

## 國立臺灣科技大學 108 年度產業碩士專班招生(秋)試題

班 別：3D 列印  
科 目：3D 列印英文

(總分為 100 分)

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**1. Technical Words Translation (10%).** Please translate the following technical words into Chinese. (1% each).

- (1) Additive Manufacturing Technology: \_\_\_\_\_。
- (2) Material Extrusion Technology: \_\_\_\_\_。
- (3) Vat Photo Polymerization Technology: \_\_\_\_\_。
- (4) Material Jetting Technology: \_\_\_\_\_。
- (5) Binder Jetting Technology: \_\_\_\_\_。
- (6) Sheet Lamination Technology: \_\_\_\_\_。
- (7) Powder Bed Fusion Technology: \_\_\_\_\_。
- (8) Directed Energy Deposition Technology: \_\_\_\_\_。
- (9) Fused Deposition Modeling Technology: \_\_\_\_\_。
- (10) Multi Jet Fusion Technology: \_\_\_\_\_。

**2. Translation (90%).** Please translate the following paragraph into Chinese.

- (1) The term "3D printing", also known as "additive manufacturing" describes numerous technologies capable of constructing three-dimensional objects through the application of successive layers of material. (10%)
- (2) The demand for additive manufacturing machines is increasingly growing since the 90's. Areas of interest that have used 3D printing to create objects include aeronautics, architecture, automotive industries, art, dentistry, fashion, food, jewelry, medicine, pharmaceuticals, robotics and toys. (10%)
- (3) It is possible to produce complex shapes with AM technologies compared to classical manufacturing processes (ex. milling, molding, stamping, etc.). Many attributes influence the outcome and depend on manufacturing technology type. (10%)
- (4) 3D printing can speed development and delivery for customized products and bring increased flexibility through better inventory management and real-time production of products with variable demand. (10%)
- (5) Other advantages include manufacturing advantages for small batches, cost advantages based on efficiencies for certain applications and unprecedented flexibility in new markets. (10%)
- (6) The first additive manufacturing (AM) technology was created in the 1980's to produce models and prototype parts. The additive principle is based on a layer by layer manufacturing, which begins with a three-dimensional object using computer-aided design (CAD) before slicing a STL (Standard Tessellation Language) format in layers by a specific software. (10%)

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- (7) Among the major advances that this process presented to product development are the time and cost reduction, human interaction, and consequently the product cycle development. Pushed forward by a growing demand and a patent expired effect, many manufacturers and AM solutions appeared. (10%)
- (8) AM also has the potential for mass production of complex geometries such as lattice structures, where the application of traditional methods of manufacturing such as casting is not straightforward and require further time-consuming tooling and post-processing. However, improvements in the fabrication speed and cost reduction must be resolved through the improvement of machine design. Also, the high costs and time-consumption of the AM process remain to be major hurdles that inhibit mass production. (20%)