

Total No. of Questions : 4]

SEAT No. :

PA-4998

[Total No. of Pages : 2

[6008]-251

S.E. (Mechanical /Automation & Robotics/
Automobile & Mechanical Sandwich) (Insem)

KINEMATICS OF MACHINERY

(202047) (2019 Pattern) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Use of calculator is allowed.
- 4) Assume suitable data, if necessary.

- Q1) a) Define Kinematic link and explain its types. [5]
- b) Explain the Grashoff's law in four bar mechanism. [4]
- c) For kinematic linkage as shown in fig.1, calculate the following: [6]
- i) Number of binary, ternary and quaternary links.
 - ii) Number of degrees of freedom.

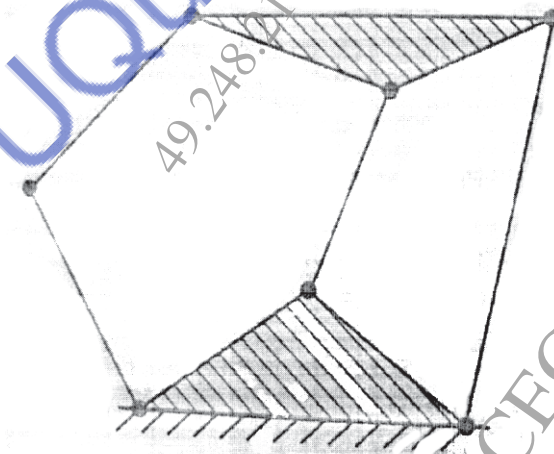


Fig.1

OR

P.T.O.

- Q2) a)** Compare machine and mechanism. [4]
- b)** Define Degree of Freedom and Calculate the number of degrees of freedom of the mechanism as shown in fig. 2. [6]

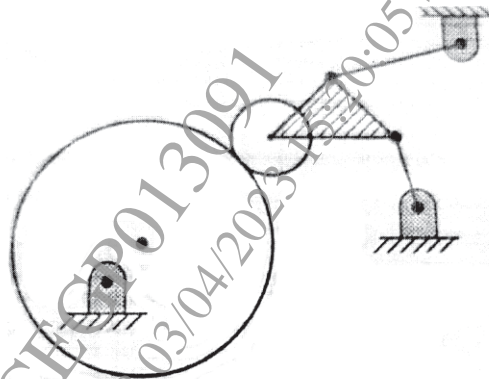


Fig.2

- c)** Explain different types of constrained motion with suitable example. [5]
- Q3) a)** In an I.C. engine mechanism, the crank is 200 mm long and connecting rod is 750mm long. When the angle is turned by the crank is 60° from I.D.C and angular velocity of the crank is 20 rad/sec^2 find, [8]
- Velocity of piston
 - Acceleration of piston
- b)** Give comparison between Single Hooke's Joint and Double Hooke's Joint. [7]

OR

- Q4) a)** What is loop closure equation? Derive the same for four bar mechanism. [7]
- b)** Two horizontal shafts are connected by a single Hooke's joint. If the speed of the driven shaft between 315 and 285 r.p.m, find the greatest permissible angle between the shafts. Also calculate angular displacement of driving shaft. [8]

