

QUESTION 1

a) FEA CAN BE USED TO REDUCE PHYSICAL PROTO TYPES AS WHEN USING CAE AND CAD WE CAN EXTENSIVELY TEST DIFFERENT PROTOTYPES IN THE VIRTUAL WORLD BY TESTING VARIOUS MATERIALS, BOUNDARY CONDITIONS AND SUBJECTED LOADS. FROM ~~WHICH~~ WE CAN ~~PO~~ OPTIMIZE TOPOLOGY TO ENSURE COMPONENTS FIT AND ~~ARE~~ ARE MANUFACTURABLE AND LIGHT AS POSSIBLE I.E FOR AUTOMOTIVE TO REDUCE FUEL CONSUMPTION BUT STAY STRONG. FROM THIS WE CAN ALSO PRODUCE CASTING MOLDS TO ENSURE THE DESIGN IS ~~MANUFACTURABLE~~ MANUFACTURABLE.

CARRY OUT SHAPE OPTIMISATION TO REDUCE POSSIBLE FAILURE POINT DUE TO FATIGUE.

PERFORMANCE ASSESSMENT TO SHOW HOW IT ACTS DURING OPERATION AND REDUCE ANY PEAK LOADS.

WE CAN THEN USE OPTIMISED CAD DESIGN TO DESIGN A ROUGH ~~OF~~ PROTOTYPE ~~BEFORE~~ FOR PHYSICAL TEST BEFORE MANUFACTURE