ME 308 – MACHINE ELEMENTS II

HOMEWORK 1

A pressure fed bearing and has a diameter of 50 mm and has a 55 mm length with a 5 mm central annular groove. This bearing is fed by SAE 20 oil at 50 °C with a 1250 kPa supply pressure. The relevant journal is rotating at 2700 rpm and applies a load of 6 kN to the bearing. Determine the optimum clearance range and select an appropriate fit. Start with the minimum clearance 20 µm with 10 µm increment (10 µm, 20 µm, 30 µm… etc). Use Trumpler’s design criteria to check the design in the end.

Please APPLY following rules while preparing this homework:

- Present your homework on white A4 paper.
- Show all your calculations clearly.
- Show all the units. Do not present results without units.
- State all the equations and tables you used by giving reference from the textbook or notes.
- Neatness will be graded.