

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (ME) (Sem.-4)  
**THEORY OF MACHINES-II**  
Subject Code : ME-204  
M.Code : 54037

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

**1. Write briefly :**

- a) Define gravitational force.
- b) State the conditions for equilibrium.
- c) List the different power transmission elements.
- d) Define inertia.
- e) What is shaking force?
- f) What is hammer blow?
- g) Define module.
- h) Define train value.
- i) What is axis of precession?
- j) Write the classifications of Synthesis Problem.

## SECTION-B

2. Why is balancing of rotating parts necessary for high speed engines?
3. State and prove the law of gearing.
4. What do you understand by 'gear train'? Discuss the various types of gear trains.
5. Explain with a neat sketch the 'sun and planet wheel'.
6. An aeroplane makes a complete half circle of 50 metres radius, towards left, when flying at 200 km per hr. The rotary engine and the propeller of the plane has a mass of 400 kg and a radius of gyration of 0.3 m. The engine rotates at 2400 r.p.m. clockwise when viewed from the rear. Find the gyroscopic couple on the aircraft and state its effect on it.

## SECTION-C

7. Discuss how a single revolving mass is balanced by two masses revolving in different planes?
8. Derive an expression for the minimum number of teeth required on the pinion in order to avoid interference in involute gear teeth when it meshes with wheel.
9. Discuss the effect of the gyroscopic couple on a two wheeled vehicle when taking a turn.

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**