

نمره ۱.۴۰

۱- مرجع ضماین مشخص شده کدام است؟

- a. Many factors are involved when considering a CIM implementation. They are the production volume, the experience of the company or personnel to make the integration, the level of the integration into the product itself, and the integration of the production processes.
- b. Tables should be numbered in a continuous sequence through the essay. Each table must be referred to in the text, but it may also have a heading clearly showing its content.
- c. When Germany organised its air defences into the Kamhuber Line, it was realised that if the RAF bombers were to fly in a bomber stream they could overwhelm the night fighters who flew in individual cells directed to their targets by ground controllers. It was then a matter of calculating the statistical loss from collisions against the statistical loss from night fighters to calculate how close the bombers should fly to minimise RAF losses
- d. It is also true that strategic planning may be a tool for effectively plotting the direction of a company; however, strategic planning itself cannot foretell exactly how the market will evolve and what issues will surface in the coming days in order to plan your organizational strategy.

نمره ۵.۶۰

۲- جملات زیر را ترجمه صحیح و کامل نمایید.

- The goal of Computer Integrated Manufacturing Open System Architecture is to help companies to manage change and integrate their facilities.
- Colloquially, the word "innovation" is often synonymous with the output of the process.
- Many people find it difficult to write a scientific paper
- This machine was usually assembled by trial and error rather than by theoretical calculation.
- An electronic component is any physical entity in an electronic system used to affect the electrons or their associated fields
- the four sides of the base of the Great Pyramid of Giza were required to be perpendicular to within 3.5 arcseconds
- A model in science is a physical, mathematical, or logical representation of a system of entities, phenomena, or processes
- An electronic mail message consists of two components, the message header, and the message body, which is the email's content .

نمره ۲.۸۰

۳- معنای واژه های زیر را بنویسید.

- productivity
- observation
- polymath
- electronic circuits
- quality
- carbon nanotubes
- Scientific Modelling
- anti-aircraft artillery

نمره ۲.۸۰

۴- مفهوم و معنای نه پاراگراف زیر را در یک جمله بنویسید.

- a. In summary, innovation can be described as the result of some amount of time and effort into researching (R) an idea, plus some larger amount of time and effort into developing (D) this idea, plus some very large amount of time and effort into commercializing (C) this idea into a market place with customers.
- b. The list below indicates the usefulness of the various sources available: From 1 the most popular to 11 most scientific, up to date and reliable: The World Wide Web , Scientific textbooks, Newspaper articles, articles on science subjects in popular journals, On-line journals (not refereed), Popular science journals, e.g. New Scientist <http://www.newscientist.com>, Review articles in scientific journals (e.g. Nutrition Abstracts and Reviews or in 'Trends' journals such as Trends in Plant Science) <http://www.trends.com> , Grey literature (i.e. information not readily available), for example, conference proceedings, research reports, and annual reports, Abstracting journals, e.g. Grassland and Forage Abstracts, Veterinary Bulletin <http://www.cabi.org>; databases containing annotated bibliographies (e.g. by CABI) <http://www.cabi.org>, on-line-searching of database titles and current contents, Science citation index, Higher degree theses, Scientific papers in scientific journals (including refereed on-line journals)
- c. In 1206, al-Jazari invented an early crankshaft, which he incorporated with a crank-connecting rod mechanism in his twin-cylinder pump. Like the modern crankshaft, Al-Jazari's mechanism consisted of a wheel setting several crank pins into motion, with the wheel's motion being circular and the pins moving back-and-forth in a straight line. The crankshaft described by al-Jazari transforms continuous rotary motion into a linear reciprocating motion, and is central to modern machinery such as the steam engine, internal combustion engine and automatic controls.
- d. An operations researcher faced with a new problem is expected to determine which techniques are most appropriate given the nature of the system, the goals for improvement, and constraints on time and computing power.

۵- با توجه به متن زیر با مثال توضیح دهید مواد در مقیاس نانو با حالت معمول خود چه تفاوت هایی پیدا می کنند. نمره ۱.۴۰

Materials reduced to the nanoscale can suddenly show very different properties compared to what they exhibit on a macroscale, enabling unique applications. For instance, opaque substances become transparent (copper); inert materials attain catalytic properties (platinum); stable materials turn combustible (aluminum); solids turn into liquids at room temperature (gold); insulators become conductors (silicon). Materials such as gold, which is chemically inert at normal scales, can serve as a potent chemical catalyst at nanoscales.