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Identify Kinematic pairs and named it. Refer Fig. No. 1

1) Link 1 and 2 -- Sliding Pair
2) Link 2 and 3 -- Turning Pair
3) Link 3 and 4 -- Turning Pair
4) Link 4 and 1 -- Sliding pair

The weights of four masses A, B, C, D are 200 kg, 300 kg, 240 kg, 260 kg respectively. The corresponding radii of rotation are 200 mm, 150 mm, 250 mm and 300 mm respectively and the angle between successive masses are 45°, 75° and 135°. Find the position

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respectively. The corresponding radii of rotation are 200 mm, 150 mm, 250 mm and
300 mm respectively and the angle between successive masses are 45o, 75o and
135o. Find the position and magnitude of the balance weight required if its radius of
rotation is 200 mm.

OR

Draw the constructional details diagram of centrifugal clutch. Explain its working principle

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Two pulleys one 450 mm diameter and the other 200 mm diameter are on parallel shafts 1.95 m apart and are connected by a crossed belt. Find the length of belt required and angle of contact between belt and each pulley. Estimate the power transmitted by

Two pulleys one 450 mm diameter and the other 200 mm diameter are on parallel shafts 1.95
m apart and are connected by a crossed belt. Find the length of belt required and angle of
contact between belt and each pulley. Estimate the power transmitted by belt when the
larger pulley rotates at 200 rpm. If the maximum tension in the belt is 1 KN and coefficient of
friction between belt and pulley is 0.25.

Explain the following terms of centrifugal governor with neat sketch: (i) Height of governor (ii) Equilibrium speed (iii) Sleeve lift

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(iii)Sleeve Lift
Terms related with Governor:

A 4-bar mechanism has following dimensions: l(DA)= 300 mm l(CB) = l(AB) = 360 mm l(DC) = 600 mm. The link 'DC' is fixed. The angle ADC is 60° The driving link 'DA' rotates at a speed of 100 rpm clockwise and constant driving torque is 50 N.M. Calcul

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angle ADC is 60o. The driving link 'DA' rotates at a speed of 100 rpm clockwise and
constant driving torque is 50 N-m. Calculate the velocity of point 'B' and angular
velocity of driven link 'CB'.

Given Data:

N AD = 100 rpm

DA = 300 mm = 0.3 m

T A = 50 N-m

ω AD = 2 π x 100 /60 = 10.47 rad/sec.

Velocity of A w.r.t. D (V AD);

Two parallel shafts whose centre lines are 4.8 m apart are connected by open belt drive. The diameter of larger pulley is 1.5 m and that of smaller pulley 1 m. The initial tension in the belt when stationary is 3 kN. The mass of the belt is 1.5 kg/m lengt

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drive. The diameter of larger pulley is 1.5 m and that of smaller pulley 1 m. the initial
tension in the belt when stationary is 3 KN. The mass of the belt is 1.5 Kg/m length.
The coefficient of friction between belt and pulley is 0.3. Taking centrifugal tension
in to account, calculate power transmitted when smaller pulley rotates at 400 rpm.

Draw the profile of cam operating a knife edged follower from following data: (i) Follower to move outwards through 40mm during 60° of cam rotation. (ii) Follower dwell for next 45°. (iii) Follower to return to its original position during next 90°. (i

Draw the profile of cam operating a knife edge follower from following data:
(i)Follower to move outwards through 40 mm during 60o of cam rotation.
(ii)Follower dwells for next 45o.
(iii)Follower to return to its original position during next 90o.
(iv)Follower to dwell for rest of the rotation. The displacement of follower is
to take place with simple harmonic motion during both outward and return strokes. The least radius of cam is 50 mm. if the cam rotates at 300
rpm.

A crank of slider crank mechanism rotates clock wise at constant speed of 300 rpm. The crank is 150 mm and connecting rod is 600 mm long. Determine: (i) Linear velocity of the midpoint of connecting rod. (ii) Angular acceleration of

connecting rod at

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(i)

Linear velocity of the mid-point of connecting rod.

(ii)

Angular acceleration of connecting rod at a crank angle of 45o from inner

dead centre position.

(ii) Angular acceleration of connecting rod at a crank angle of 45o from inner

dead centre position:

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Draw the labelled diagram of Crank and slotted lever Quick Return Mechanism.

Neat labeled Sketch of Crank and Slotted Lever Quick Return Mechanism:

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