节选自2019年12月第二套试题

Questions 19 to 21 are based on the recording you have just heard.

19. A) The engineering problems with solar power.

B) The generation of steam with the latest technology.

C) The importance of exploring new energy sources.

D) The theoretical aspects of sustainable energy.

20. A) Drive trains with solar energy.

B) Upgrade the city’s train facilities.

C) Build a new ten-kilometre railway line.

D) Cut down the city’s energy consumption.

21. A) Build a thank for keeping calcium oxide.

B) Find a new material for storing energy.

C) Recover super-heated steam.

D) Collect carbon dioxide gas.

答案：

19.D 20.A 21.B

听力原文：

We've talked recently about the importance of sustainable energy. We've also talked about the

different theories on how that can be done. So far, our discussions have all been theoretical. Now I have a practical question for you all.

Can you run a 140,000 kilogram train on just the steam generated by solar power? Well, one engineer, Tim Castleman, believes it's possible. And his home city of Sacramento, California should see the technology's first test. As part of the upgrading of its rail yard, Castleman, who is an inventor and self-proclaimed steam visionary, is campaigning for a new steam train that runs without any fire and could run on an existing ten-kilometre line, drawing tourists and perhaps offering city commuters a green alternative to their cars. Castleman wants to build an array of solar magnifying mirrors at one end of the line to collect and focus heat onto water-filled tubes. This would generate steam that could be used to fill tanks on a small steam train without the use of fire. "Supplying power to trains in this way would offer the shortest distance from well to wheels," he says, "with the least amount of energy lost." According to Harry Valentine, a Canadian engineer who is researching modern steam technology, a special tank measuring 2 by 10 metres could store over 750 kilowatt hours of energy as high-pressure steam, enough to pull a 2-car train for an hour or so.

Energy to drive a steam locomotive can be stored in other materials besides water. (21-1) For example, a team at Tohoko University in Japan has studied materials that can store large amounts of heat. When heated, these materials turned from a solid into a liquid absorbing energy as they change phase. The liquid is maintained above its melting point until steam is required, at which point the liquid is allowed to turn back into a solid, releasing its stored energy. (21-2) Another team at Nagoya University in Japan has tested calcium compound as an energy storage material. Heating this chemical compound drives off carbon dioxide gas, leaving calcium oxide. The gas can be stored under pressure in a tank. To recover the energy, the gas is fed back over the calcium oxide. "In theory," says Valentine," this can create a high enough temperature to generate superheated steam."