

Mechanical Engineering Basics

Mechanical Engineering · Answer Key · 25 Questions

1. Which simple machine consists of a rigid bar that pivots around a fixed point called a fulcrum?

- A) Pulley
- B) Lever**
- C) Inclined plane
- D) Screw

2. What type of energy is stored in an object due to its position or shape, such as a stretched spring?

- A) Kinetic energy
- B) Thermal energy
- C) Potential energy**
- D) Chemical energy

3. In a gear system, what happens to the output speed if a small driving gear turns a much larger gear?

- A) Speed increases
- B) Speed decreases**
- C) Speed remains the same
- D) Direction reverses only

4. Which mechanical component is designed to reduce friction between moving parts by using small metal balls?

- A) Ball bearing**
- B) Piston
- C) Camshaft
- D) Flywheel

5. What is the primary function of a lubricant in a mechanical system?

- A) To increase heat
- B) To stop motion
- C) To reduce friction**
- D) To generate electricity

6. Which simple machine uses a grooved wheel and a rope to change the direction of a force?

- A) Wedge
- B) Screw
- C) Pulley**
- D) Wheel and axle

7. What unit is used to measure force in the International System of Units (SI)?

- A) Joule
- B) Watt
- C) Newton**
- D) Pascal

8. Which device converts rotational motion into linear motion, commonly found in engines to move valves?

- A) Camshaft**
- B) Gearbox
- C) Turbine
- D) Lever

9. What is the purpose of a gusset plate in structural mechanical engineering?

- A) To provide insulation
- B) To connect and strengthen joints**
- C) To store thermal energy
- D) To increase gear ratio

10. Which force opposes the motion of two surfaces sliding against each other?

- A) Gravity
- B) Tension
- C) Friction**
- D) Inertia

11. A screw is essentially which type of simple machine wrapped around a cylinder?

- A) Lever
- B) Inclined plane**
- C) Pulley
- D) Wheel

12. What is the term for the ratio of the output force to the input force in a machine?

A) Mechanical advantage

- B) Efficiency
- C) Power output
- D) Torque

13. Which material is an alloy specifically known for its high strength-to-weight ratio in aerospace engineering?

- A) Copper
- B) Lead

C) Titanium

- D) Iron

14. What type of gear is used to transfer motion between two shafts that are at a 90-degree angle to each other?

- A) Spur gear

B) Bevel gear

- C) Helical gear
- D) Worm gear

15. What does a thermocouple measure in a mechanical system?

- A) Pressure
- B) Speed

C) Temperature

- D) Voltage

16. Which component in a vehicle's engine is responsible for converting the combustion pressure into mechanical rotational energy?

A) Crankshaft

- B) Radiator
- C) Alternator
- D) Spark plug

17. Which property of a material describes its ability to be hammered into thin sheets without breaking?

- A) Elasticity

B) Malleability

- C) Hardness
- D) Conductivity

18. What mechanical force is defined as a twisting force that causes rotation?

- A) Tension
- B) Torque**
- C) Compression
- D) Shear

19. In fluid power systems, what component is used to transmit force using pressurized liquid?

- A) Hydraulic cylinder**
- B) Pneumatic valve
- C) Gear pump
- D) Electric motor

20. Which type of energy conversion occurs in a wind turbine?

- A) Mechanical to Electrical**
- B) Electrical to Mechanical
- C) Thermal to Electrical
- D) Chemical to Mechanical

21. What is the term for a machine that has two or more simple machines working together?

- A) Complex machine
- B) Compound machine**
- C) Automated system
- D) Modular unit

22. Which property indicates how much a material resists being stretched or pulled apart?

- A) Tensile strength**
- B) Compressive strength
- C) Density
- D) Hardness

23. What is the main function of a clutch in a mechanical transmission system?

- A) To cool the engine
- B) To engage or disengage power transmission**
- C) To increase fluid pressure
- D) To measure rotational speed

24. Which mechanical fastener is used to permanently join two pieces of metal by deforming one end?

- A) Bolt
- B) Screw
- C) Rivet**
- D) Spring

25. What is the standard measurement for the rate at which work is performed?

- A) Power**
- B) Energy
- C) Force
- D) Momentum