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Learning Report – MBSE

Course Code: <CODE>



Version Number:

Team Members :

Team No:

Module: Model Based System Engineering

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| **Ver. Rel. No.** | **Release Date** | **Prepared. By** | **Reviewed By** | **Approved By** | **Remarks/Revision Details** |
|  | 17-02-21 | R SANJANA |  |  |  |
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# Team Work

## **Activity 1** – Understanding Different MBSE Workflows Based on Business Domain

(Aero| Auto) (Choose any one domain)

Where | When | What | How | Resources | Pros and Cons

## **Activity 2** – Modelling – Collective Learning (use any UML online tools: eg:- draw.io)

Solution | Alternate solution | Test cases for each of the subparts

More details for the different components in session slides

**Part A -**  Model the following expression: ((a<b) && !(b>c)) || ((a==c) && !(b==2))

**Part B -**  Design a microcontroller based automatic water pumping system, which pumps water to overhead tank when the water in over head tank is less than threshold , water in sump is greater than threshold and power supply is present.

Solution | Alternate solution | Test cases

**Part C-**  Design a model for finding out the roots of a quadratic equation of the form ax2+bx+c=0

**Part D-**  - Design an display console for a Digital thermometer whose display should be in 0F and 0K  by converting the measured 0C.

**Part E-** Model any second order equation one each

**Part F-** Model any one difference equations

## **Activity 3** – Explore the below resources and share learning and critical comments on the same

**System Engineering Brief: Managing Complexity with a Systems Driven Approach:** <https://www.youtube.com/watch?v=uEmX7rw0fKg&t=25s>

**ANSYS SCADE: Model Based Systems Engineering and Design [Overview] :**

https://www.youtube.com/watch?v=Hp5brmQKd7c&feature=youtu.be

**Modeling Virtual Car Assembly  lines using Delmia Products:** <https://www.youtube.com/watch?v=UcHhX6oK95I&feature=youtu.be>

**Mercedes Benz Assembly Testing:**

<https://youtu.be/UmbWIMRdyZk>

**Model-Based Design with MATLAB and Simulink:** [https://in.mathworks.com/videos/model-based-design-with-matlab-and simulink-69040.html](https://in.mathworks.com/videos/model-based-design-with-matlab-and-simulink-69040.html)

**Development and control of an inverted pendulum system:** <https://youtu.be/855O9x0Pgf0?t=63>

**IBM Rational DOORS:** <https://www.youtube.com/watch?v=P2KKdCrejFc>

**Rapid Control Prototyping:** <https://in.mathworks.com/videos/rapid-engine-control-prototyping-using-simulink-real-time-and-speedgoat-target-hardware-1527493263578.html>

## **Activity 4** – Complete Matlab Onramp

Insert Certificate

Sample Certificate –

## **Activity 5** – Complete Simulink Onramp

Insert Certificate