# 10th December

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## Part A: Automation Conceptual Design

#### Topic 1. Product Design (Total: 10 Marks)

The initial product calculations are good but perhaps some additional detail within them would be useful to give a more accurate value.

Most components chosen seem reasonable for your design but perhaps the motor is working too close to It’s maximum capacity.

It would have been nice to see some attention given to the structural calculations within your design (eg. how it can be held in place during operation).

It’s good to see the couplings highlighted, however perhaps some additional annotation/highlighting would’ve been useful to better understand your design.

The exploded view seems to be missing some annotation for the referencing to a bill of materials which would have been useful to see for all components in the design.

#### Topic 2. Automated Workcell Design (Total: 15 Marks)

It’s good seeing an attempt made at highlighting each of the robot operations, however, there appear to be a few missing that are required to fully assemble your design.

Perhaps some additional detail could have been given within the workflow matrix such as highlighting how exactly it corresponds to the requirements of the workcell.

It’s good to see your robot parameters identified, however, it would have been even better to see some additional detail in the supporting calculations as to why these parameters are required.

The graspability/stability analysis seems to be mostly correct however adding in some more robust methodology for how you came to your values would have been useful (eg. using the contact surface area, moments from the centre of mass).

Perhaps utilising the graspability/stability analysis would have been useful to optimise your work cell based on analysing a few assembly processes.

Most workcell constraints have been identified, however, it would have been useful to see what is the minimum time required for a second cycle to begin after the first.

It’s good to see some optimisation given for robot movement based on your constraints or otherwise to overall improve your workcell.

#### Topic 3. Automation Support Systems - (Total: 15 Marks)

Most robots within the workcell seem to have been identified well however some of them may be more expensive than what is required for the assembly operation and could be improved.

It’s good seeing robots available in-market being identified, however, it would have been useful to give a comparison between the robot specifications and your required parameters.

The stiffness analysis is good and helps understand why the robot is suitable for the process it is used for, however, perhaps more details/scenarios would have been useful to get a fuller appreciation.

It’s good to see some discussion for at least one of the end-effectors however justification should have been given for all of them in some way to identify how they are suitable for each assembly process.

Most sensors seem suitable for your design, however, more sensors may be required to have your workcell functioning effectively.

It’s good to see the key parameters for your support systems highlighted but perhaps it would have been useful to see what specific requirements you required from them.

It’s good to see a flexible fixture included into your design but perhaps highlighting why the flexibility would’ve been useful for your design.

#### Topic 4. Robotic Simulation - RoboDK (Total: 10 marks total)

Most components seem to have been integrated into your simulation section of the report based on what you have shown from your design, however, a few of the support systems seem to be missing.

It seems that many components are missing from your simulation video design to give a full workcell and should’ve been incorporated to show your conceptual design within the simulation.

The overall simulation quality is reasonable, however it would’ve been better to have included more details and/or clarity for the assembly processes.

## Part B: Research-Focused Investigation

#### Topic 5. Literature Review (Total: 10 marks)

The literature review doesn’t seem to be very relevant to the research topic highlighted and should be redone with better focus around your topic.

Some good criticism has been given throughout the literature review however it would’ve been nice to see how the research gaps found could be utilised as motivation for your own research.

Some basic key theories have been identified from the literature but perhaps there could be more detailed/specific theories that could be utilised here?

It’s good to also see the key theories identified being developed further but more explanation/interpretation would be useful to see how they fit better to your research topic.

Most of the literature chosen seems to be fairly old/outdated, finding any newer research to build upon (or highlighting the lack of It’s presence) would’ve been useful to see.

#### Topic 6. Methodology (Including alignment to Industry 4.0 and Factory-in-a-box) (Total: 15 Marks)

The methodology is mostly logical throughout, however perhaps some additional specific detail within would give a more logical step-by-step process of your work.

This section seems to be mostly reasonable however it may benefit from a different perspective to highlight creativity to achieve your research

There seems to be some consideration given to industry 4.0 within the methodology, but perhaps much more context could be given to the research to better fit it to this technology.

Most annotations through are clear however they require additional arrow references to significant figure areas to understand what is being talked about.

Overall, the methodology seems to be reasonable, however much more effort needs to have been put into this section to bring it to a much higher standard.

#### Topic 7. Results (Total: 15 Marks)

The analysis of the results is of a good standard but perhaps a few more details within the evaluation would’ve been useful to closely link your results to your conclusions.

It’s good to see some comparison given between your project and previous literature, but it would’ve been even better to highlight which particular gaps of the research your work has been able to fill.

The results shown have been supported by research reasonably well but it would’ve been useful to see more novel insights made into what impact the results may have.

#### Topic 8. Quality of Supporting Evidence (Total: 10 Marks)

All annotations throughout are clear, with full description and arrow references to significant areas in the figures.

Most of the CAD seems to be a little basic, perhaps adding in additional details to the design (fillets, chamfers etc.) would give a better representation of what components would actually look like.

Most tables and figures have been labelled logically throughout the report, however some seem to have not been labelled well.