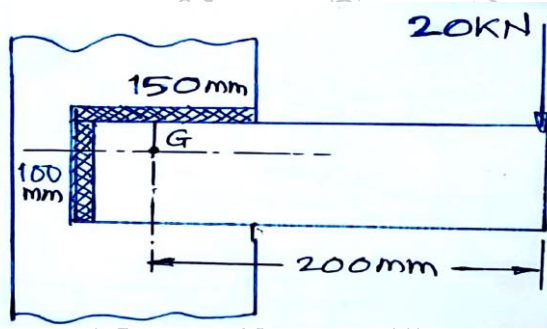


- (b) Fig. No.1 shows a welded joint subjected to an eccentric load of 20KN. Determine the uniform size of weld on entire length of two legs. Take permissible shear stress as 100 MPa.



(Fig. No.1)

- Q5. (a)** A spur gear of 250 mm PCD is mounted at 300 mm to the right of left hand bearing and a 450 mm diameter pulley is mounted at 200 mm to the left of right hand bearing. The shaft is supported in bearing 900mm apart and transmits 20 KW at 400 r.p.m. A gear is driven by a pinion located vertically above and the pulley transmits power through belt to another pulley located vertically below it. The belt tension ratio at pulley is 2. The pulley weighs 500 N. Select suitable material and design shaft. 10
- (b)** A multi-plate clutch transmits a power of 75 kW at 3000 rpm. The plates run in oil and coefficient of friction is 0.07. Axial intensity of pressure is not to exceed 0.15 N/mm². Due to space limitation external radius is restricted to 125 mm. Assuming number of springs as 6, design a) Input and Output Shaft b) Friction and pressure plates. 10
- Q6. (a)** A flat belt drive is used to transmit 6 kW power from an electric motor rotating at 1440 rpm to the blower operating at 400 rpm for 10 hours/ day and the expected life of belt is two and half years approximately. Centre to centre distance is 950 mm. Find
 a. Driving and Driven pulley diameter. 10
 b. Considering Rubber Canvas Material for the belt, determine the thickness and width of the belt.
- (b)** A single cylinder four stroke cycle internal combustion engine produces 15 KW power at 700 rpm. Design a suitable flywheel, assuming coefficient of fluctuation of speed as 0.04. The torque developed during the power stroke may be considered as sine curve and work done during the power stroke is 30% more than the work done per cycle. 10
