



The Sector Skills Council  
for Science, Engineering and  
Manufacturing Technologies

# 2013 REGIONAL HEAT MECHANICAL ENGINEERING CAD

Modelling from Detail Drawings & Creating Assemblies



**Task:** Modelling from Detail Drawings & Creating Assemblies

**Time:** 3.0 Hours

**Given:** 13 Part Drawings & Assembly Drawing

**Task:**

**Advanced and Higher**

1. Create 3D models of all parts shown on part drawings
2. Assemble the scooter in correct assembly sequence. All non-modelled parts are to be brought in from the content library
3. Reproduce the given assembly drawing with parts list on one piece of A3
4. Produce an isometric exploded view drawing which clearly shows all parts on A3 paper

**Higher Only**

5. Produce an AVI file to demonstrate the Scooter exploding then collapsing.
  - a. Parts must not clash and should follow a logical order
  - b. Screw functionality should be shown
  - c. Camera angles should be changed to focus on specific assembly functions
6. Produce an AVI file to demonstrate the physical Simulation of the Scooter Steering and wheel rotation Include in this:
  - a. A complete 360 degree rotation of the steering
  - b. A complete 720 degree rotation of both wheels simultaneously
  - c. Camera angles should be changed to focus on specific functions

**USE OF COMPUTER:**

Use of the computer is allowed from the beginning of the competition time.

**OUTPUT**

- Software Modeled Parts, Assemblies and Drawing Files.

**NOTES**

- All marks are to be taken from digital files and printing is not required.
- Save all files in a folder with your full name as the title which will be later sent to us for marking.

## MARKING

- All Marking is Objective and broken down as follows:

### ADVANCED COMPETITION

	Max Mark
3D Model – Deck	10
3D Model – Bearing Cup	3
3D Model – Top Cap	2
3D Model – Wheel	4
3D Model – Tyre	1
3D Model – Spacer	1
3D Model – Rear Axle	2
3D Model – Fork	7
3D Model – Grip	3
3D Model – Star Nut	2
3D Model – Handles	2.5
3D Model – End Grip	2.5
3D Model - Clamp	3
Completed Assembly	14
Assembly Drawing	23
Exploded View Drawing	20
<b>Total Marks</b>	<b>100</b>

### HIGHER COMPETITION

	Max Mark
3D Model – Deck	10
3D Model – Bearing Cup	3
3D Model – Top Cap	2
3D Model – Wheel	4
3D Model – Tyre	1
3D Model – Spacer	1
3D Model – Rear Axle	2
3D Model – Fork	7
3D Model – Grip	3
3D Model – Star Nut	2
3D Model – Handles	2.5
3D Model – End Grip	2.5
3D Model - Clamp	3
Completed Assembly	10
Assembly Drawing	17
Exploded View Drawing	20
Exploding/Collapsing Animation	5
Physical Simulation of Wheels and Handle Bars	5
<b>Total Marks</b>	<b>100</b>