. ④ Another media-related use of artificial intelligence involves reporting sports events, the financial markets, and business news. One company developed software which collects facts and turns them into articles.

問5　次の(1)から(6)について正しい英文になるように選択肢①～⑧を並べ替えたとき，空欄 (ア) ～ (シ) に入る語句を答えよ。

(1) Social media companies should ☐ ☐ (ア) ☐ ☐ ☐ (イ) ☐ online.

① children　② if　③ be　④ protect
⑤ punished　⑥ they　⑦ to　⑧ fail

(2) If I were ☐ , ☐ (ウ) ☐ (エ) ☐ ☐ ☐ .

① such　② I　③ you
④ wouldn't　⑤ a　⑥ do
⑦ thing　⑧ dangerous

(3) Language ☐ ☐ (オ) ☐ ☐ (カ) ☐ ☐ to communicate with the world.

① as a tool　② allows　③ that　④ can
⑤ thought　⑥ us　⑦ of　⑧ be

(4) I don't like him ☐ ☐ ☐ , (キ) ☐ ☐ (ク) ☐ his opinions.

① agree　② a　③ with　④ nor
⑤ person　⑥ do　⑦ I　⑧ as

(5) Not everyone ☐ ☐ ☐ (ケ) ☐ ☐ ☐ (コ) adults.

① have　② same rights　③ children　④ whether
⑤ should　⑥ agrees　⑦ the　⑧ as

(6) Be careful ☐ ☐ (サ) ☐ ☐ (シ) ☐ ☐ later.

① that　② anything　③ throw　④ may be
⑤ not　⑥ needed　⑦ to　⑧ away

問6　次の会話(1)から(6)の空欄に入れるのに最も適切なものを，それぞれ①～④のうちから一つずつ選べ。

(1) Julie: It's so hot today!

Julie's dad: Do you want something to drink?

Julie: Can I have a glass of water?

Julie's dad: [　　] .

① Not at all

② Don't mention it

③ Sure, help yourself

④ It's out of the question

(2) Steve: Wow, these books are pretty heavy!

Junya: Would you like some help?

Steve: Don't worry, [　　] .

Junya: Are you sure?

① I can manage

② you can give me a hand

③ I can't take it

④ you can't help it

(3) Helen: Are you sure you won't have another cup of coffee?

Sue: No, really, I must be on my way.

Helen: Well, OK, goodbye then.

Sue: Goodbye. It was lovely to see you again.

Helen: [　　] .

① Nice to meet you, too

② Yes, keep in touch

③ Easy come, easy go

④ Another time, perhaps

(4) Greg: When I first came to Japan, there weren't any cell phones.

Tatsuya: Really? How long have you been living here?

Greg: [ ] . I came here in 1985, so I've been here for 33 years.

① I don't have a clue

② Give me a break

③ Let's see

④ Check it out

(5) Chris: I hear you're going to France next week.

Diane: Yes, that's right. I'm a bit nervous about it.

Chris: You studied French at school, didn't you?

Diane: Well, yes, but [ ] , I can't speak it very well.

① all the more

② for that matter

③ no wonder

④ even so

(6) Mami: Where did you go to high school?

Karl: It was a very small place right out in the country.

Mami: Did you enjoy your time there?

Karl: Well, it was quite tough, but [ ] it was fun.

① at last

② on the whole

③ back and forth

④ in common

問7　次の文章は2016年10月の記事である。それを読んで，以下の(1)から(4)の問いに答えよ。

If you follow discussions about the Internet of Things (IoT)*1, you've probably heard this surprising prediction at least once: The world will have 50 billion internet-connected devices by 2020. That prediction was first made by the former head of the technology company Ericsson, when he gave a 2010 presentation to company shareholders. Today, that number has arguably done more than any other to set sky-high expectations for IoT growth and profits. Remarkably, the prediction wasn't even close to the highest at that time.

Major analysts have since lowered their expectations for 2020, as shown in Figure 1. But the popular 50 billion number continues to be widely talked about. Even some of those who first made the prediction are a bit surprised by its widespread acceptance. Peter Middleton of the IT research company Gartner says such forecasts are intended to create "market efficiency," by helping companies make smart choices about whether they should enter a new area of business, and helping investors decide where to place their money.

Why isn't there one generally accepted set of numbers? Two reasons: arithmetic and avarice*2. To begin their analyses, many IT companies collect year-by-year sales data from manufacturers that produce connected devices or components such as semiconductors, as well as from companies that sell and ship those products to customers. Next, the same IT companies reduce the reported number of devices to account for those that will be replaced or thrown out each year, and then they add estimates of the numbers of internet-connected devices installed in previous years. The result of this arithmetic is the "install base," or approximate number of connected devices in use at a given time.

Some analysts include other variables, such as industry growth rates or

the amount of money that companies spend every year on information technology. And some conduct consumer and business surveys to find out how devices are used, so they'll know how many of the devices that are sold and shipped actually end up connected to the internet.

Janna Anderson of Elon University says there is some self-interest in predictions, too. In 2013, she found that "those who are marketing IoT and those whose business results are somehow affected by enthusiastic predictions are more likely to make them." At this point, even the strictest definitions of IoT remain unclear because of exaggeration, including attempts to predict demand for devices that have not yet been invented or marketed. But David Evans of the startup company Stringify, one of those originally most positive about the future of IoT, is confident that businesses will find many millions of practical ways to serve customers through the IoT before long. "I think technology needs to solve real problems, and if it doesn't it will die on the vine[*3]," he says.

As the next 10 billion IoT devices come online, the industry will face some difficult challenges, such as ensuring the security of its devices, powering billions of sensors, and handling all the resulting e-waste[*4]. Despite those issues, Evans isn't shy about anticipating connected device ubiquity[*5]. "I expect to see trillions of connected things, in the end," he says.

[*1] Internet of Things (IoT)：「モノ」がインターネットと接続され，情報交換・制御する仕組み

[*2] arithmetic and avarice：計算と強欲

[*3] die on the vine：実を結ばず終わる

[*4] e-waste：電子情報産業廃棄物

[*5] ubiquity：至る所にあること

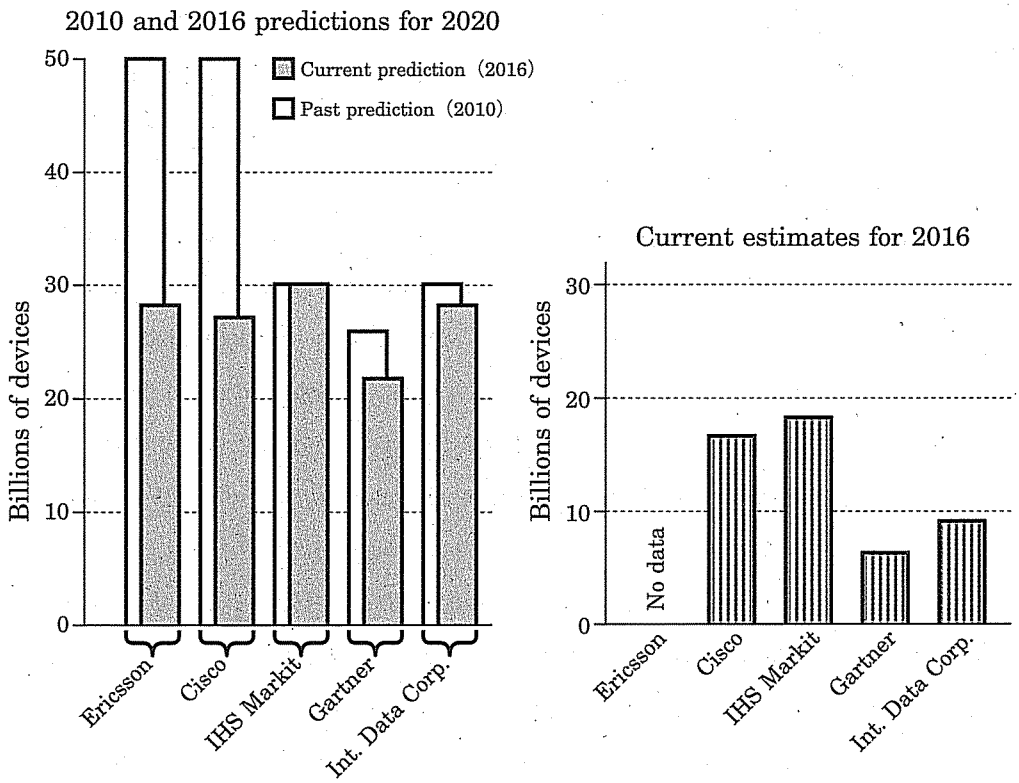


Figure 1　Estimated number of IoT-connected devices

(1)　Figure 1 を見て以下の(ア)から(エ)までの空欄にそれぞれ該当するものを以下の①～⑤より選び番号で答えよ。同じ選択肢を二度以上使用しても構わない。

If we look at each company's 2016 prediction for the number of internet-connected devices in 2020 and compare it with the same company's previous prediction, the company with the largest difference is [(ア)], while the company with the smallest difference is [(イ)]. Next, if we compare the results for the companies that announced their estimates for 2016 at the same time as their predictions for 2020, the company with the largest difference between the current estimate and current prediction is [(ウ)] while the company with the smallest difference is [(エ)].

① IHS Markit　② Gartner　③ Int. Data Corp.
④ Ericsson　⑤ Cisco

(2) Ericsson 社と Cisco 社の 2 社が以前に行った2020年の設置台数予測値と2016年に行った設置台数予測値をそれぞれ比べると，いずれも予測値が大幅に引き下げられている。その理由としてこの記事の主張に最も適合するものを以下の①～④から一つ選べ。

① When the numbers of devices were estimated before 2016, the results included not only the predicted number of devices in each year, but also a predicted increase in market size, economic growth, and numbers obtained with an expectation of growth.

② The numbers estimated in the past showed only the actual number of devices produced each year, so they did not include the number of devices which were replaced or thrown out.

③ The growth rate of IoT around 2010 was high. But it went down around 2016, so when the predictions were based on the new growth rate, the results were much lower.

④ The actual number of devices was obtained in 2016, so there were only four years of predicted results from then until 2020. As a result, the accuracy of the prediction was better than in 2010.

(3) 2020年に約 30 billion の IoT 設置台数を実現するために乗り越えるべき主要な課題とは何か，以下の①～⑧のうちからこの記事の主張に適合するものを三つ選べ。

① finding many millions of practical ways to serve customers

② finding ways to discard huge numbers of older IoT devices

③ encouraging investments in IoT

④ finding suitable power sources

⑤ encouraging IoT research and development

⑥ increasing the number of IoT specialists

⑦ strengthening the security of IoT

⑧ increasing the number of new businesses

(4) 「2020年には世界のIoT普及台数が50 billionになる」理由としてこの記事の主張に最も適合するものを以下の①～④から一つ選べ。

① Aiming for a higher number than the one recently predicted is expected to inspire industry, attract investors, and activate IoT business, allowing it to reach 50 billion devices by 2020.

② If people say that IoT will have a much bigger market in the future, it will attract investors and businesses, and increase sales of computers.

③ By setting a high number as a target, research and development will be activated, dream-like technology will be created, and use of IoT will be increased even in other fields of technology.

④ By using a high number as a catch phrase, many people are planning to attract human resources and money into the IoT field.

問8 ディープ・ラーニング(深層学習)について書かれた次の英文を読み，(1)から(6)の質問の答えとして最も適切なものをそれぞれ①～④から一つずつ選べ。

Over the past four years, readers have doubtlessly noticed huge increases in the quality of a wide range of everyday technologies. Most obviously, the speech-recognition functions on our smartphones work much better than they used to. When we use a voice command to call our friends, we reach them now. We aren't connected to an angry stranger. In fact, we are increasingly interacting with our computers by just talking to them, whether it's Amazon's Alexa, Apple's Siri, Microsoft's Cortana, or the many voice-responsive features of Google. Chinese search giant Baidu says customers have tripled their use of its speech interfaces in the past 18 months.

Machine translation and other forms of language processing have also become far more convincing, with Google, Microsoft, Facebook, and Baidu

announcing new developments every month. Google Translate now translates spoken sentences in one language into spoken sentences in another for 32 pairs of languages, while offering text translations for 103 languages, including Cebuano, Igbo, and Zulu. Google's Inbox application offers three ready-made replies for many incoming emails.

Then there are the advances in image recognition. The same four companies all have features that let you search or automatically organize collections of photos. You can ask to be shown, say, all the ones that have dogs in them, or snow. The companies are all developing applications that generate sentence-long explanations for the photos in seconds. Think about that. To gather up dog pictures, the application must identify anything from a Chihuahua to a German shepherd and not fail to work if the dog is upside down or partly hidden, at the right of the frame or the left, in fog or snow, sun or shade. At the same time it needs to exclude wolves and cats.

The advances in image recognition extend far beyond cool social applications. Medical companies claim they'll soon be able to use computers to read X-rays, MRIs, and CT scans more rapidly and accurately than doctors, to detect cancer earlier and more easily, and to speed up the search for life-saving medicines. Better image recognition is essential to improving robots, drones and, of course, self-driving cars.

But what most people don't realize is that all these breakthroughs are basically the same breakthrough. They've all been made possible by a family of artificial intelligence (AI) techniques popularly known as deep learning, though most scientists still prefer to call them by their original academic name: deep neural networks.

The most remarkable thing about neural networks is that no human being has programmed a computer to perform any of **the achievements described above**. In fact, no human could. Programmers have, rather, trained the computer by feeding it a learning algorithm and exposing it to

big data — hundreds of thousands of images or years of speech samples. They have then allowed the computer to learn for itself how to recognize the desired objects, words, or sentences. In short, such computers can now teach themselves. "You essentially have software writing software," says Jen-Hsun Huang, CEO of graphics processing leader NVIDIA.

Neural nets aren't new. The concept dates back to the 1950s, and many of the key algorithmic breakthroughs occurred in the 1980s and 1990s. What's changed is that today computer scientists have finally learned to use both the vast computational power and the enormous quantities of data — images, video, audio, and text files available on the Internet — which are essential to making neural nets work well.

Google had two deep-learning projects under way in 2012. Today it is pursuing more than 1,000, according to a spokesperson, in all its major product sectors, including search, Android, Gmail, translation, maps, YouTube, and self-driving cars. IBM's Watson system used AI, but not deep learning, when it beat two TV quiz champions in 2011. Now, though, almost all of Watson's 30 component services are supported by deep learning.

Investors, who didn't even know what deep learning was five years ago, are now suspicious of startup companies that don't have it. We're now living in an age where it's going to be required for people building advanced software applications. People will soon demand, "Where's your natural-language processing version? How do I talk to your application? Because I don't want to click through menus."

(1) Select the item that belongs to the same family as Cebuano, Igbo, and Zulu.

① Amazon's Alexa
② Chihuahua
③ Google Translate
④ German

(2) Select the statement that **is not** correct according to this article.

① Google has more than 500 times as many deep learning projects as it did five years previously.

② The concept of neural networks is not new.

③ Deep learning needs only a little data to learn to identify an object.

④ Few investors had heard of deep learning ten years ago.

(3) How have smartphones improved in the last four years?

① They have started to include speech recognition functions.

② They have made it possible for us to connect with our friends.

③ They have become better at understanding what people are saying.

④ They are easier to use, so people are less likely to get angry with them.

(4) How is it possible for applications to generate explanations of photographs?

① By using image recognition to understand the contents of the photographs

② By rearranging the objects in photographs so that no parts are hidden

③ By automatically organizing people's collections of photographs

④ By excluding all the objects not contained in the photographs

(5) Which of the following is **not** one of "**the achievements described above**"?

① Generating sentence-long explanations of photos in seconds

② Reading CT scans more quickly and accurately than doctors

③ Translating spoken sentences in one language into spoken sentences in another

④ Using artificial intelligence to defeat two TV quiz champions

(6) How can computers teach themselves?

① By training a learning algorithm that has been exposed to big data

② By analyzing recognized objects in order to generate big data

③ By learning to recognize particular items among huge amounts of data

④ By looking through speech and image data to find suitable examples