

Roll No.

Total No. of Pages: 02

Total No. of Questions : 09

B.Tech. (ME) (Sem-4)
THEORY OF MACHINES-II

Subject Code : BTME-405-18

M.Code : 77550

Date of Examination: 30-05-2023

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) State the conditions for equilibrium.
- b) Define inertia force and inertia torque.
- c) Define module.
- d) State fundamental law of gearing.
- e) What do you mean by arc of contact?
- f) Explain the term point of concurrency.
- g) Why is balancing of machines necessary?
- h) Define the term related to worm and worm gears: axial pitch and lead.
- i) Define velocity ratio.
- j) What is gyroscopic couple?

SECTION-B

2. Explain the terms static balancing and dynamic balancing. State the necessary condition to achieve them.
3. State and prove the law of gearing.
4. Explain briefly the differences between simple, compound, and epicyclic gear trains. What are the special advantages of epicyclic gear trains?
5. A pinion of 20 involute teeth and 12.5 cm pitch circle diameter drives a rack. The addendum of both pinion and rack is 6.25 mm. What is the least pressure angle which can be used to avoid interference?
6. Write the derivation to obtain the expression for variation in tractive effort of an engine.

SECTION-C

7. Discuss how a single revolving mass is balanced by two masses revolving in different planes?
8. 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 B. If the gear A instead of being fixed, makes 300 r.p.m in the clockwise direction, what will be the speed of gear B?
9. Explain Freudenstein's method of three point synthesis of mechanisms.

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.