B.TECH. DEGREE EXAMINATION, MAY 2018

Eighth Semester

Branch : Automobile Engineering/Mechanical Engineering

AU 010 801 / ME 010 801—DESIGN OF TRANSMISSION ELEMENTS (AU/ME)

(New Scheme—2011 Admission onwards)

[Regular / Supplementary]

Time : Three Hours

Maximum : 100 Marks

Answer any **two** *questions from Part A and Part B.*

All questions carries 25 marks.

Assume missing data suitably.

Machine design data book as per syllabus is permitted.

Part A (Model 1 and 2)

1. A multi-disk clutch consists of five Steel plates and four bronze plates. The inner and outer diameters of friction disks are '75 mm and 150 mm respectively. The coefficient of friction is 0.1 and the intensity of pressure is limited to 0.3 N/mm^2, Assuming the uniform wear theory, calculate :

   (i) the required operating force, and (ii) power transmitting capacity at 750 rpm.

2. Derive power transmitting capacity of a single plate clutch for :

   (i) Uniform pressure condition.

   (ii) Uniform wear condition.

3. A ball bearing is operating on work cycle of 3 hours consisting of :

   (a) A radial load of 3 kN at 1440 r.p.m for one quarter cycle.

   (b) A radial load of 5 kN at 720 r.p.m for half cycle.

   (c) A radial load of 2.5 kN at 1440 r.p.m for the remaining cycle.

   (d) The expected life of the bearing is 10000 hours. Calculate the load carrying capacity of the bearing.