

■ 次の英文を読んで、後の設問に答えなさい。



30min

*Biomass energy is the result of the conversion of sunlight into usable energy. Plants absorb energy from the sun as they grow. That energy can then be extracted as the plant mass is either burned or converted into a more convenient liquid fuel, *ethanol for example, which is similar to gasoline or natural gas. Thus, biomass is an indirect form of solar energy. The most important advantage of biomass energy is that it is well suited as a direct gasoline substitute that can fuel all forms of transportation technologies.

Biomass is a renewable energy source because each year the plant life which biomass depends upon is renewed in a new growing season. While the plants are absorbing energy from the sun, they are also fixing carbon from the atmosphere into the plant mass. When the plant mass has its energy extracted, this carbon is then released back into the atmosphere. Consequently, the amount of carbon emitted would be balanced by the amount of carbon that is absorbed. Thus, biomass energy, in theory, does not contribute to global climate change, and it is considered CO₂-neutral.

Unlike other renewable energy sources, however, biomass is not pollution-free. In fact, the pollution from many biomass sources can be significant. Ethanol, for example, emits the same type of pollutants

(except for CO₂) as its fossil-fuel companions. Wood-burning stoves and corn stoves release more pollution than natural gas furnaces, even though less than coal stoves.

Furthermore, a new problem has emerged recently in the world crop market. ⁽²⁾ Since 2006, farmers in the United States who switched crops from soybeans to corn for the ethanol market, or grew their soybeans for fuel rather than food, have caused a decrease in the world supply of soybeans for food material. This supply loss was then replaced by new soybean production in countries such as Brazil and Indonesia, where the crops were then grown on land that was stripped of tropical rain forest. Ironically, cutting down an acre of tropical rain forest results in more carbon emissions than are balanced by the ethanol production from one acre of corn. Biomass crops could be considered truly renewable, only when they are grown in an environmental and sustainable manner and on land that is not covered with productive forests.

*Biomass: バイオマス (エネルギー源となる生物資源のこと)

*ethanol: エタノール/エチルアルコール

設問レベル1

25min | Question level 1

問1 本文の内容に合致する文をA群およびB群の①～④からそれぞれ一つずつ選びなさい。

A群

- ① In order to put biomass energy into practical use, traditional transportation systems must be modified.
- ② As plant life is renewed year after year, biomass may be considered to be a renewable energy source.
- ③ Biomass will help check global climate change because it can stimulate the amount of CO₂ in the atmosphere.
- ④ The most important merit of biomass energy is that it releases very little pollution.

B群

- ① As the US farmers started growing soybeans for fuel, the demand for corn as food material has sharply decreased.
- ② Brazil and Indonesia will compete with the U.S. for conserving their vast areas of tropical rain forest.
- ③ Biomass crops could become renewable if corn is grown instead of soybeans.
- ④ If tropical rain forest has to be destroyed to raise biomass crops, CO₂ emissions in the air may not necessarily be lessened.

問2 次のア～オの文が本文の内容に合致するように、() にそれぞれ①～④から適切な語を選びなさい。

- ア) Biomass energy, which is an indirect form of solar energy, can be () from plants.
 ① absorbed ② extracted ③ substituted ④ suited
- イ) The carbon that is fixed in the plants is then () into the air when they are finally burned.
 ① contributed ② decreased ③ emitted ④ renewed
- ウ) Biomass is one of many renewable energy sources but, unfortunately, it is not without its ().
 ① conversion ② crops ③ forests ④ problems
- エ) In recent years, a new crop market has () to meet the demand for biomass energy.
 ① caused ② emerged ③ stripped ④ supplied

ア) Biomass crops should not be grown on land that has been () of tropical rain forest.

- ① balanced ② cleared ③ considered ④ sustained

問3 下線部(1)を和訳しなさい。

問4 下線部(2)を和訳しなさい。

問5 本文中に出てくる次の単語の中で、アクセントの位置が異なるものをそれぞれ一つ選びなさい。

- (3) ① energy ② depend ③ emerge ④ supply
 (4) ① advantage ② atmosphere ③ contribute ④ significant

設問レベル2

5min | Question level 2

要約 空所に適する語句を選択肢から補って、要約文を完成させましょう。

- ① あらゆる形態の輸送技術の燃料に利用可能なバイオマスエネルギーは、(a) ので間接的な太陽エネルギーであり、(b) ので再生可能エネルギーでもある。大気中の二酸化炭素を吸収し、バイオマスエネルギーを抽出するときにその二酸化炭素を大気中に放出するので、理屈の上では、バイオマスエネルギーは(c) にはならない。
 ② しかし、他の再生可能エネルギーと違って、バイオマスエネルギーは(d) する。また、食用大豆の栽培からバイオマス燃料用の大豆やトウモロコシの栽培に変更する農家が増えて(e)、これを補うために新たな国が食用大豆を育てるために(f) した結果、(g) を招くという新たな問題も発生している。

選択肢

- ①食用大豆の供給量が減り ②太陽エネルギーを吸収して育った植物から得られる ③炭素排出量の増加 ④二酸化炭素以外に汚染物質を排出 ⑤地球の気候変動の原因 ⑥熱帯雨林を伐採 ⑦その植物は毎年育つ