

武汉理工大学考试试卷 (A 卷)

2018 ~2019 学年第一学期 先进制造技术概论 课程 时间 120 分钟, 32 学时,

2 学分, 闭卷, 总分 100 分, 占总评成绩 70% 2019 年 1 月 6 日

题号	一	二	三	四	五	六	七	八	九	十	合计
满分	10	10	80								100
得分	6	6.5	59								71.5

得分	6
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1 Fill in the Blank Question (0.5 mark for every blank, 10 marks)

1) A manufacturing system is a physical organizational system of components for the purpose of achieving a predetermined manufacturing purpose. It is an organic whole with specific functions, which consists of manufacturing process, hardware, software and human.
0.5 0.5 0.5 0.5

2) According to the viewpoint of material forming theory, the forming method of mechanical parts can be divided into three types such as removal forming, deposition forming, forced forming.
0.5 0.5 0.5

3) In order to adapt to different cutting loads, high speed cutting and high cutting accuracy, the machine bed should have: constant temperature, constant humidity, purify and shock isolation.
0.5 0.5 0.5 0.5

4) The three stages of mechanical manufacturing process are forming preparation age, cutting process age and surface modification age.
0.5 0.5 0.5

5) The flexible manufacturing system (FMS) mainly includes production subsystem, logistics subsystem and computer control system.
0.5 0.5 0.5

6) The composition structure of Manufacturing Resource Planning (MRPII) can be divided into three major systems, which are production subsystem, logistics subsystem and computer control system.
0.5 0.5 0.5

得分 6.5

2. Identification Question (名词解释) (2 marks for every item, 10 marks)

1) Manufacturing (General): According to the business plan, management, analysis, ~~and~~ the service behind the product and recycle the waste, it turns the ^{raw} material into product or half-product by the manufacturing process.
2

2) Value Engineering:

It's a kind of technology ~~that~~ with management and design, which treats the analysis of the product's work as the core and regards the scientific analysis ~~is~~ method as the strategy and combine the ~~the~~ consequence and cost to achieve the best advantage.
2

3) Green product:

During the cycle of the manufacturing process, it has no or less damage on the environment and it can protect the users and makers. It also saves the material.
1

4) Flexible manufacturing system:

5) Concurrent Engineering (并行工程):

the products and the related engineering like manufacturing work together, and develop the ~~the~~ ~~the~~ integrated and better manufacturing system, in order to make the high ~~get~~ quality product in a faster way.
1.5

得分

59

3. Short Answer and Analysis Question (Choose any 5 questions, 16 marks for every question, 80 marks)

1) Please describe and discuss the position and function of manufacturing industry in national economy.

The manufacturing industry is pillar of the national economy and is the basic of the people's life and survive. If the country wants to develop the new science and high technology, the manufacturing industry plays an important role. The industry can make the country has a great advantage in the competition in any area. And it also improve the export and help solve the problem of the jobs. The manufacturing industry is the basic of the national economy.

2) Please describe the main content and characteristic of Computer-Aided Design (CAD)

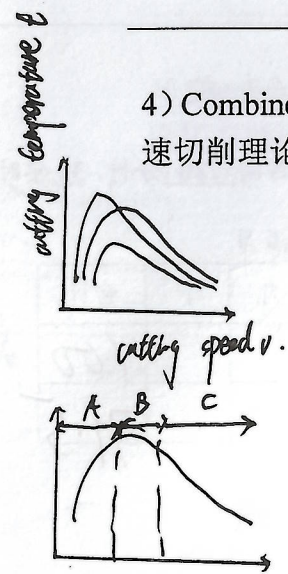
Technology and analyze the key technology of CAD.

CAD uses the computer to help analysis and deal with graph and data information about the product. According the consequence of the CAD, it can make the high quality product. CAD is mainly depends on the computer and needs the information that the computer provides. The key technology has 3 points. The first is the analysis of the object. It needs the designed product's information. The second is the designed function that realized the ways of the manufacturing. The last is the designed constraints on the products.

3) What are the main developments of advanced manufacturing technology?

On the earth, the advanced manufacturing technology almost is based on the wide market and strong economic power. The technology is intellectualized and based on the data information. It promotes the science technology and the top technology. It plays an important role in many areas. It turns the conventional manufacturing industry to the intellectualized industry. It enlarge the market and improve the development of other areas. It improve the development of the globe and promote the development of the specialized and innovation. The main development of the advanced technology is the development of intellectualized.

4) Combined with the Salomon curve, please describe the high speed cutting theory (速切削理论).



According to the graph, with the cutting speed increases, the cutting temperature also increases. Until it reaches the climax, it begins to decrease.

As you can see the area of "B" called "death valley". If the cutting speed across the B, it means the speed of the cutting machine reaches C called super-high speed cutting.

5) Please briefly describe the relationship and difference between MRPII and ERP.

6) Indicate one new technology of additive manufacturing (3D printing) and application prospect.

3D printing is a kind of new technology which express the 3 dimensions of the product and the constructive and the characteristic of the products. According the information and data in the computer, it use the computer to build the high quality product in a fast way by the theory of the additive involving the additive material. It has many application in many areas like medicine, architecture and so on, such as the artificial bone. It has great prospect in other areas. It is applied to form the product you want quickly and provide the research method and model to the science. Anyway, in the future, 3D printing will apply to many areas widely.

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