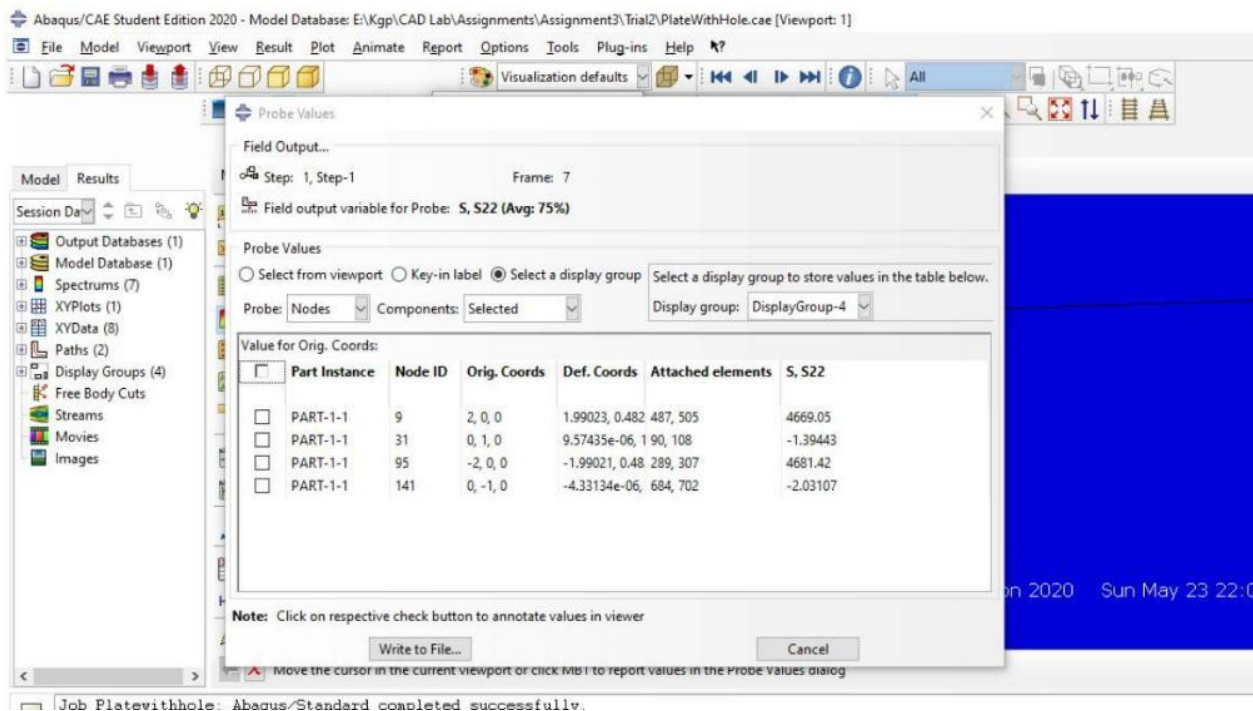


## Assignment No. 3 ( CAD Lab)

Submitted by : **Vhanbatte Shrinish Rajesh (19CE36022)**

**Stresses for the given co-ordinates :-**



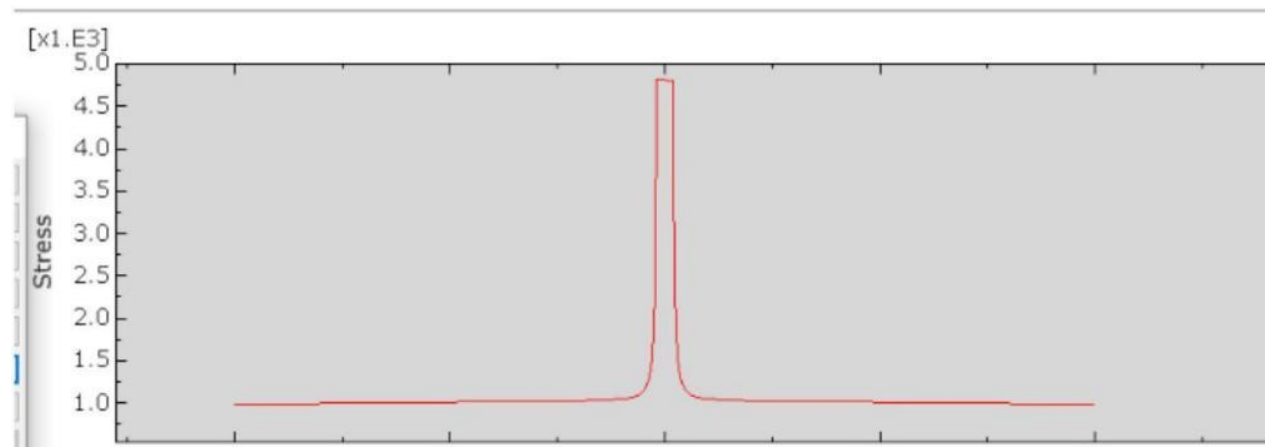
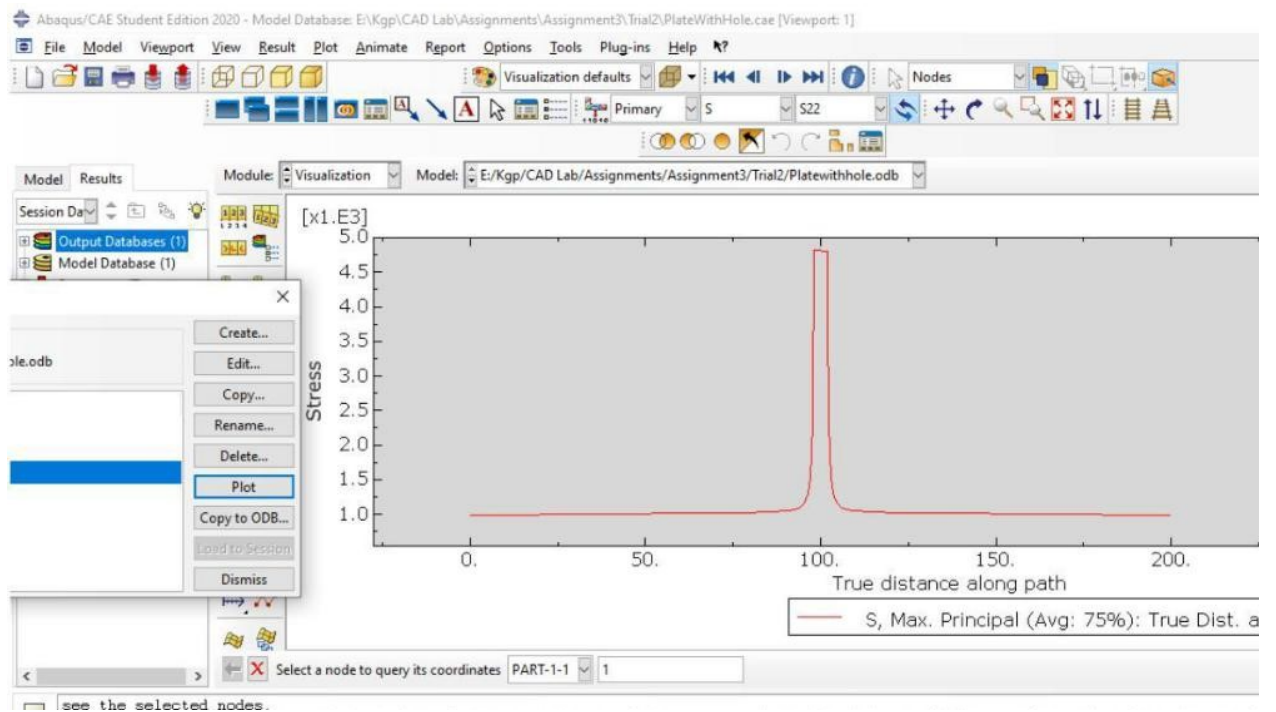
Above written results are the Sigma YY stresses obtained after converging the solution at the required coordinates.

For getting above results edge seeding is done with 18 numbers of elements and with a bias ratio of 7000.

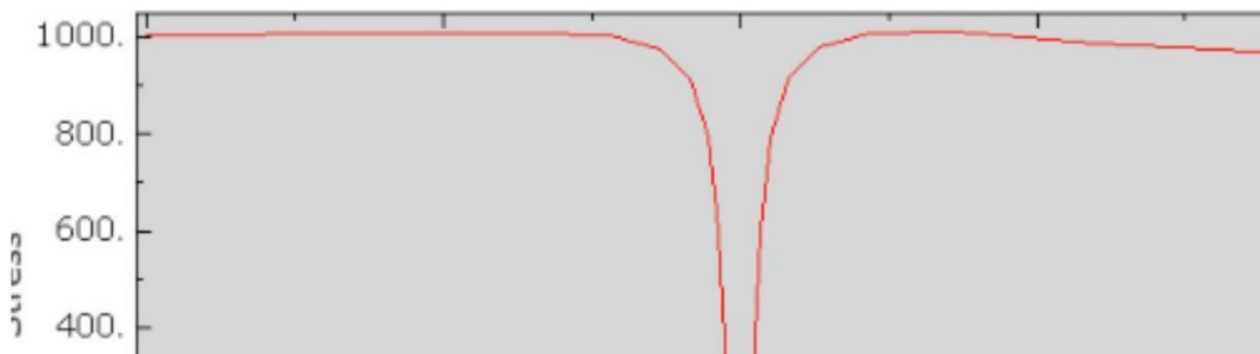
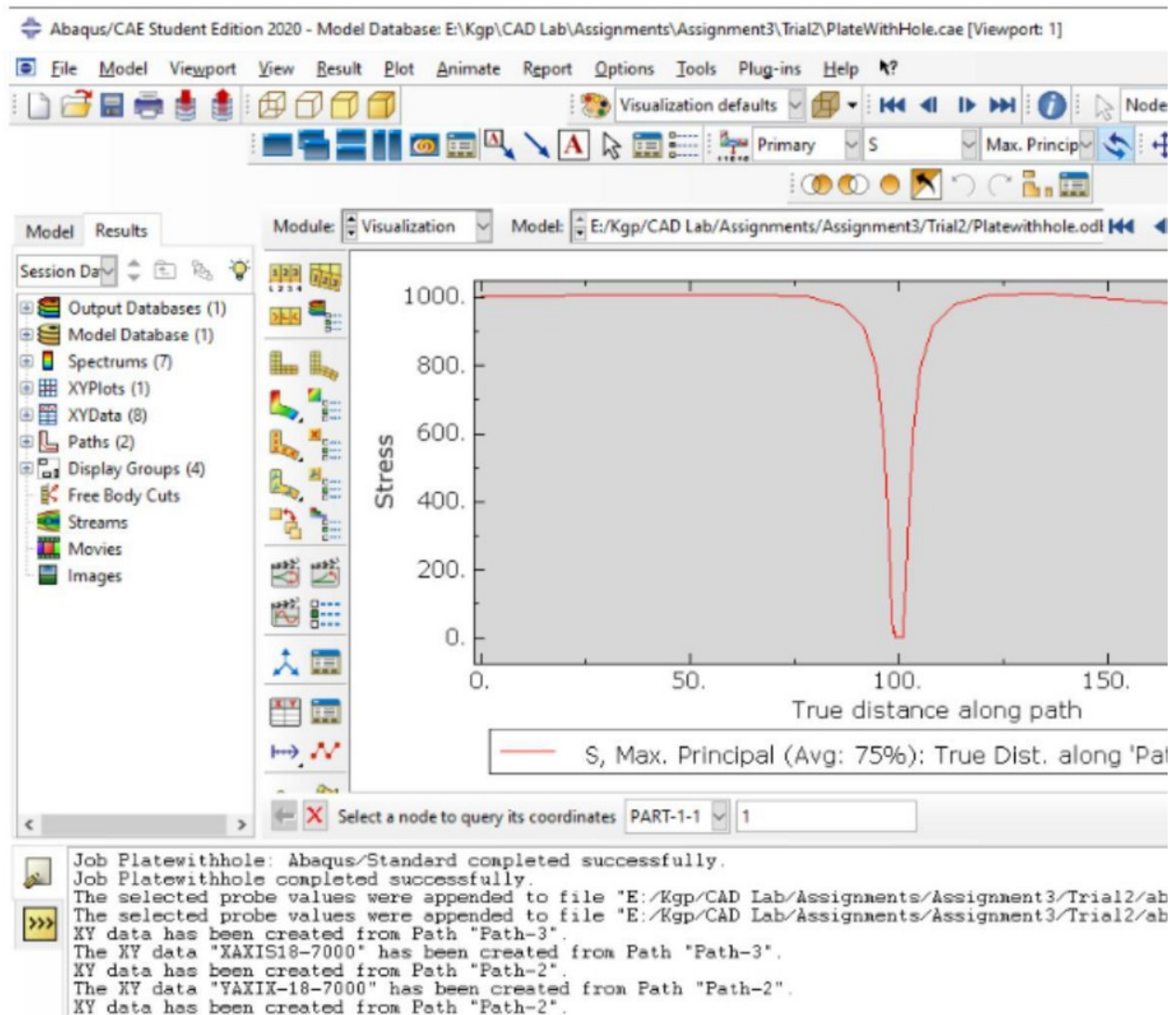
Meshing is done by taking Element type as Quadratic with Structured orientation.

# PLOT OF MAXIMUM PRINCIPAL STRESS ALONG X AND Y AXIS:-

## 1. ALONG X- AXIS:-



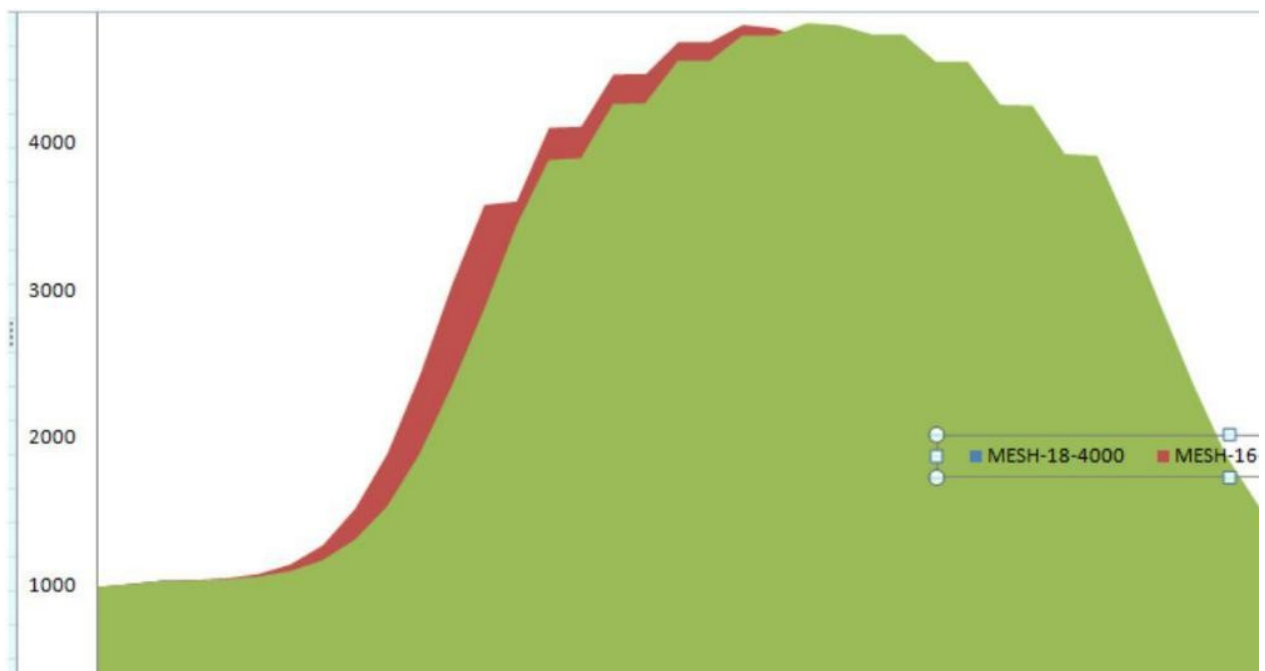
## 2. ALONG Y-AXIS:-

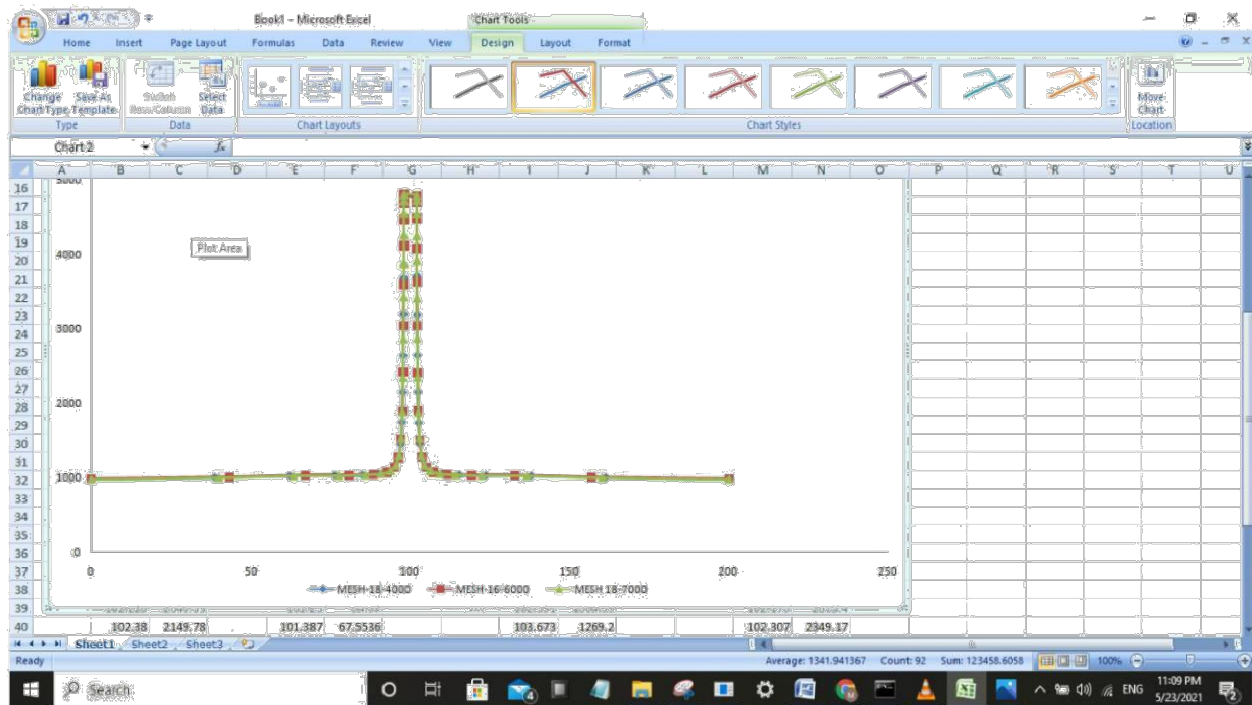


## CONVERGENCE STUDY

For Convergence the X-Axis Stress Distribution curve for 3 different **Element number-Bias ratio** Combination is plotted.

Results are shown in the form of graph as:-





In convergence study I tried to get **theoretical stress intensity factor** as 5, since it is known that the due to stress concentration the peak stress(at the edge of hole i.e. at coordinates **(-2mm,0mm)** and **(2mm,0mm)**) should be 5 times to the stresses at outer portion as **per theoretical stress intensity factor** ( $P_{\text{peak}} = P \cdot (1 + 2 \cdot a/b)$  where  $a=2\text{mm}, b=1\text{mm}$ ) so trying for different mesh combinations I found that on taking the **bias ratio of 7000 at 18 number of nodes** along the selected edges **theoretical stress intensity factor** converged to about 4.9

Value of peak stress:- **4680.27 N/mm<sup>2</sup>**

Position:- **(-2,0,0) and (2,0,0)**