

文部科学省後援

技術英検

1 級試験問題

実施日：20xx年X月X日(x)

開始時刻：12時20分

終了時刻：13時40分

<注意事項>

1. 解答用紙は別紙です。
2. 問題はIからVIまであり（全6問）、IからIVはマークシート、VとVIは記述式です。
3. 解答用紙には、受験番号、氏名を忘れずに記入してください。
記入漏れの場合は、無効となります。
4. 解答用紙のみ提出してください。
この問題用紙はお持ち帰りいただいても結構です。

I 次の(a)から(e)の英文の()に入れる最適な語を選び、その番号を解答欄に記入しなさい。なお、1から3はそれぞれ1回しか使えない。文頭に来るべき語であっても先頭は小文字になっている。

【英文空所補充(2か所各3択) 語彙力 (3点×2)×5問=30点】

(a) Magnesium is an important nutrient for the human body; chronic magnesium (a-1) can increase the risk (a-2) heart disease and diabetes.

(a-1) 1. deficiency 2. intake 3. coordination

(a-2) 1. on 2. of 3. with

(b) (b-1) most organisms cannot live at extremely high temperatures, certain species can (b-2) temperatures up to 120° C.

(b-1) 1. however 2. since 3. although

(b-2) 1. tolerate 2. calibrate 3. operate

(c) Fuel cells generate power through an (c-1) process. They convert chemical energy to electrical energy by (c-2) hydrogen and oxygen from the air.

(c-1) 1. electromechanical 2. electrochemical 3. antibiotic

(c-2) 1. combining 2. mixing 3. accommodating

(d) As with any triangle, the area is (d-1) to one half the base multiplied (d-2) the corresponding height.

(d-1) 1. equal 2. similar 3. normal

(d-2) 1. by 2. for 3. through

(e) Rocket engines work by action and reaction; they push rockets (e-1) simply by expelling their exhaust in the (e-2) direction at high speed.

(e-1) 1. front 2. other 3. forward

(e-2) 1. curved 2. straight 3. opposite

II 次の (a) から (d) のそれぞれの英文を、情報を変えずに「3C (Correct, Clear, Concise) に則って最も簡潔に書き直した英文」を1つ選び、その番号を解答欄に記入しなさい。

【短文を簡潔にリライト(英文3択) : 4点×4問=16点】

- (a) The soil microbes change the forms of organic nutrients so that they are easily available.
1. The soil microbes change organic nutrients that are easy to use.
 2. The soil microbes transform organic nutrients into easily available forms.
 3. Organic nutrients are transformed into easily available soil microbes.
- (b) As one of the top ocean predators, sharks play a role in helping ensure that the balance of the ocean's ecosystem is maintained.
1. Sharks are among the top ocean predators and help maintain the balance of the ocean's ecosystem.
 2. It is the most dangerous sharks that play the role of maintaining the balance of the ocean's ecosystem.
 3. The balance of the ocean's ecosystem is maintained by sharks, the most helping predators.
- (c) Velocity is the same as speed, except for the fact that velocity also indicates the direction of motion.
1. Velocity is the same as speed despite the direction of motion.
 2. Like speed, velocity indicates the direction of motion.
 3. Velocity is speed with the direction of motion.
- (d) With carbon dioxide and water, organic compounds are produced by green plants in the presence of sunlight. Such a chemical process is called photosynthesis.
1. Photosynthesis is a chemical process by which green plants are carbonized in sunlight.
 2. Photosynthesis is a chemical process by which green plants produce carbon dioxide and water in sunlight.
 3. Photosynthesis is a chemical process by which green plants produce organic compounds from carbon dioxide and water under sunlight.

Ⅲ 次の(a)から(f)の各組の英文が同じ意味になるように、()に入れる最適な語を下の1から12より選び、その番号を解答欄に記入しなさい。なお、1から12は1回しか使えない。文頭に来るべき語であっても先頭は小文字になっている。

【英文空所補充(2か所各3択) 文法力 4点×6問=24点】

- (a) { The sensors for detecting an approaching object must be installed at least 5 cm from each other.
The () sensors must be installed at least 5 cm apart.
- (b) { Many factories in this area are not making profits anymore.
Many factories in this area are no longer economically ().
- (c) { All these methods have a process in which an equilibrium is disturbed by rapid changes in temperature or pressure.
All these methods () disturbing an equilibrium by rapid changes in temperature or pressure.
- (d) { One of the issues with an aging society is an increase of elderly people with a mental disorder associated with the ability to think.
An issue with an aging society is an increase in elderly people with a () disorder.
- (e) { Since children require more protein per kilogram of body weight than adults, they are prone to the influence of protein deficiency.
Since children require more protein per kilogram of body weight than adults, they are more () to protein deficiency.
- (f) { The earth's magnetic field is currently pointing in a direction which is different from the direction in which it pointed in times long past.
The earth's magnetic field is currently pointing in a direction different from () it was in times long past.

- | | | | |
|----------------|----------------|----------------|--------------|
| 1. what | 2. susceptible | 3. depression | 4. proximity |
| 5. viable | 6. bankrupt | 7. independent | 8. cognitive |
| 9. nutritional | 10. involve | 11. resolve | 12. tactile |

IV 次の英文を読んで、各設問に答えなさい。

【300ワード程度の科学技術分野のパラグラフを読み、内容・文法等の理解を問う。6点×5問=30点】

Genetically engineered (GE) foods have had their DNA changed using genes from other plants or animals. Scientists take the gene for a desired trait in one plant or animal, and they insert that gene into a cell of another plant or animal.

Genetic engineering can be done with plants, animals, or bacteria and other very small organisms. Genetic engineering allows scientists to move desired genes from one plant or animal into another. Genes can also be moved from an animal to a plant or vice versa. Another name for this is genetically modified organisms, or GMOs.

The process to create GE foods is different than selective breeding. This involves selecting plants or animals with desired traits and breeding them. Over time, this results in offspring with those desired traits.

One of the problems with selective breeding is that it can also result in traits that are not desired. Genetic engineering allows scientists to select one specific gene to implant. This avoids introducing other genes with undesirable traits. Genetic engineering also helps speed up the process of creating new foods with desired traits.

The possible benefits of genetic engineering include the following:

- More nutritious food
- Tastier food
- Disease- and drought-resistant plants that require fewer environmental resources

- Less use of pesticides
- Increased supply of food with reduced cost and longer shelf life
- Faster growing plants and animals
- Food with more desirable traits, such as potatoes that produce less of a cancer-causing substance when fried

Some people have expressed concerns about GE foods including the following:

- Creating foods that can cause an allergic reaction or that are toxic
- Unexpected or harmful genetic changes
- Foods that are less nutritious

However, these concerns have proven to be (). None of the GE foods used today have caused any of these problems.

<https://medlineplus.gov/ency/article/002432.htm>
U.S. National Library of Medicine

(a) 本文の内容を最もよく表しているタイトルを選び、その番号を解答欄に記入しなさい。

1. Genetic-engineering technologies supporting our future food supply
2. Safety of genetically engineered foods
3. Pros and Cons of genetically engineered foods

(b) 遺伝子組換え食品の利点としてあげられていないものを選び、その番号を解答欄に記入しなさい。

1. Reduced use of pesticides
2. More delicious and nutritious
3. Causing less allergic reaction

(c) 次のうち正しいものを選び、その番号を解答欄に記入しなさい。

1. GE foods are basically the same as selective breeding.
2. Genetic engineering allows the genes to be moved from an animal to a plant or a plant to an animal.
3. GM foods are free from unexpected or harmful genetic changes.

(d) 下線部 Disease- and drought-resistant plants に意味が最も近いものを選び、その番号を解答欄に記入しなさい。

1. Plants that are prone to diseases and droughts
2. Plants that are not susceptible to diseases and droughts
3. Plants that are easily affected by diseases and droughts

(e) 空所()に入る単語を選び、その番号を解答欄に記入しなさい。

However, these concerns have proven to be (). None of the GE foods used today have caused any of these problems.

1. unfounded
2. established
3. decisive

V 次の英文メールにおいて、それぞれ2文で構成されている下線(a)、(b)、および(c)を、3C(clear、concise、correct) に則って内容を変えずにそれぞれ簡潔な1文で英訳しなさい。

【和文英訳(メールか議事録を扱う)10点×2問=20点 数量・価格・納期の交渉など具体的な場面を想定】

Speedy-X 試作品に関するお打ち合せのお願い

XY 社 開発部

Richard Jones 様

お世話になりありがとうございます。

(a) 貴社と共同開発してきましたカメラ、Speedy-x の試作品についてのご連絡です。この試作品ですが、弊社として追加したい機能が1つあり、技術的に可能かどうか相談させていただきたく存じます。

本件の相談のため、オンラインでのお打ち合わせをお願いいたします。

以下に候補日をお送りします。

- ・4月10日(月) 14時~17時
- ・4月11日(火) 10時~12時
- ・4月13日(木) 14時~16時

(b) お打ち合わせは1時間を予定しております。ひよつとすると、1時間を少し超えるかもしれません。

追伸：(c) Z社より、Y国の工場での生産が再開した、とのご連絡をいただきました。レンズを3ヶ月以内に納品できるそうです。

キムラタケン

VI 次の(a)から(c)より2問選び、3 Cに則って英訳しなさい。なお、選んだ2問の記号を解答欄の口に記入しなさい。口の記入がない場合は減点の対象になります。

【3 Cに則った、科学技術分野での和文英訳力を問う。 25点×2問=50点】

- (a) 科学的発見からビジネスインテリジェンスまで、データサイエンスは私たちの世界を変えつつある。情報のデジタル化、センサーの普及、機械学習と可視化*の進歩、コストや帯域幅、スケーラビリティの劇的な向上などの著しい変化が相まって、大きなチャンスが生まれている。

[注] 可視化*: visualization

- (b) ホッキョクグマは、狩猟、移動、繁殖*など、生活のほぼすべての面において海氷に依存している。NASAの衛星は海氷の変化を追跡しており、そのデータによると、1979年から2019年の間に北極の海氷が年平均約53,100km²のペースで縮小している。

[注] 繁殖*: breeding

- (c) 懸濁液（サスペンション）とは、分散した小さな固体粒子を含む液体のことです。例えば、容器に水と土を入れて振ると、懸濁液になります。固体粒子は、懸濁液をろ過すると残渣*として回収され、放置するとゆっくりと容器の底に沈み沈殿物**を形成します。

[注] 残渣*: residue 沈殿物**: sediment

無断複製転載を禁ず