

THIS BOX MUST BE COMPLETED

Student Code No.

Student's Signature

Date Submitted

Contact e-mail

MODULE TITLE : ENGINEERING DESIGN

TOPIC TITLE : DESIGN SPECIFICATION

TUTOR MARKED ASSIGNMENT 1

NAME

ADDRESS

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..... ***HOME TELEPHONE***

EMPLOYER

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..... ***WORK TELEPHONE***

EDE - 1 - TMA (v1)

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IMPORTANT

Before you start please read the following instructions carefully.

1. This assignment forms part of the formal assessment for this module. If you fail to reach the required standard for the assignment then you will be allowed to resubmit but a resubmission will only be eligible for a Pass grade, not a Merit or Distinction.

You should therefore not submit the assignment until you are reasonably sure that you have completed it successfully. Seek your tutor's advice if unsure.

2. Ensure that you indicate the number of the question you are answering.
3. **Make a copy** of your answers before submitting the assignment.
4. **Complete all details on the front page of this TMA** and return it with the completed assignment including supporting calculations where appropriate. The preferred submission is via your TUOL(E) Blackboard account:

<https://eat.tees.ac.uk>

5. Your tutor's comments on the assignment will be posted on Blackboard.

This TMA will form the basis of a design project which will be completed within TMA 2. You should therefore think carefully about which of the following Case Studies you choose, based on your knowledge of the theory and practice of the product chosen.

For **ONE** of the case studies given on the next page, complete the following.

1. Derive at least four concept designs to satisfy the given specification. Use short written descriptions and simple sketches to illustrate your ideas. Show evidence of the use of the following techniques:
 - brainstorming
 - synectics
 - morphological chart.
2. Use the weighted objective method to select **your** best solution from any **four** of the concept designs.
3. What other information would be required to be able to write a more complete Product Design Specification? (Use an objective tree to clarify and expand upon the vague brief given.)

Case Studies

Choose **ONE** of the following.

- (a) As a keen, but economically challenged, cyclist you need a means of carrying two bicycles whilst travelling between destinations on a touring holiday in your small car which has a tow bar fitted.

OR

- (b) It has been found that to improve product quality, a process stream leaving a storage vessel on a chemical plant now needs to be cooled from a temperature of 100°C to a temperature of 50°C before entering the reactor. The ambient air temperature averages 15°C with a high of 25°C. A water supply at 40°C is available.

OR

- (c) An analogue/digital circuit trainer is required for students to construct circuits. The design requires:
- the ability to build circuits
 - associated power supply
 - a suitable waveform generator
 - a means of measuring current, voltage and resistance.

