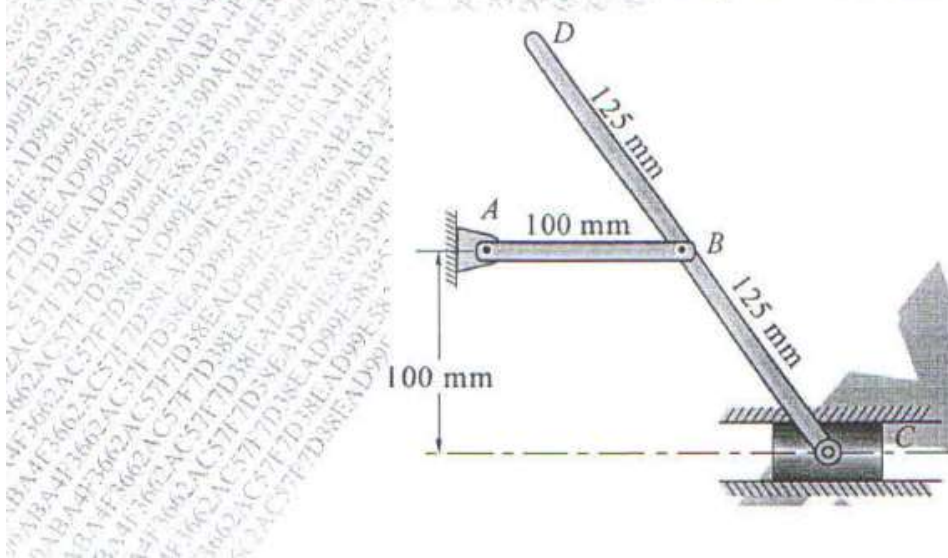


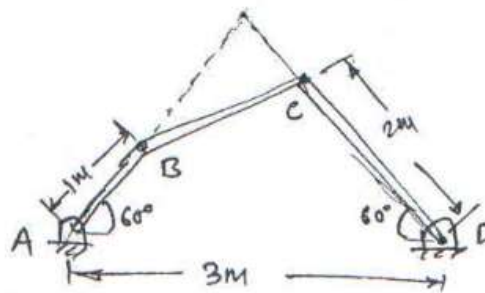
## MAY JUNE 2017

- c) At the position shown in Fig. the crank  $AB$  has angular velocity of  $3 \text{ rad/sec}$  [6]  
clockwise. Find the velocity of slider  $C$  and the point  $D$  at the instant shown.



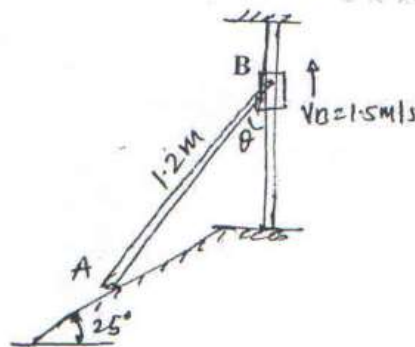
## MAY JUNE 2017

- c) Angular velocity of connector  $BC$  is  $4 \text{ r/s}$  in clockwise direction. What are the angular velocities of cranks  $AB$  and  $CD$ . [6]



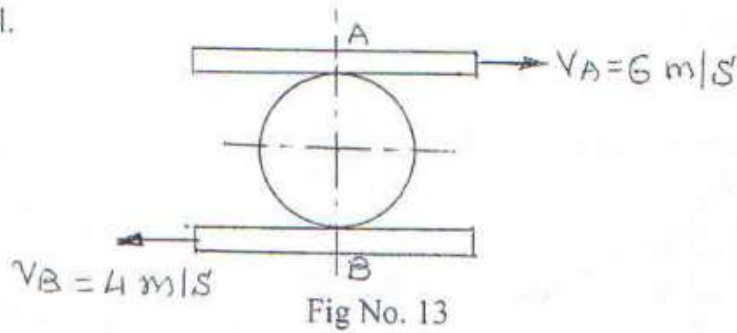
5

- c) Fig shows a collar  $B$  which moves upwards with constant velocity of  $1.5 \text{ m/s}$ . At the instant when  $\theta = 50^\circ$  determine (i) The Angular velocity of rod pinned at  $B$  and freely resting at  $A$  against  $25^\circ$  sloping ground and (ii) The velocity of end  $A$  of the rod. [6]

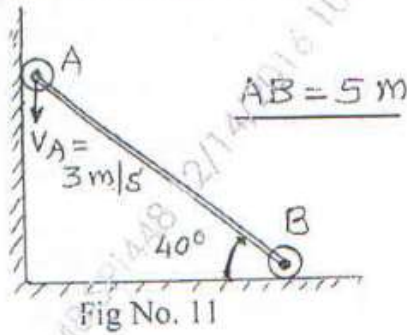


## DEC 2016

- (b) A roller of diameter 0.8 m rolls without slipping between two parallel plates as shown in figure No.13. Locate ICR and find angular velocity of the wheel. [6]

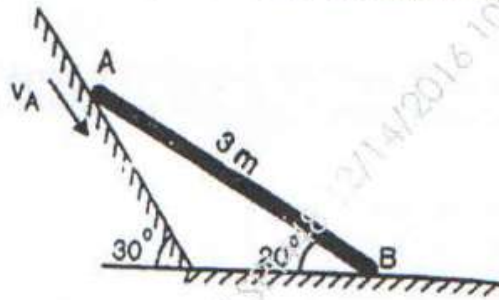


- (c) Two wheels are attached to ends of rod AB as shown in figure No.11. [6]  
Determine angular velocity of rod AB and velocity of end B.

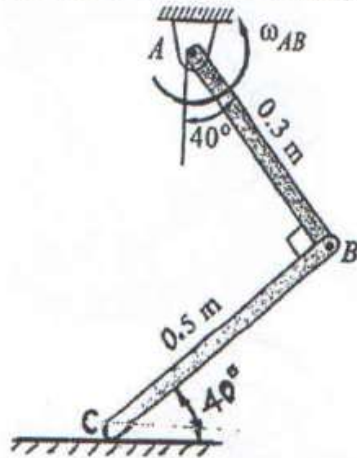


## DEC 2016

- c. Rod AB of length 3m is kept on smooth planes as shown in fig. The velocity of end A is 5m/s along the inclined plane. Locate the ICR and find the velocity of end B. [4]



- c. A rod AB has an angular velocity of 2 rad/sec, counter clockwise as shown. End C of rod BC is free to move on a horizontal surface. Determine (i) Angular velocity of BC and (ii) Velocity of C

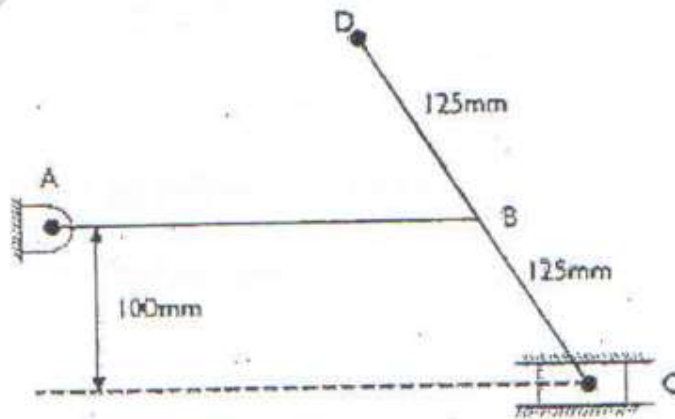


[6]

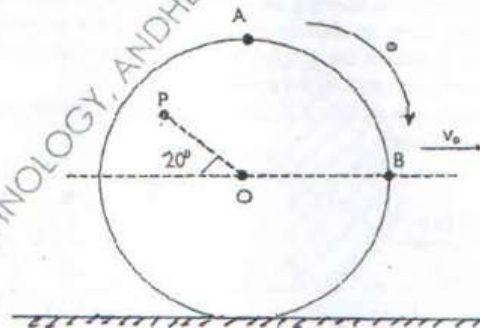
## MAY JUNE 2016

- c. Find velocity of C and point D at the instant shown  $\omega_{AB} = 3 \text{ rad/sec}$  clockwise. AB = 400mm.

[6]



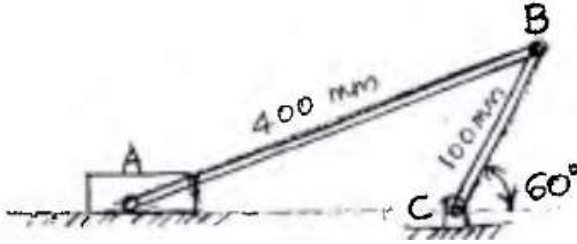
- c. A wheel is rolling along a straight path without slipping. Determine velocity of points A, B and P. OP = 600mm,  $\omega = 4 \text{ rad/sec}$ ,  $V_o = 4 \text{ m/s}$



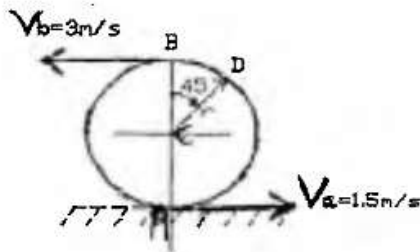
## DEC 2015

c) The crank BC of a slider crank mechanism is rotating at constant speed of 30 rpm clockwise. Determine the velocity of the piston A at the given instant. [6]

$$AB = 400 \text{ mm} \quad BC = 100 \text{ mm}$$



c) Due to slipping, points A and B on the rim of the disk have the velocities  $V_a = 1.5 \text{ m/s}$  to the right and  $V_b = 3 \text{ m/s}$  to the left as shown in figure. Determine the velocities of the centre point C and point D on the rim at this instant. Take radius of disk 0.24 m. [6]



## MAY 2015

c) For crank of concentric mechanism shown in fig. 12, determine the instantaneous centre of rotation of connecting rod at position shown. The crank OQ rotates clockwise at 310 RPM. Crank length = 10 cm, connecting rod length = 50 cm. Also find the velocity of P & angular velocity of rod at that instant. 6

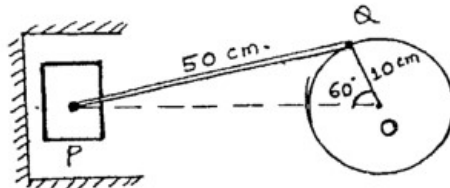
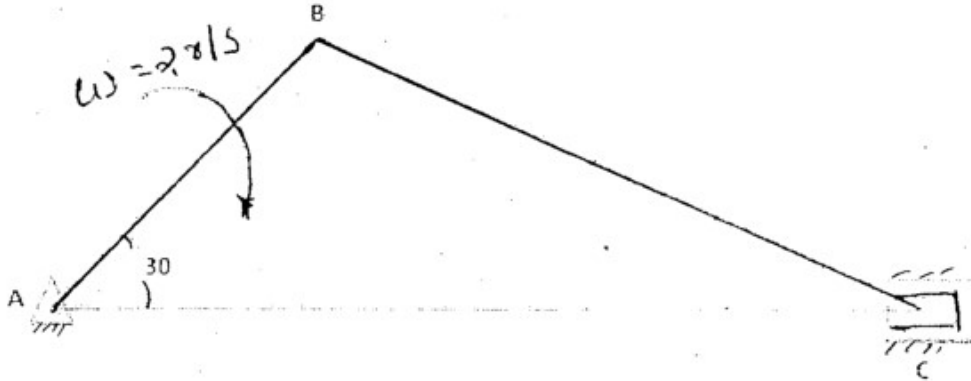


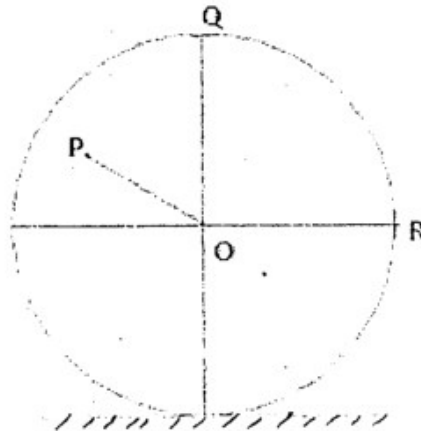
Fig. 12

## DEC 2014

- c. Figure shows the crank and connecting rod mechanism. The crank AB rotates [6]  
with an angular velocity of 2 rad/sec in clockwise direction. Determine the  
angular velocity of Connecting Rod BC and the velocity of Piston C using ICR  
method. AB = 0.3m; and CD = 0.8m.

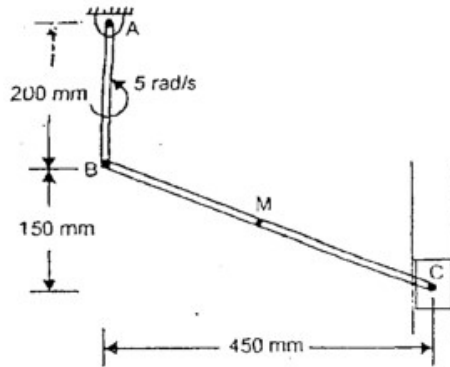


- c. A wheel of 2m diameter rolls without slipping on a flat surface. The center of [6]  
the wheel is moving with a velocity 4m/s towards the right. Determine the  
angular velocity of the wheel and velocity of points P, Q and R on the wheel

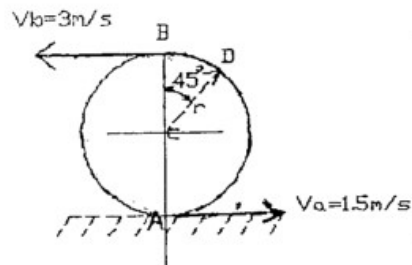


# MAY 2014

c) In the mechanism shown the angular velocity of link AB is 5 rad/sec anticlockwise. At the instant shown, determine the angular velocity of link BC and velocity of piston C. [6]



b) Due to slipping, points A and B on the rim of the disk have the velocities as shown in figure. Determine the velocities of the centre point C and point D on the rim at this instant. Take radius

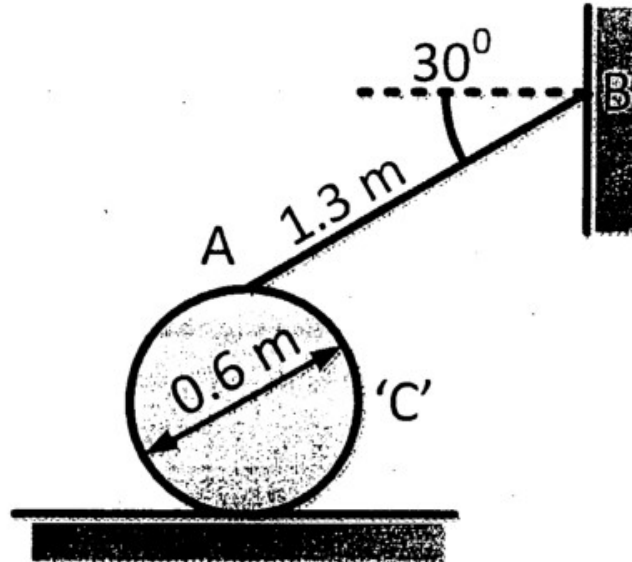


of disk 0.24m.

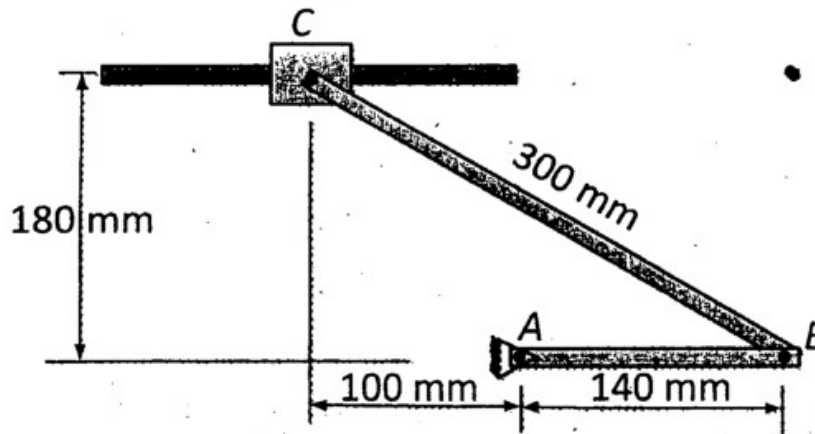
[6]

**DEC 2013**

- (c) 'C' is a uniform cylinder to which a rod 'AB' is pinned at 'A' and the other end of the rod 'B' is moving along a vertical wall as shown in figure. If the end 'B' of the rod is moving upward along the wall at a speed of 3.3 m/s find the angular velocity of the cylinder assuming that it is rolling without slipping. [06]

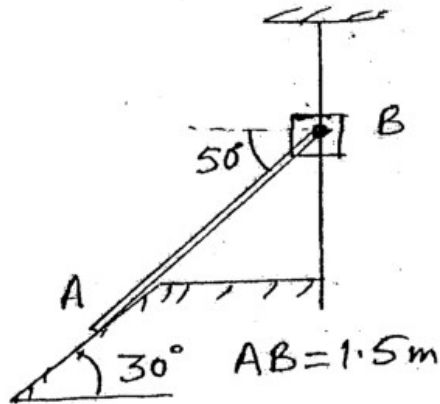


- (c) In figure collar C slides on a horizontal rod. In the position shown rod AB is horizontal and has angular velocity of 0.6 rad/sec clockwise. Determine angular velocity of BC and velocity of collar C. [06]



## MAY 2013

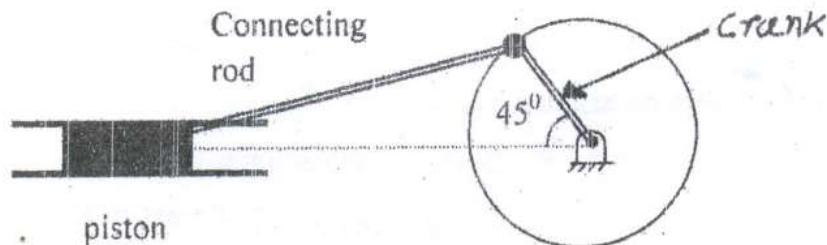
- (c) Collar B moves up with constant velocity  $V_B = 2$  m/s. Rod AB is pinned at B. Find out angular velocity of AB and velocity of A. 6



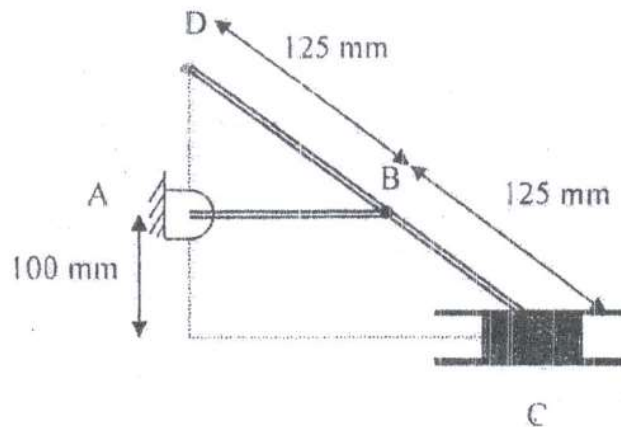
- (c) Explain instantaneous centre of rotation. 6

## DEC 2012

- c) In a crank and connecting rod mechanism, the length of crank and the connecting rod are 300mm and 1200mm respectively. The crank is rotating at 180 rpm. Find the velocity of piston, when the crank is at an angle of  $45^\circ$  with the horizontal. [06]



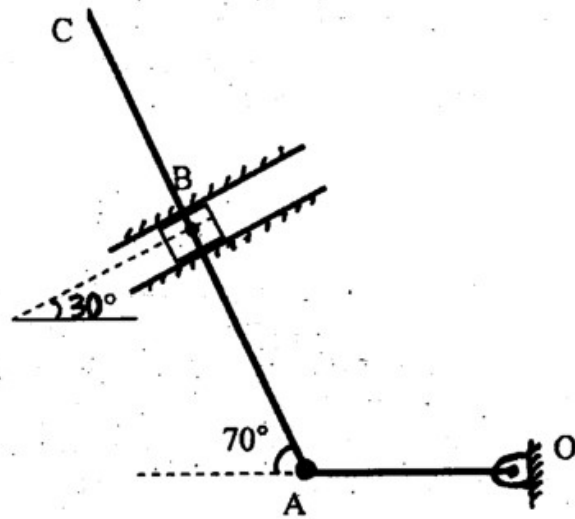
- c) At the position shown in figure, the crank AB has Angular velocity of 3rad/sec clockwise. Find the velocity of slider C and the point D at the instant shown.  $AB=100$ mm. [06]





**DEC 2010**

7A) Locate the instantaneous centre of rotation for the link ABC and determine Velocity of Points B & C. Angular velocity of rod OA is  $15 \text{ rad/sec}$  counter clock wise. Length of OA is  $200 \text{ mm}$ , AB is  $400 \text{ mm}$  and BC is  $150 \text{ mm}$ . (08 marks)



**MAY JUNE 2010**

7. (a) In the mechanism shown, find velocity of point C and angular velocity of link BC if angular velocity of link AB is  $4 \text{ rad/sec}$ . Solve the problem when link AB and link BC make angle of  $45^\circ$  with horizontal as shown in the figure. 8

