Code: 9D15102

M.Tech I Semester Supplementary Examinations February/March 2018

ADVANCED MECHANISMS

(Machine Design)

(For students admitted in 2012, 2013, 2014, 2015 & 2016 only)

Time: 3 hours Max. Marks: 60

Answer any FIVE questions

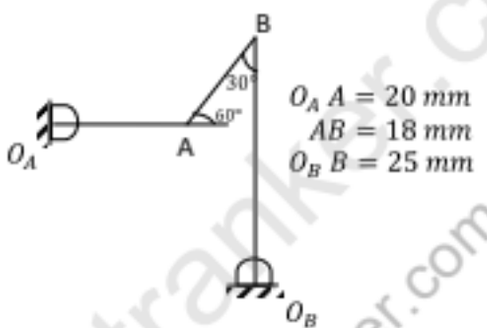
All questions carry equal marks

*****

1 (a) Explain mobility criteria for spatial mechanism and manipulators.

(b) What are the specific advantages of spherical mechanisms over other spatial and planar mechanisms?

2 Show the Bobilliers construction describe with reference to the four bar mechanism shown in the figure below satisfies the Euler Savory equation.



3 (a) State and derive Halls equation.

(b) State and prove Freudenstein's collineation axis theorem.

4 (a) Explain in brief about guiding a body to two distant positions.

(b) Explain different types of four bar mechanisms with neat sketches.

5 Explain function generation with neat sketch using velocity pole method.

6 (a) What is function generation? Discuss.

(b) Derive displacement, velocity, acceleration analysis for four bar mechanism, using Freudenstein's equation.

7 Discuss important kinematic analysis of the following:

(a) D-H transformation matrix.

(b) PUMA and STANFORD arm.

8 Write short note on the following:

(a) Formulation of Jacobian for serial manipulator.

(b) Singularity analysis.

(c) D-H notation.

*****