



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL AND MANUFACTURING ENGINEERING

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

EEE 210 AUTOCAD

DATE: 24/3/2021

TIME: 2.00-4.00PM

INSTRUCTIONS

This paper contains **FIVE** questions.

Answer **Question ONE** and **any other TWO** questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) State by using an example, the main reason that make AutoCAD popular among computer drawing programs. (2 marks)
- b) State **six** disadvantages of using computer aided design (6 marks)
- c) State the purpose of each of the following terminologies as used in AutoCAD screen
 - i. command line
 - ii. Status bar (2 marks)
- d) Explain with the aid of a sketch the output of the following command line procedure in AutoCAD Acadiso template: Start the LINE command and begin at point 50,40 then enter. Type @30<45 to draw the first line. Next enter@ 40<315 then @30<225 then @40<135 (or C to Close) (4 marks)
- e) Indicate the Keystroke, Icon, Location and the Result of the following commands as used in AutoCAD: (i) Line (ii) Circle. (4 marks)
- f) Explain the use of a STRETCH command in AutoCAD by using an example (5 marks)
- g) State the function of each of the following commands
 - i. Fillet
 - ii. Chamfer
 - iii. Array (3 marks)

- h) Sketch the output of the following AutoCAD command line entries:
- Command: PL PLINE
Specify start point: <pick a point>
Current line-width is 0.0000
Specify next point or [Arc/Halfwidth/Length/Undo/Width]: 50
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]: A
Specify endpoint of arc or
[Angle/Center/CLose/Direction/Halfwidth/Line/Radius/Second pt/Undo/Width]:
20
Specify endpoint of arc or
[Angle/Center/CLose/Direction/Halfwidth/Line/Radius/Second pt/Undo/Width]: L
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]: 50
Specify next point or [Arc/Close/Halfwidth/Length/Undo/Width]: A
Specify endpoint of arc or
[Angle/Center/CLose/Direction/Halfwidth/Line/Radius/Second pt/Undo/Width]:
CL (4 marks)

QUESTION TWO (20 MARKS)

- a) Describe **three** different coordinate entry methods available in AutoCAD (6 marks)
- b) Name and explain any **six** points one can snap to in Object snap as used in AutoCAD. (6 marks)
- c) Define the following terminologies as used in AutoCAD (i) Object(ii) Ortho mode (2 marks)
- d) i What is difference between window and cross selection as used in AutoCAD (2 marks)
- ii State and briefly explain any other **four** ways of selecting objects in AutoCAD (4 marks)

QUESTION THREE (20 MARKS)

- a) Describe how one can draw the Figure Q3(a) using AutoCAD mirror command (4 marks)
- b) To enter distances in AutoCAD, one can use Absolute, Relative and Polar Coordinates to locate points. Name the other four more ways to tell AutoCAD where to locate the point you are drawing to, as illustrated in Figure Q3 (b) (i) to (iv) (2 marks)

- c) Give the command steps or sequence used to draw Figure Q3 (c) in AutoCAD. The commands should include Line, Fillet, Chamfer, Circle and Polygon. All linear dimensions are in millimetres (mm). (10 marks)
- d) Name and briefly describe the icons shown in figure Q3 (d) (i) and (ii) as used in AutoCAD. (4 marks)

QUESTION FOUR (20 MARKS)

- a) Explain how to create a block from a drawing in AutoCAD using **six** steps (12 marks)
- b) Sketch the output of the following AutoCAD command line entry on the figure Q4 (b). (2 marks)

Command: ALIGN

Select objects: <SELECT BOTTOM AND RIGHT SIDE LINES>

Specify opposite corner: 28 found

Select objects: <ENTER>

Specify first source point: <1S>

Specify first destination point: <1D>

Specify second source point: <2S>

Specify second destination point: <2D>

Specify third source point or <continue>: <ENTER>

Scale objects based on alignment points? [Yes/No] <N>: N

- c) Name and explain the purpose of the icons (i) and (ii) as shown in Figure Q4 (c) as used in AutoCAD. (6 marks)

QUESTION FIVE (20 MARKS)

- a) Explain how one can write the text shown in figure Q5 (a) in AutoCAD. (3 marks)
- b) State the steps of AutoCAD command entries for you to produce the drawing as shown in Figure Q5 (b). (8 marks)
- c) Describe by use of example commands and sketches, the use of following commands in AutoCAD (a) Union (b) Subtract (c) Intersect (9 marks)

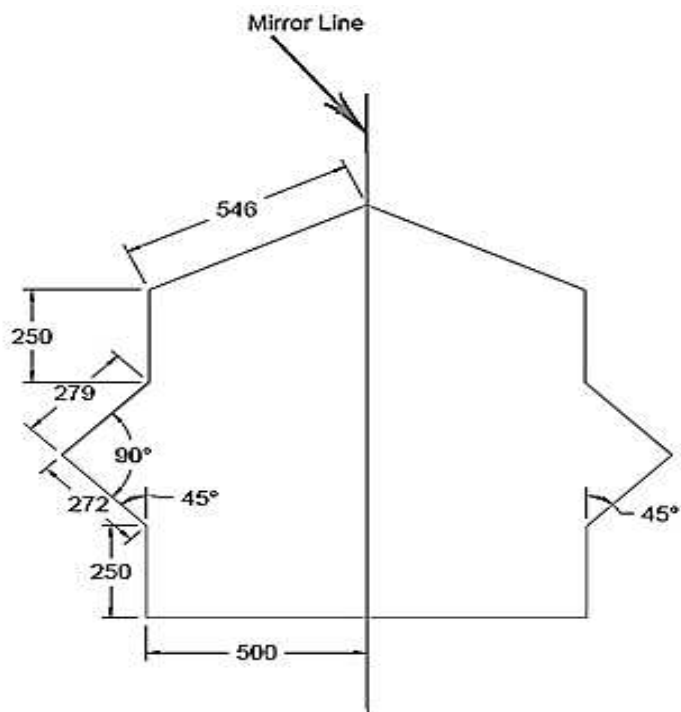


Figure Q3 (a)

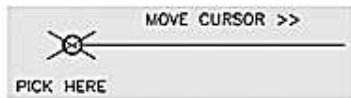


Figure Q3 (b) (i)

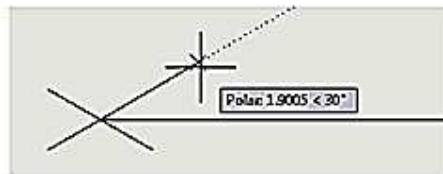


Figure Q3 (b)(ii)

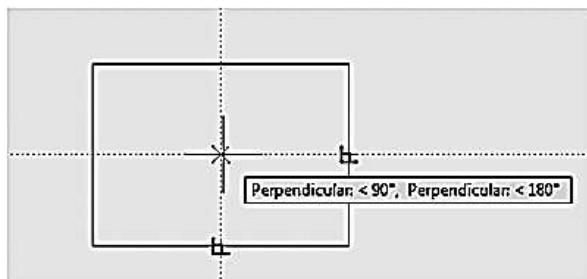


Figure Q3(b) (iii)

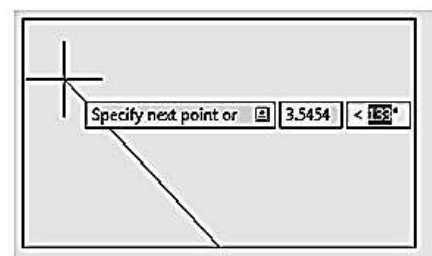


Figure Q3 (b) (iv)

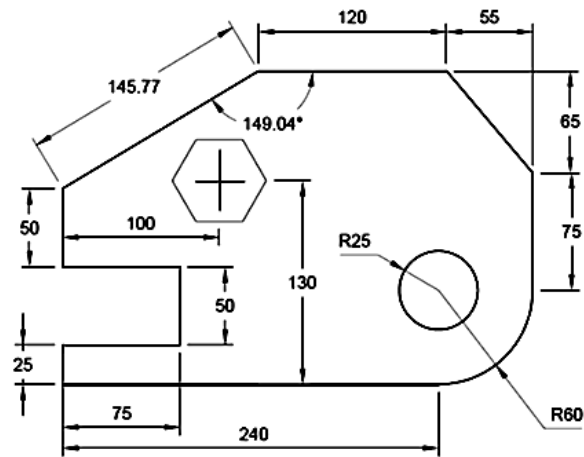


Figure Q3 (c)

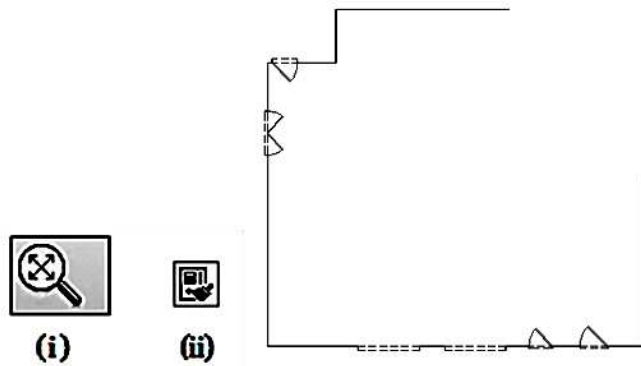


Figure Q3 (d)

Figure Q4(b)



Figure Q4 (c)



Figure Q5 (a)



Figure Q5 (b)