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**Course:** BTEC Higher National Certificate / Diploma (Engineering)

**Year: 2019/20**

**Unit Number and Title: Unit 1 Engineering Design**

**Assignment No:** 3

**Assignment Title: Formulate possible technical solutions to address a design specification**

**Covers Learning Outcome: LO3 Prepare an industry-standard engineering technical design report**

**Student name: …………………………………………………………**

**Issue date: 3rd January 2019**

**Due date: 7th February 2019**

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| **Submission date:** |  | **Marking date:** |  |
| **Student name:** |  | **Lecturer name:** | **J Kupper**  |
| **Student signature:** |  | **Lecturer signature:** |  |

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| --- | --- | --- | --- | --- |
| Criteria  | Assessment Grading Criteria | Achieved | Evidence | Assessor comment / feedback |
| **P6** | Prepare an industry-standard engineering technical design report | *Yes / No* | *Task 1*  |  |
| **P7** | Assess the presented technical design and identify any potential limitations it may have | *Yes / No* | *Task 2* |  |
| **M4** | Explain the role of design specifications and standard in producing a finished product | *Yes / No* | *Task 2* |  |
| **M5** | Identify any compliance, safety and risk management issues present in the chosen solution | *Yes / No* | *Task 2* |  |
| **D3** | Evaluate the effectiveness of the presented industry-standard engineering technical design report for producing a fully compliant finished product | *Yes / No* | *Task 3* |  |

**Lecturer general feedback:**

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**How your work will be assessed:**

To provide evidence that you have mastered the essential concepts of Learning Outcome 2 you must make a valid attempt at all the questions.

If you complete the ‘P’ questions satisfactorily you have an opportunity to provide more evidence to show that you can work at MERIT and then DISTINCTION level by making a valid attempt at all the questions that have an ‘M’ and then ‘D’ attached to the question number. To meet MERIT and DISTINCTION criteria you will generally be expected to produce not only correct numerical answers but also, to present your strategy/method in a clear and logical way so that you demonstrate your understanding and where appropriate, your ability to adapt the principles and concepts that you are applying.

**Assignment Brief**

* Before you start work on this assignment, read all of the questions and make yourself aware of the learning outcomes addressed by the assignment.
* Note that each question is directly related to a criterion that it, when appropriately answered, provides evidence for PASS, MERIT or DISTINCTION criteria being met.

Set out your responses so that they are easy to read. Number your answer to each question and where appropriate, identify each part-question as (a), (b) etc. Make sure that your answers quote any formulae being used in symbolic form before values are inserted and show the method/strategy you are applying. Don’t forget to underline (or highlight) your final answer(s).

* Write your name on each of your answer sheets, number the answer sheets sequentially, staple the answer sheets together and hand-in them in with this assignment worksheet. Do not put each page of answers into a separate plastic document wallet.
* This assignment must be submitted by the agreed submission date entered on the front page of this worksheet, unless agreed otherwise by the tutor.

**Task1 (P6)**

With reference to the PDS and subsequent FMEA that you created in Assignments 1 & 2:-

Create an Engineering Technical Design report for presentation to the customer. The report must show how your design meets the Customer Requirements and include the following detail:

Costs

Timescales

Availability of required components & material

How it meets the spec. in terms of key dimensions, loading, transportation, operating environment etc.

**Task2 (M4, D3)**

With reference to your report and proposed solution, explain the need for specifying standards to ensure correct material procurement, manufacture and use of the product. Why is this important?

How will your report ensure (and reassure the customer) that the finished product is fully compliant. Suggest any other ways that the written report could be supplemented to ensure that this is the case.

How will your report ensure (and reassure the customer) that the finished product is manufacturable within the timescales you have proposed. Consider any unusual or non-standard processes that may be required. Suggest any other ways that the written report could be supplemented to ensure that this is the case.

**Task3 (P7, M5)**

Identify the key risk and specification-compliance areas in your chosen design solution, particularly with regard to safety and on-time delivery. Clearly identify any limitations there may be from a customer perspective. How would you make the customer aware of these limitations?