Translate into Thai the following passage.[1] **(30 points)**

Frank Lloyd Wright introduced the word "organic" into his philosophy of architecture as early as 1908. It was an extension of the teachings of his mentor Louis Sullivan whose slogan "form follows function" became the mantra of modern architecture. Wright changed this phrase to "form and function are one," using nature as the best example of this integration.

Although the word "organic" in common usage refers to something which has the characteristics of animals or plants, Frank Lloyd Wright's organic architecture takes on a new meaning. It is not a style of imitation, because he did not claim to be building forms which were representative of nature. Instead, organic architecture is a reinterpretation of nature's principles as they had been filtered through the intelligent minds of men and women who could then build forms which are more natural than nature itself.

Organic architecture involves a respect for the properties of the materials—you don't twist steel into a flower—and a respect for the harmonious relationship between the form/design and the function of the building (for example, Wright rejected the idea of making a bank look like a Greek temple). Organic architecture is also an attempt to integrate the spaces into a coherent whole: a marriage between the site and the structure and a union between the context and the structure.

Throughout his 70 year career, Frank Lloyd Wright published articles, gave lectures, and wrote many books. The philosophy of organic architecture was present consistently in his body of work and the scope of its meaning mirrored the development of his architecture. The core of this ideology was always the belief that architecture has an inherent relationship with both its site and its time.

[1] http://www.pbs.org/flw/legacy/essay1.html

Summarize in Thai the following selection. (20 points)

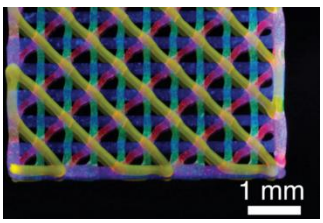
5 Incredible Trends That Will Shape Our 3D Printed Future[2]

Self-repairing pipes. Printed organs. Bulletproof T-shirts. *Seriously*? We already live in a globalized digital culture. What will it be like to live in a 3D-printed world? Imagine the effect of these five trends:

1. Localized Production for Consumer and Industrial Goods: Biz Stone, Twitter's co-founder, recently predicted that Nike could be a pure software company in ten years. If this happens, it will be thanks to 3D printing production. In the future, everything you know will be made closer to you. Let's say one day at home you realize that one of the wheels on your dishwasher has broken. You simply look up the part on the Internet, print it out at home or at your neighborhood commercial 3D printer, and out comes the replacement part. Your daughter outgrows her 3D-printed custom shoes? Drop the old pair in the material recycler and print out a brand new pair, one size larger.

Producing our own consumer goods, as in the example above, will make it much more convenient, affordable, and efficient to satisfy our household needs and wants. But the economic effect of localized commercial production on industry will be even more dramatic. Around the world, digital 3D printing factories of various sizes and capacities will soon become connected in a global production network. Referred to as direct digital manufacturing, this capacity to manufacture components and finished goods near their point of use will be much more efficient than today's global sourcing. Localized production will dramatically compress (or *eliminate!*) today's supply chains. PwC recently reported that roughly 40% of air and shipping cargo is under threat. The implications of this disruption on supply chains and all who participate in them are enormous.

2. Custom Production Materials: The ability to customize the materials used for production—even printing living tissue—will be truly transformative. Doctors are already using 3D printing to create knee replacements customized for each patient. Very soon, the material itself will contain pain medication and antibiotics designed to release slowly over time. Visionaries like entrepreneur Dr. Daniel Stolyarov are experimenting with 3D printing using Graphene, a substance that is quite flexible, transparent, and yet is 100 times stronger than steel! Is Superman's bulletproof outfit becoming a reality? Yes, and so is printing of human cells (including stem cells) into complex functional living tissues. These techniques are already being applied to address the need for tissues and organs suitable for transplantation. 3D bioprinting has the potential to completely reshape healthcare.



3D printed micro lithium-ion battery from Jennifer Lewis at Harvard University

3. Nano-Printing: The picture above is of a 3D-printed lithium-ion battery, created by Jennifer Lewis and her team at Harvard University. It works like a normal battery,

[2] http://www.forbes.com/sites/ricksmith/2015/07/07/5-incredible-trends-that-will-shape-our-3d-printed-future/#639ec880707f

except that this battery is the size of a single grain of sand! Batteries like these may be used to power miniature medical devices, compact electronics or even tiny robots. You've heard about the amazing advances in nanotechnology—the fabrication of incredibly small particles down to atoms and molecules? Well, 3D nano-printing allows for rapid prototyping of micro and nano structures. Applying 3D printing concepts to nanotechnology will make nanofabrication faster and more efficient, and therefore economically viable much sooner than most futurists ever envisioned.

4. Goal-Directed Design: 3D printing allows for almost unlimited complexity in geometry and materials—so much so that humans become the limiting factor in taking full advantage of the possibilities. But what if a computer could automatically generate hundreds upon hundreds of variations of a design until it solves a specific problem? This is the purpose of goal-directed design. Currently, computer-aided design (CAD) tools are used to manually create, document and analyze designs. But with goal-directed design, you start with your specific on for factors like strength, weight and durability, and the computer generates hundreds of design possibilities, evaluating and recommending the best designs for different objectives. Combining 3D printing's unlimited shape and material customization with powerful computing will lead to designs that no human could possibly have imagined. In the future, the best designers will not be those who come up with the best designs; they will be the ones who are able to ask the computer the best questions.

5. 4D Printing: By now you can see where 3D printing will take us. But are you ready for 4D printing? With this new technology, you print a 3D object that at some future point can automatically self-assemble or change shape when confronted with a change in its environment, such as temperature or moisture. This is the fourth dimension. This technology is being pioneered by Skylar Tibbits at MIT, and it has wide-ranging implications for consumers and industries. Imagine a construction brick that only reaches its full weight and structure after water is added to it, at the exact location where it will be used. Envision hydraulic pipes that automatically repair themselves if they are ever damaged. Get ready to wear sneakers that become running shoes if you started running, or grow cleats if you walk on grass, or become waterproof if it starts to rain. While this technology is still new, it promises to take 3D printing to an entirely new dimension.

Will living in a 3D-printed future really be that much different than today? Who knows for sure? We will still put our shoes on one foot at a time. However, those shoes might be printed right in our homes, with complex shapes and custom material properties computer-generated based on our unique foot dimensions and precise usage patterns. They may automatically react to our environments, and use embedded micro sensors to send information back to your personal cloud.

But hey, you will almost certainly be able to get the trademark Nike swoosh!