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**DEPARTMENT: MECHANICAL ENGINEERING**

**MEE 586 ASSIGNMENT**

1. **What is Integrated CAD/CAM?**

CAD is Computer Aided Design and can be defined as a group of steps and processes carried out by computer systems to aid in design. CAM is Computer Aided Manufacturing and can be defined as processes and stages of manufacturing in which computer based technology has been fused into.

Therefore integrated CAD/CAM are computer aided systems employed in the majority of production functions, from design and planning to manufacturing and quality standard assurance. Complete Integration of CAD and CAM in all stages of production has hardly been put into practice and it applies particularly to medium and small batch production of the machine-building industry.

1. **Characteristics of a good CAD software**
2. Simplicity:-

A software must be simple enough to be used and understood by the user or customer.

1. Readability:-

This characteristic describes the ability of the software to help the user in performing a desired task satisfactorily as and when required.

1. Portability:-

The software must be transferable from one system to another.

1. Recoverability:-

A Good software must be able to give warnings before getting crashed and should be able to recover data after the occurrence of a crash. It must be able to provide crash report and feedbacks to the software developers.

1. Reliability:-

The software must be capable of carrying out the required task specifically and satisfactorily while avoiding undesired operations.

1. Flexibility:-

Good CAD softwares must be able to incorporate design modifications without much o difficulty and it must be able to run smoothly.

1. Efficiency:-

An Efficient software is that which uses less resources such as CPU in terms of time and usage to give a required or better output.

1. **Explain 3 divisions of software components.**

Computer software can be divided into three main groups depending on their use and application. These are:

1. system software or operating system referred simply as the OS
2. application software and
3. programming languages.

Usually most of us interact with a computer using application software.

1. System Software: System software or operating systems are softwares used to translate inputs from various sources into a language which a machine can understand by the computer. The OS coordinates the various hardware components of the computer. Examples of OS include, Windows, and UNIX.
2. Application software: This is the division of software components that the average user interacts with. It comprises of software that aids the user to interact with a computer. All software utilized for working on a computer are classified as application software. In fact all user interfaces are applications. Examples of application software are the Microsoft office suite which includes Word, Excel and PowerPoint.
3. Programming languages: This is a division of computer software which is used exclusively by computer programmers. Unless we are also programmers, we are unlikely to come across programming languages. They are used in developing operating systems and application softwares. They can be considered as the bricks for building a software. C++, Java and Simlab are some popular programming languages. Generally Java is used for internet applications. C++ is a language of professional developers and used extensively in developing operating systems.
4. **Draw a product cycle to describe the scope of CAD/CAM in the operation of manufacturing firm.**

PACKAGING

QUALITY CONTROL

PRODUCTION

PROCESS PLANNING

DESIGN ANALYSIS

GATHERING DESIGN INFORMATION AND FEASIBILITY STUDY.

MARKETING

MANUFACTURING PROCESSES

SHIPPING

NC, CNC, DNC PROGRAMMING

ORDER MATERIALS

DESIGN AND PROCUREMENT OF NEW TOOLS

PRODUCTION PLANNING

CAM PROCESSES

DESIGN ANALYSIS

DESIGN SYNTHESIS

CAD PROCESSES

DESIGN OPTIMISATION

DESIGN EVALUATION

DESIGN DOCUMENTATION AND COMMUNICATION

DESIGN MODELLING AND SIMULATION

DESIGN CONCEPTUALISATION

DESIGN DEFINITION, SPECIFICATION AND REQUIREMENT

IDENTIFICATION OF DESIGN NEEDS

DESIGN PROCESSES