

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	10	8.5	7.5								93.5

得分 10

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

- 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 related person.
0.5 0.5 0.5 0.5
- According to the viewpoint of material forming theory, the forming method of mechanical parts can be divided into three types such as forced forming, removal forming and stack forming.
0.5 0.5 0.5
- In order to adapt to different cutting loads, high speed cutting and high cutting accuracy, the machine bed should have: rigidity, strength, high damping characteristic and high thermal stability.
0.5 0.5 0.5 0.5
- The three stages of mechanical manufacturing process are blank preparation, mechanical process and surface modification.
0.5 0.5 0.5
- The flexible manufacturing system (FMS) mainly includes process subsystem, logistic subsystem and computer control subsystem.
0.5 0.5 0.5
- The composition structure of Manufacturing Resource Planning (MRPII) can be divided into three major systems, which are plan control, logistic management and financial management.
0.5 0.5 0.5

得分 8.5

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

1) Manufacturing (General):

include manufacturing process, and include market analyze. product design, quality control, design management, sale, after-sale service and product treatment and recycle, and so on, the whole process of product life.

2) Value Engineering:

Value Engineering is a analyze technology. the product property as the major body, use analyze method of science, balance product property and manufacturing cost, achieve the best rate of property and value.

3) Green product:

In the whole life of product, It can save resource and energy, it is no harm for environment and human, and have protection for user and maker.

4) Flexible manufacturing system:

In the automatic manufacture, the small variety large-scale production change into multiple variety production, this is the flexible manufacturing system.

5) Concurrent Engineering (并行工程):

The manufacturing process and related process work in the same time, and it became the parallel and integrated work group, use shortest time to finish high precision product.

得分 74

3. Short Answer question, 8

1) Please describe the national economic solution: M

controlling

Function:

industry

and ex

country

2) Please

Techno

Solution: ① m

design

enginee

mechin

support

imposs

② key

③ NU

3) W

Solution

得分 75

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.

Manufacturing industry include many sectors in national economy, it is the pillar industry of country and national economy, by supportance of knowledge and economy, manufacturing industry is major body of market competition.

new technology industry is based on manufacturing industry, by improve manufacturing industry, it can solve employment problem and expand export, and manufacturing is important defense of country.

2) Please describe the main content and characteristic of Computer-Aided Design (CAD) Technology and analyze the key technology of CAD.

main content: 1. draw image of model and assembly and design related document. 2. image rendering and dynamic display. 3. engineering analyze, such as finite unit analyze, optimization design, reliability analyze and dynamic simulation. characteristic: 1. use CAD, support and resolve problem in design of product.

2. Emphas assistant of CAD. 3. there is no possibility and no heed to attend the whole process of product design. the key technology: 1. image modeling. 2. single database and related design. 3. surface modelling.

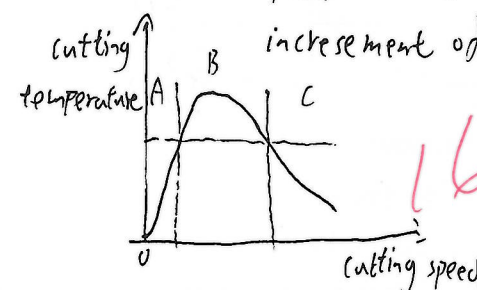
4. integrate CAD and CAM system. 5. standard technology.

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

1. high process precision. 2. high cutting speed. 3. use new engineering material. 4. digital and intelligent equipment's improvement. 5. less or no remain of blank. 6. the development of new clean surface engineering technology.

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

In the general cutting speed region, the cutting temperature increase with incresement of cutting speed, however, when the cutting speed achieve the certain value, the cutting temperature decrease with incresement of cutting speed. B is dead valley.



when the cutting speed exceed B region, it can use tool to achieve high speed cutting. this is the high speed cutting theory.

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

MRPZZ is the production management technology, by company as the core, and use the whole resource of company to manufacturing product, however, with the development of market competition, it reveal the shortage, and disadvantage, ERP is based on MRPZZ, by improve and strength MRPZZ, combine internal resource with customer demand and supplier external resource, make supply chain as the core, quickly respond market demand, this is a production management information technology.

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