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ADM - CIT-223-021/2018

UNIT - CAD

CAT II

Question 1

I. Explain any six Questions to be asked when selecting software.

- Does the software meet your needs and goals? - You must select a software that helps you reach your final goals hence before selecting it you need to make sure you define your own needs and goals and match these with potential vendors.
- How flexible is the community software? - One needs to examine how flexible the software is by checking the different user plans and the level of customization. He also should check on the future of the software if it can be customized to meet his needs in case they change.
- What does it take to implement and manage the software? - This involves checking how to use the software , its maintenance and if the skills required to carry out the day to day life of the software usage is available.
- Which features do you need to make a good start and are their alternatives? - You also need to check whether it is feasible to purchase this new software or use the older one. YOu must inspect what features it will have and what you currently have and in case they are not with large differences and the software work can be done easily without new ones then it is not feasible.
- Does the software have a high frequency of updates?- One needs also to check how often the system is updated. Regularly updated systems may always affect your day to day system usage.
- Can the software be integrated with existing systems? - Since you are buying the software for an organization and it must work together with other software tools , you need to check if it can be combined or integrated with other systems within the organization and how easy it can be done.

Ii. Explain four industrial sectors where Computer Aided Design has commonly been applied.

a. The mechanical sector

This is the largest sector that uses CAD softwares for making from 2.5D and 3D objects. Applications are usually built for CAD and CAM systems. It covers all types of applications in the manufacturing sector from 3D printing , 2.5D Milling, laser cutter , solid modelling etc. One needs to test the part of the system live on the screen prior to actually building. Most of the systems have a post processor integrated to communicate with the machine tools.

b. AEC sector

AEC means Architecture, Engineering and Construction sector. To enhance the growth and development of construction drawings and documents, CAD is well used by design and construction engineers for bringing huge and positive change in Architecture Engineering and Construction Industries. Applications that are built in this sector include Interior building or object designs. Architects and engineers use to create varieties of technical drawings such as floor plans, site plans, elevations, detailed drawings and plumbing drawings, etc. without the support of any high end tools and technology.

c. Electronics/Electrical engineering.

For this sector, there are ECAD (Electronic Computer Aided Design) and EDA (Electronic Design Automation) which are particularly designed for designing electronic items. They performs the primary tasks of constructing electrical schematics, performing simulations, and creating physical blueprints for electronic devices ranging from the latest microprocessor to powerful graphic processing units. It is the primary reason that electronics have advanced from processors with just over 2000 transistors to ones with billions packed onto them. The software allows the engineers to place the physical components represented in the electrical diagram onto a model of its physical form. Any discrepancies, such as overlapping parts or a lack of room, are noted and can then be corrected well before the manufacturing process.

d. Apparel industry.

This is a sector which deals with clothing designs. The software has become one of the most essential tools for pattern making and related jobs in clothing. industry. It is used for pattern making, pattern grading, and the making of the marker. A fashion designer can create new sketches, patterns, prints more quickly and precisely using CAD software. With the increasing use of CAD, fashion designers can create multiple variations of a single design and style and adapt it to varying material and pattern.

Iii. Write a command line history of how to create a Revcloud in AutoCAD using REVCLOUD.

Command: REVCLOUD Minimum arc length: 96 Maximum arc length: 96' Style: Normal
Specify start point : A
Specify minimum length of arc <96'>: 12
Specify maximum length of arc <1'> :<ENTER>
Specify start point : Guide crosshairs along cloud
path... <MOVE YOUR MOUSE AND CLOSE THE REVCLOUD>
Revision cloud finished.

Question 2

I. Explain how to create a block from a drawing in AutoCAD using six steps.

- Draw the objects that you want in the block. Choose Home tab> Block panel> Create to start the BLOCK command. The Block Definition dialog box opens. Type a name in the Name text box. The name can have spaces.
- You need to specify a base point. That's the point at which you'll insert the block. In the Base Point section, click Pick Point. You'll immediately be returned to the dialog box.
- In the Objects section, click the Select Objects button. Select the objects and press Enter to return to the dialog box. Just below, choose Retain, Convert to Block, or Delete. These options control what happens after you create the block. In the Behavior section, you can make a block Annotative, force it to scale uniformly and choose whether to allow exploding.
- In the Settings area, choose the block unit. You can choose Unitless but if you choose a unit, AutoCAD will try to scale the block appropriately when you insert it into another drawing.
- Finally, you can add a description in the Description box. A description is helpful in the DesignCenter, when you want to insert the block from another drawing.

- Click OK to complete the box. If you choose Delete, the objects disappear. You can use the OOPS command to bring them back.

Ii. Explain the use of each of the following modifying tools in AutoCAD. Use an example sketch diagram with command line history in your explanation for each of the tools.

(i) Offset tool

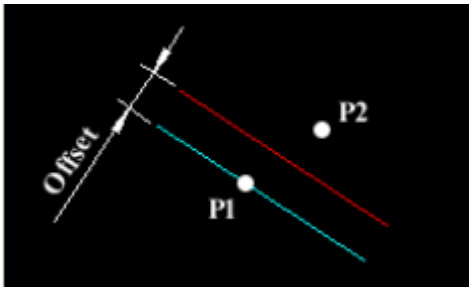
Command: OFFSET

Specify offset distance : 10 (specify distance)

Select object to offset : (select object, P1)

Specify point on side to offset: (pick direction, P2)

Select object to offset or <exit>:



P1 is offsetted to the right to create p2. It creates a parallel object to the original at a distance specified.

(ii) Rotate tool (reference angle option).

The Rotate command allows an object or objects to be rotated about a point selected by the user. AutoCAD prompts for a second rotation point or an angle which can be typed at the keyboard.

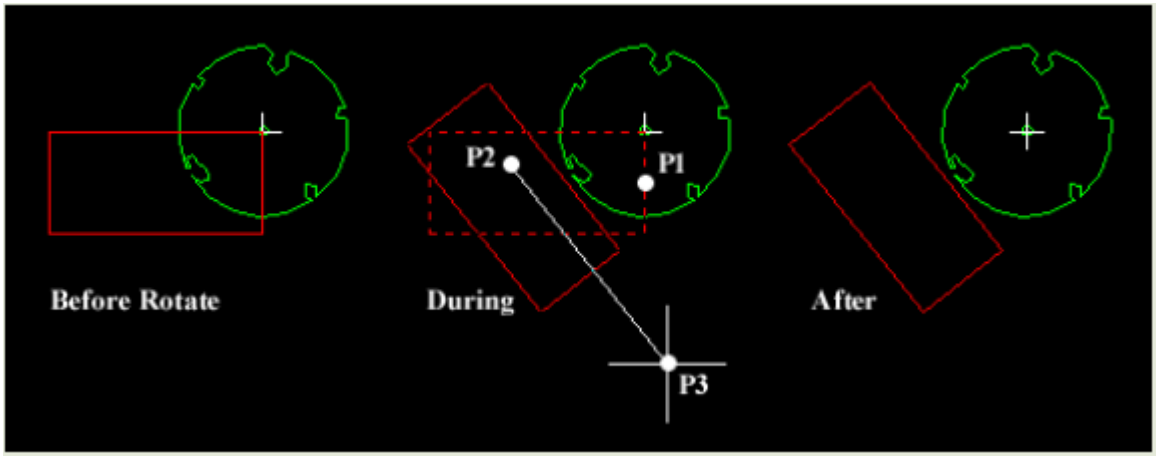
Command: ROTATE

Select objects: (pick object to rotate, P1)

Select objects: Return (to end selection)

Specify base point: (pick base point, P2)

Specify rotation angle : (pick second point, P3 or enter angle)



Question 3.

I. Explain how one can write the texts shown in Figure below 5(a) in AutoCAD.

Draw an arc and start the Arc align text command. As prompted, select an arc at a time and a dialog box will appear. Write the respective texts and adjust the settings accordingly and choose OK. Delete the arcs.

Ii. Identify and explain any six tools and commands used to generate Figure Question 5(b).

i. Line tool : Drawing straight lines

ii. Region: Converts an object that encloses an area into a region object

iii. Array: Create multiple copies of selected objects in a rectangular or polar (radial) pattern. (ARRAY) e.g polar array.

iv. Circle tool: draw a circle object

v. Extrude: Creates a 3D solid or surface by extending a 2D or 3D curve.

vi. Visual styles: Visual styles control the display of edges, lighting, and shading.

vii. Subtract: Creates as a new object by subtracting one overlapping region or 3D solid from another

Iii. Give the command line history to draw a torus using AutoCAD primitive solid. The radius of the torus is 30mm while its tube radius is 5mm.

Command: torus

Specify center point or [3P/2P/Ttr]: 0,0

Specify radius or [Diameter]: 30

Specify tube radius or [2Point/Diameter]: 5