

GANPAT UNIVERSITY**B. Tech. Semester: IV Marine Engineering****Regular Examination April – June 2016****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.

Section – I

- Que. – 1 (a) Define following [5]
 i) Kinematic link ii) Kinematic pair
 (b) Define following [5]
 ii) Kinematic chain ii) Mechanism

OR

- Que. – 1 Derive the Equation of Ratio of tension in the belt drive. [10]
 Que. – 2 (a) Explain different types of belt drive. [5]
 (b) Explain the Velocity ratio of compound Belt drive. [5]

OR

- Que. – 2 Find the power transmitted by a belt running over a pulley of 600 mm diameter at 200 r.p.m. The coefficient of friction between the belt and pulley is 0.25, angle of lap 160° and maximum tension in the belt is 2500 N. [10]
 Que. – 3 In an epicyclic gear train, an arm carries two gears A and B having 36 and 45 teeth respectively. If the arm rotates at 150 r.p.m. in the anticlockwise direction about the centre of the gear A which is fixed, Determine the speed of gear A instead of being fixed, makes 300 r.p.m. in clockwise direction, what will be the speed of gear B? [10]

Section – II

- Que. – 4 (a) Classify followers and explain with neat sketch. [5]
 (b) Give difference between flywheel and governor. [5]

OR

- Que. – 4 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 30 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. - 5 (a) List the different types of Gears with neat sketch.
 (b) List the different types of Gear train with neat sketch.

[5]

OR

- Que. - 5 Draw the profile of a cam rotating in anti clock wise direction and operating a roller 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 120° of cam rotation.
 2. Follower dwells for next 30°
 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 and radius of roller 10 mm.

- Que. - 6 In the toggle mechanism shown in Fig. 1. The crank OA rotates at 210 rpm anticlockwise find the velocity of all the joints. [10]

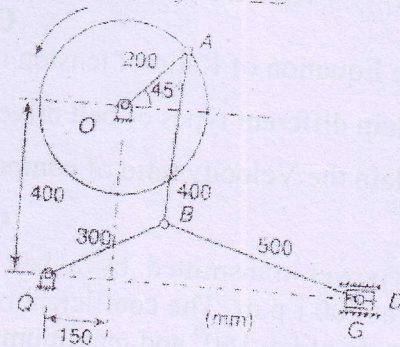


Figure No. 1

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