Name :.....
Roll No:.....

MAR ATHANASIUS COLLEGE OF ENGINEERING
(Government Aided Autonomous Institution)
Kothamangalam, Kerala - 686 666
DEPARTMENT OF MECHANICAL ENGINEERING

B24ME2T04 THEORY OF MACHINES

Second Sessional Examination March 2026

Duration: 1 hr 30 min | S4 ME A & B BATCH | Max mark: 40

Part A

(1) Explain with a neat sketch (i) Angle of ascent (ii) Dwell (iii) Angle of descent. (CO2) **(3)**

(2) Draw a CAM and follower mechanism and explain the links in the mechanism. (CO2) **(3)**

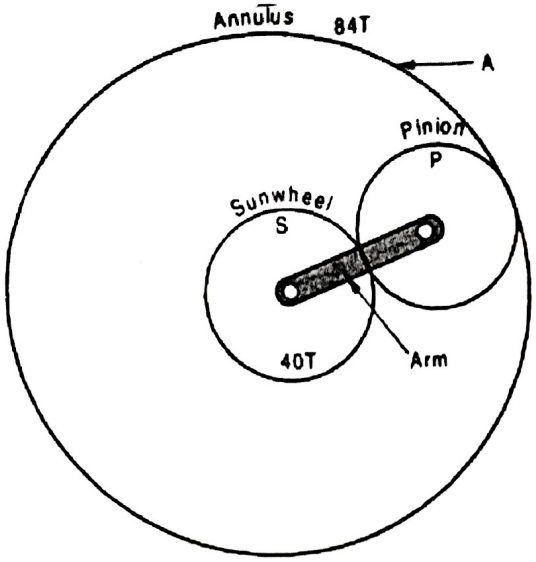
(3) Sketch the tooth profile of a spur gear and clearly label its different parts. (CO3) **(3)**

(4) State the law of gearing. (CO3) **(3)**

Part B

(1) A cam rotating clockwise at a uniform speed is required to give a roller follower, the motion defined below. (a) Follower to move outward through a distance of 25 mm during 120° of cam rotation. (b) Follower to dwell for 60° of cam rotation. (c) Follower to return to its initial position during 90° of cam rotation. (d) Follower to dwell for the remaining 90° of cam rotation. The minimum radius of cam = 60 mm. The line of stroke of the follower is offset by 15 mm from the axis of rotation towards right. Displacement of follower takes place with SHM during both outward and return strokes. The radius of the roller is 6 mm. (CO2) **(14)**

(2) An epicyclic gear consists of a pinion, a wheel of 40 teeth and an annulus with 84 internal teeth concentric with the wheel. The pinion gears with the wheel and the annulus. The arm carries the pinion at one of its end. The arm rotates at 100 rpm. If the annulus is fixed, find the speed of the wheel. Also, find the speed the annulus, if the wheel is fixed. (CO3) **(14)**



Vision

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1. To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices.

2. To mould disciplined and socially committed engineers capable of assuming professional leadership upholding national integrity.