

MECHATRONICS IAT-2

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Degrees of freedom of a pair is defined as the number of *

- independent relative motions in translation
- independent relative motions in rotaion
- independent relative motions in translation and rotaion
- dependent relative motions in translation and rotaion

A rigid body in a plane can have *

- 2 DOF
- 3 DOF
- 4 DOF
- 6 DOF

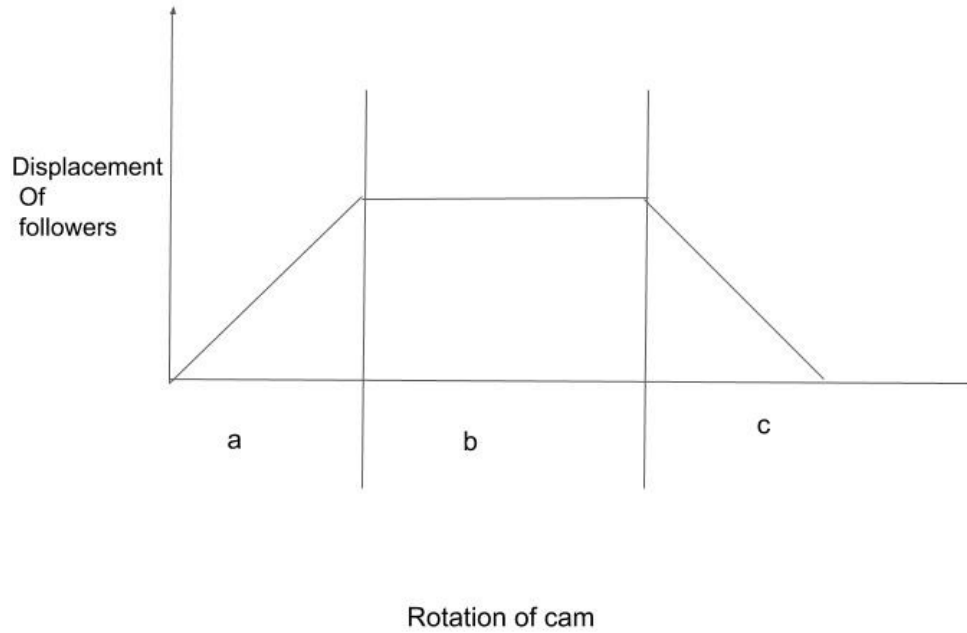
A rigid body in space can have *

- 2 DOF
- 3 DOF
- 4 DOF
- 6 DOF

Follower imparts a desired motion to a CAM *

- True
- False

IMAGE A1



In image A1, select the right option w.r.t a cam and follower displacement *

- a-Fall;b-dwell;c-rise
- a-up dwell;b-dwell;c-down dwell
- a-Rise;b-Dwell;c-fall
- none of the above

In spur gear, If the teeth are on parallel axis to the blank, they are called *

- Parallel spur gear
- Helical spur gear

The type of gear having diverging or inclined conical blanks are called *

- Spur gear
- Bevel gear
- Helical spur gear
- Conical gear

velocity ratio of driving-driven shaft is given by *

- Angular velocity of driven/Angular velocity of driver
- No. of teeth of driver/No. of teeth of driven
- Angular velocity of driver/Angular velocity of driven
- No. of teeth of driven/No. of teeth of driver

Train value of driving-driven shaft is given by *

- 1/Angular velocity of driven/Angular velocity of driver
- 1/No. of teeth of driver/No. of teeth of driven
- 1/Angular velocity of driver/Angular velocity of driven
- 1/No. of teeth of driven/No. of teeth of driver

In a four gear train, Velocity ratio is given by *

- angular velocity of 1/angular velocity of 4
- number of teeth of 1/number of teeth of 4
- Both the above
- none the above

In a three gear train Velocity ratio, the gear in the center is not considered in the formula

- True
- False

In a ratchet and pawl mechanism, *

- Ratchet is the saw teeth shaped component
- Ratchet is a wheel
- Pawl is the arm
- all the above

An arm is present in an epicyclical gear *

- True
- False

Which type of gear train has multiple gears fixed in same shaft *

- Simple gear train
- Compound gear train
- off axis gear train
- None of the above

In a belt drive, the power transmitted is increased with the increase in __ of belt *

- velocity
- distance
- friction

The gear train usually employed in clocks is *

- reverted gear train
- simple gear train
- sun and plane
- differential gear

A differential gear in automobiles is used to *

- reduce speed
- assist in changing speed
- provide jerk-free movement of vehicle
- help in turning

Increase of angle of contact in belt drive can be achieved by using *

- Ratchet
- Pawl
- Jockey pulley
- arm

V belts are less efficient than flat belts *

- True
- False

Number of teeth on a wheel per unit of its pitch diameter is called *

- module
- diametral pitch
- circular pitch
- none of the mentioned

The type of gears used to connect two non parallel and non intersecting shafts is *

- Spur gear
- Helical gear
- Bevel gear
- Spiral gear

Which gear train is used for higher velocity ratios in a small space? *

- Simple gear train
- Compound gear train
- Reverted gear train
- Epicyclic gear train

The size of gear is usually specified by *

- pressure angle
- pitch circle diameter
- circular pitch
- diametral pitch

A ___ is a type of electromagnet, the purpose of which is to generate a controlled magnetic field through a coil wound into a tightly packed helix. *

- DC motor
- AC motor
- Solenoid
- relay

A ___ is an electrically operated switch. It consists of a set of input terminals for a single or multiple control signals, and a set of operating contact terminals. *

- DC motor
- AC motor
- Solenoid
- relay

A relay consists of A bulb magnetic core, solenoid, switch to control a bulb mechanism. *

- True
- False

Torque speed characteristic achievable with different electrical configurations in a DC motor *

- True
- False

Speed of a field coil DC motor depends on

- Strength of current
- NUMBER OF COIL
- Strength of magnetic field
- All the above
- none the above

Drawbacks of Single phase Induction motor *

- High over load capacity
- High efficiency
- High power factor
- All the above
- None the above

Advantages of Synchronous motors *

- Speed is dependent on load
- Inaccurate control in speed
- all the above
- None the above

Series wound, Shunt wound, Compound wound are types of *

- Permanent magnet DCmotor
- non permanent magnet DC motor

Select the incorrect performance characteristics of a stepper motor

- Rotation in both directions
- Holding torque speed
- Capability of digital control
- Increased sound profile

___ is defined as the angle which the rotor of a stepper motor moves when one pulse is applied to the input of the stator. *

- Step angle
- Holding angle
- Slew angle
- None the above

___ refers to the maximum torque that the stepper motor can output when the motor's phase windings pass the rated current and is in the static lock state. *

- Pull in torque
- Holding torque
- Pull out torque
- Slew range
- none the above

The region between the pull-in and pull-out torque curves. *

- Holding Torque
- Slew range
- Phase
- None the above

A process can be controlled automatically by a PLC *

- True
- False
- Other:

PLC stands for *

- Programmable logic controllers
- Programmable Linear controller
- Programmable Location controller
- None the above

_____ is an industrial digital computer which has been ruggedized and adapted for the control of manufacturing processes, such as assembly lines, or robotic devices, or any activity that requires high reliability, ease of programming and process fault diagnosis. *

- Programmable Linear controller
- Programmable logic controllers
- Programmable Location controller
- None the above

A basic structure of a PLC involves *

- Input
- Output
- Programming device
- Memory
- Power supply
- all the above

Scan-Read-Write-Execute are the process states of *

- Programming device
- CPU
- Memory
- None the above

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