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State the adverse effect of imbalance on rotating element of machine.

1) The dynamic forces are set up and these forces increase the loads on bearings and stresses in the various members.

2) Produce unpleasant noise and dangerous vibrations.

Draw a neat sketch of internal expanding shoe brake and lable it.

State the reason of using roller follower over kinfe edge follower.

1) Roller follower has less wear and tear than knife edge follower.
2) Power required for driving the cam is less due to less frictional force between cam and
follower.

State the necessity of Acceleration diagram of a mechanism.

1) Acceleration diagram is important in mechanism , because

acceleration is directly related to
force. F = m * a
2) By calculating acceleration, we calculate inertia force acting on different links.
3) Design of machine parts rotating at higher speed becomes safe.

Define completely constrained motion and successfully constrained motion.

1)Completely constrained motion :- When the motion between a pair is limited to a definite
direction irrespective of the direction of force applied, then the motion is said to be a completely
constrained motion.
2)Successfully constrained motion:- When the motion between the elements, forming a pair, is
such that the constrained motion is not completed by itself, but by some other means, then the
motion is said to be successfully constrained motion.

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

Define coefficient of fluctuation of energy.

It may be defined as the ratio of the maximum fluctuation of energy to the work done
per cycle.
Mathematically it is expressed as;

State the functions of clutches

[1] To engage and disengage output shaft with the engine shaft as and when required.
[2] To engage shafts very smoothly without much slipping of friction surfaces.
[3] To transmit power from engine shaft to output shaft without loss.
[4] To engage the shafts smoothly without noise and jerk

List any four applications of ‘cam’ and ‘follower’.

Applications of Cam and Follower:
[1] Operating the inlet and exhaust valves of internal combustion engines
[2] Used in Automatic attachment of machineries, paper cutting machines
[3] Used in Spinning and weaving textile machineries.

[4] Used in Feed mechanism of automatic lathes etc.
[5] Used in Diesel Fuel Pumps.
[6] Used in printing control mechanism
[7] Used in wall clock
[8] Used in feed mechanism of automatic lathe.

State the relation between relative velocity and motion of link in mechanism.

Relation between Relative Velocity and motion of link in mechanism:
The relative velocity is the velocity of any point with respect to any other some point on the
same link.
Let,
V be the relative velocity of one end w.r.t. other end of link in m/sec
ω be the angular motion in rad/sec &
r as the length of same link in meter
Then, the relation is expressed as;
$V = r \times \omega$ m/sec

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