

1. Which criterion is used to determine frictional torque in pivots and collars when considering uniform pressure and wear rate?

- a) Coulomb's Law
- b) Amontons' Law
- c) Archard's Law
- d) Pascal's Law

Answer: b) Amontons' Law

Explanation: Amontons' Law states that the frictional torque in pivots and collars can be determined by considering both uniform pressure and uniform wear rate criteria.

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2. What type of lubrication involves a thin layer of lubricant separating two surfaces in relative motion?

- a) Dry lubrication
- b) Boundary lubrication
- c) Fluid film lubrication
- d) Hydrodynamic lubrication

Answer: c) Fluid film lubrication

Explanation: Fluid film lubrication occurs when a thin layer of lubricant is present between two surfaces in relative motion, preventing direct contact and reducing friction.

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3. Friction in journal and thrust bearings is primarily influenced by which lubrication regime?

- a) Dry lubrication
- b) Boundary lubrication
- c) Hydrodynamic lubrication
- d) Mixed lubrication

Answer: c) Hydrodynamic lubrication

Explanation: Journal and thrust bearings typically operate under hydrodynamic lubrication, where a fluid film separates the sliding surfaces, reducing friction and wear.

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4. What is the concept of a friction circle in mechanical engineering?

- a) A graphical representation of frictional forces acting on a surface
- b) A geometric shape representing the area of contact between two mating surfaces
- c) A method to calculate the coefficient of friction between two materials
- d) A technique to minimize friction losses in mechanical systems

Answer: a) A graphical representation of frictional forces acting on a surface

Explanation: In mechanical engineering, a friction circle is a graphical representation used to

analyze the magnitude and direction of frictional forces acting on a surface.

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5. Rolling friction is primarily associated with which type of motion?

- a) Sliding motion
- b) Rotational motion
- c) Oscillatory motion
- d) Vibrational motion

Answer: b) Rotational motion

Explanation: Rolling friction occurs when one object rolls over another, primarily associated with rotational motion, such as the rolling of a wheel on a surface.

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6. Which type of clutch uses a single friction plate to engage and disengage power transmission?

- a) Multi-plate clutch
- b) Cone clutch
- c) Dog clutch
- d) Single-plate clutch

Answer: d) Single-plate clutch

Explanation: A single-plate clutch utilizes a single friction plate to engage and disengage power transmission by either pressing against or releasing from another surface.

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7. In multi-plate clutches, multiple friction plates are stacked alternately with what other component?

- a) Gears
- b) Springs
- c) Bearings
- d) Washers

Answer: b) Springs

Explanation: In multi-plate clutches, multiple friction plates are stacked alternately with springs to ensure proper engagement and disengagement of power transmission.

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8. Cone clutches are characterized by their conical shape, which allows for what type of engagement mechanism?

- a) Linear engagement

- b) Radial engagement
- c) Axial engagement
- d) Tangential engagement

Answer: d) Tangential engagement

Explanation: Cone clutches utilize a conical shape for tangential engagement, where the friction surfaces make contact along the taper of the cone to transmit torque.

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9. Which criterion determines the capacity of a clutch to transmit torque without slipping?

- a) Amontons' Law
- b) Coulomb's Law
- c) Archard's Law
- d) Pascal's Law

Answer: b) Coulomb's Law

Explanation: Coulomb's Law is used to determine the capacity of a clutch to transmit torque without slipping, taking into account the frictional properties of the materials involved.

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10. What is the primary advantage of using cone clutches compared to other types of

clutches?

- a) Higher torque capacity
- b) Faster engagement
- c) Reduced wear
- d) Smaller size

Answer: c) Reduced wear

Explanation: Cone clutches offer the advantage of reduced wear due to their conical shape, which distributes frictional forces evenly across the engaging surfaces, prolonging clutch life.

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