**LOK NAYAK JAIPRAKASH INSTITUTE OF TECHNOLOGY CHAPRA, BIHAR**

**(**Established under AICET Act, \_\_\_\_\_)

**Department of Mechanical Engineering**

**021821 Mechanical System Design**

**Assignment II**

1. A journal bearing is to be designed for a centrifugal pump for the following data:

Load on the journal=12 KN; Diameter of the journal=75 mm; Speed=1440 r.p.m; Atm. temperature of the oil=16oC; Operating temperature of the oil=60oC; Absolute viscosity of oil at 60o =0.023 kg/m-s. Give a systematic design of the bearing.

1. A gear drive is required to transmit a maximum power of 22.5 kW. The velocity ratio is 1:2 and r.p.m of the pinion is 200. The approximate centre distance between the shafts may be taken as 600 mm. The teeth has 20o stub involute profiles. The static stress for the cast iron gear material may be taken as 60 MPa and face width as 10 times the module. Find the module, face width and number of teeth on each gear. Check the design for dynamic and wear loads.
2. Design a flywheel for a single-cylinder, four-stroke, vertical cylinder diesel engine developing a 2kW power at 1000 r.p.m. Assume coefficient of speed fluctuation Cs=0.01.
3. Design a cylinder for a 1100 cc, six cylinder, four-stroke diesel engine running at 4400 r.p.m and developing 40 kw. Mean effective pressure is 1N/mm2.
4. Write design procedure for welded joint