Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: IV Marine Engineering

Regular Examination April – June 2017

2MR405 Theory of Machines

Time: 3 Hours **Total Marks: 60**

Instruction: (1) Attempt all Questions.

(2) Assume suitable data if necessary.

(3) Figure to the right indicates full Marks.

(4) Start new Question on New Page.1

Section – I

Que. – 1 **(a)** What are the types of governors? And Draw sketch any one. **[5]**

(b) Differentiate between flywheel and Governor. **[5]**

OR

Que. – 1 List the different types of Gear train with neat sketch. **[10]**

Que. – 2 **(a)** List different types of belt drive with neat sketch. **[5]**

(b) Explain the Velocity ratio of compound Belt drive. **[5]**

OR

Que. – 2 Derive the Equation of Ratio of tension in the belt **[10]**

Que. – 3 An engine, running at 150 r. p.m. drives a line shaft by means of a belt. The engine pulley is 750 mm diameter and the pulley on the line shaft being 450 mm. A 900 mm diameter pulley on the line shaft drives a 150 mm diameter pulley keyed to a dynamo shaft, Find the speed of the dynamo shaft, When 1. There is no slip, and 2. There is a slip of 2% at each drive. **[10]**

Section – II

Que. – 4 **(a)** Derive the Equation of slip in the belt. **[5]**

(b) Classify followers and explain with neat sketch. **[5]**

OR

Que. – 4 In a four bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is 50 mm long and rotates at 60 r.p.m. clockwise, while the link CD =80 mm oscillates about D, BC and AD are of equal length. Find the angular velocity of link AB when angle DAB =55°. **[10]**

Que. – 5 (a) List different types of Gears with neat sketch [5]

(b) List Different types of kinematic pair with neat sketch. [5]

OR

Que. – 5 Draw the profile of a cam rotating in anti clock wise direction and operating a knife edge follower when the axis of the follower passes through the axis of the cam shaft from following data: [10]

1. Follower moves outwards through 40 mm during 90° of cam rotation.
2. Follower dwells for next 120°
3. Follower returns to its original position during next 150°

The displacement of the follower is to take place with SHM during outward Stroke and with uniform velocity during inward stroke. The least radius of the cam is 50 mm.

Que. – 6 Draw the profile of a cam rotating in clock wise direction and operating a knife edge follower when the axis of the follower passes through the axis of the cam shaft from following data: [10]

1. Follower moves outwards through 50 mm during 60° of cam rotation.
2. Follower dwells for next 60°
3. Follower returns to its original position during next 90°

The displacement of the follower is to take place with SHM during outward stroke and with SHM during inward stroke. The least radius of the cam is 50 mm.

END OF PAPER