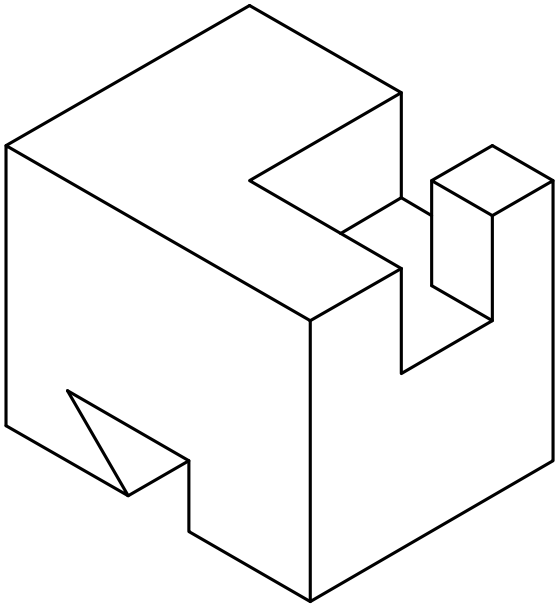
Solutions to ME101 2^{nd} Mid-Semester exam held on 18-Oct-2014

1. Refer to the figure given below and do the following (do not dimension anything)

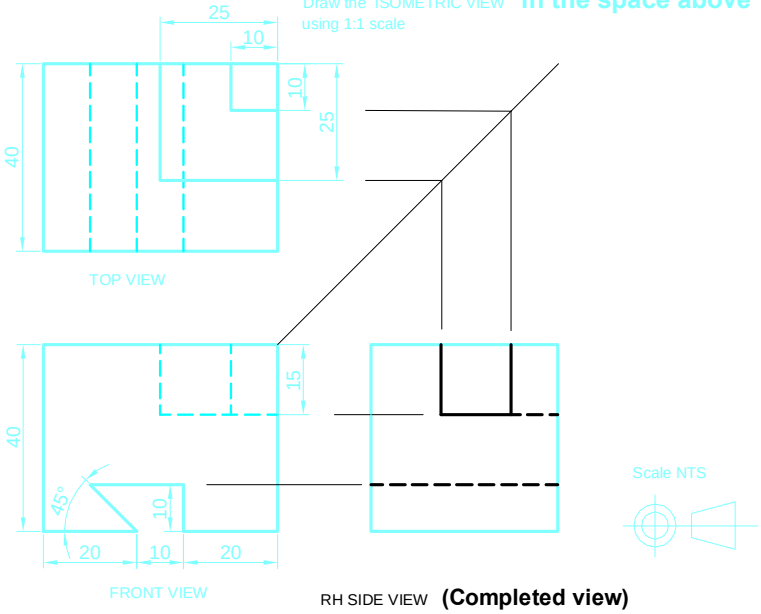
   (a) **(15 marks)** Complete the RH side view. **Use instruments. Show projection lines.**

   (b) **(25 marks) Using instruments,** draw an isometric view of the object in the space provided below, at **1:1 scale**. Orient the isometric view such that the front and top view features are visible on the left and top isoplanes, respectively.

   (The isometric drawing may not have printed to exactly 1:1 scale below, but your answer must be to 1:1 scale.)



Draw the ISOMETRIC VIEW in the space above
using 1:1 scale



RH SIDE VIEW **(Completed view)**

2. **(2 marks)** Write the size of standard A3 paper. (Hint: A3 is bigger than A4)

   420 mm x 297 mm (Comment: double the size of 297 x 210 we have been using as A4)

3. **(3 marks)** Name the standard views in 3^{rd} angle orthographic projection.

   Front view, Top view, and Right Hand Side view

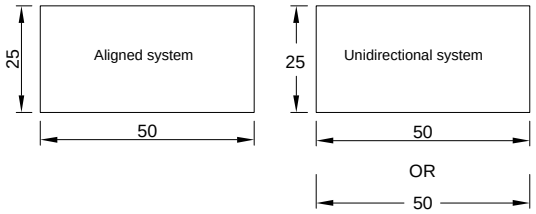
4. **(2 marks)** One possible termination of dimension lines is an arrowhead. Name two other possible terminations.

   The oblique stroke and the dot

5. **(2 marks)** Give another name for "extension lines" which are used in dimensioning drawings.

   Projection lines

6. **(4 marks)** Using instruments, and a 1:1 scale, draw two 50 mm x 25 mm rectangles side by side in the space below. Dimension the rectangle on the left using the Aligned system, and that on the right using the Unidirectional system of dimensioning. (Do not explain)
   (Note: the figure below is not on 1:1 scale, but your solution should be drawn to 1:1 scale)



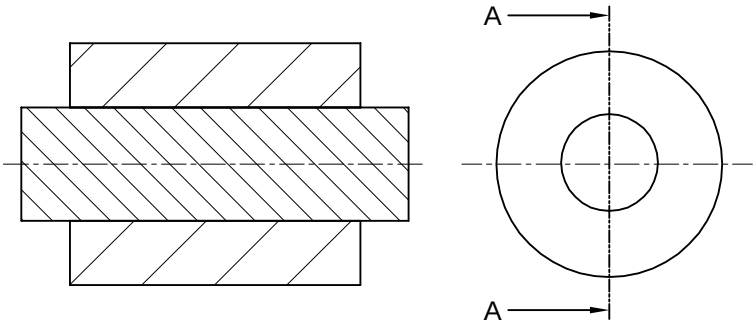
7. **(2 marks)** While dimensioning, is it permissible to use centerlines as extension lines? (Just say yes or no. Do not explain.)
   Yes

8. **(4 marks)** State one advantage of parallel dimensioning over chain dimensioning. (no more than 30 words)
   Errors in manufacturing do not accumulate

9. **(4 marks)** Draw two different linetypes which may be used to depict centerlines in engineering drawing.
   See the Mid-semester exam 1 solution (the question is repeated in this exam)

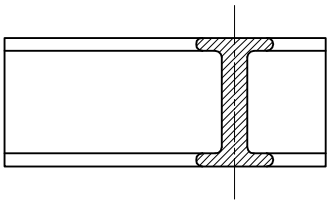
10. **(4 marks)** Draw two different linetypes which may be used to depict sectioning lines in engineering drawing.
    See the Mid-semester exam 1 solution (the question is repeated in this exam)

11. **(4 marks)** Observe the figure given below. Identify the error and state what is wrong in one sentence (less than 30 words).

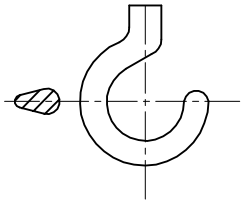


Answer: Shafts are not to be hatched in longitudinal section

12. **(4 marks)** Identify the two different types of section in the two figures given below. Write your answers in the space provided below the two drawings (Just name the type of section. Do not explain, nor describe anything).



Answer: Revolved section



Answer: Removed section

13. **(2 marks)** In a Gantt chart, what is listed on the vertical axis?

Tasks

14. **(2 marks)** The Dieter text mentions three major steps in a design process, namely, Embodiment design, Detail design, and Conceptual design. Write these steps in correct sequence beginning with the step that is completed first. (Do not explain, nor describe anything.)
    1. Conceptual design 2. Embodiment design 3. Detail design

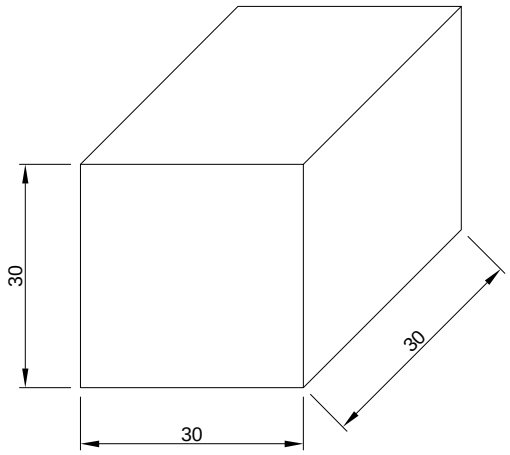
15. **(2 marks)** State the Pareto Principle (no more than 30 words).
    See the Mid-semester exam 1 solution (the question is repeated in this exam)

16. **(5 marks)** What is the meaning of the term "Axonometry" (no more than 15 words)?
    Measurement of axes

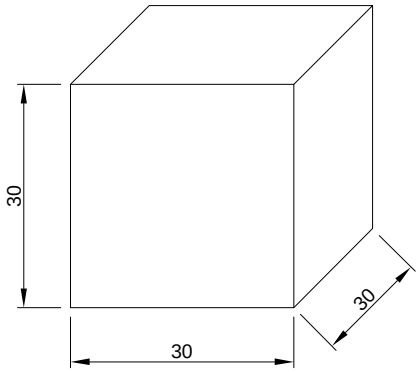
17. **(6 marks)** Write the names of the three different types of axonometric projection as per the American system of classification of pictorials.

    1. Isometric 2. Dimetric 3. Trimetric

18. **(8 marks)** Consider a right hexahedron with edge length 30 mm. **Using instruments**, draw the **Cavalier view** of this object on the left side of the space provided below, and the **Cabinet view** of this object on the right side of the space provided below. Choose the scale of your drawings such that the principal face of the object appears in 1:1 scale. Use 45 degree receding axes for your drawings. Let the axes recede towards the north-east direction.
    (Note: the figures below may not be exactly to 1:1 scale, but your solution should be drawn to 1:1 scale. You were not expected to dimension these drawings.)



Cavalier view



Cabinet view

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