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Course – Mechanical Engineering

Course code – MEC – 129.

Answer to the Question No – 1:

Ans: Mechanicale Engineering – Technicaly Mechanical Engineering is the Application Of the principles and problem-Solving techniues Of Engineering from design to Manufacturing to the Marketplace for any Object. Mechanical Engineering analyze their work using the principles of Motion. Energy, and force – Ensuring that designs function Safely. Efficiently and reliably, all at a Competitive Cost.

Mechanicale Engineering make a difference. Thats because Mechanicale engineering Careers Center on creating technology to meet human needs. Virtully every product our service in ~~Most~~ Modern life has probably been touched in Some way by Mechanical engineer to help humankind.

This include Solving todays problems and creating future Solution in the helth care, energy, transportation.

(2)

World hunger, space exploration, climate Change and more. Being ingroand in my challenges and innovation across many Field means a Mechanical Engineering education is versatil. To meet this board demand, Mechanical engineers may dig! Design a Component. a ~~mech~~ Mechanic a Systems or a processe. This ranges from the macro to the micro from the largest system like cars and satellites. to the smallest Component like sensers and Switch. Any thing that needs to be Manufactured - inded Anything with moving parts - need the Expertise of a machanical Engineering.

Answere to the Question No - 2

Ans: Seven type of mechanical Engineering: —

① Mechanics:

→ Definition— Mechanics is the fundamental branch of Mechanical engineering that deals with the study of forces and their effects on matter.

→ Key Concepts: statics:— Focuses on Objects at rest, analyzing forces and Moments with out Considering Motion. Dynamic: Involves studying Objects in Motion, Considering forces, acceleration, and energy.

→ Application: Structural analysis of building and - Bridges. Designing Mechanical Component for stability and durability.

(2) Thermodynamics:

→ Definition: Thermodynamics explores energy transfer. And its effect on the physical properties of substances.

→ Key Concep: Law of Thermodynamic: Describes the Relationships between energy. Heat and work, Heat Transfer: studies the movent of heat between system.

→ Application: Designing energy-efficient engineering and power plants. Developing heating. ventilation and air conditioning (HVAC) system.

(3) Mechatronics: Mechatronics integrates mechanical Engineering with electronics and Computer Science to to Creat intelligent system and product.

(4) Robotics: Robotics focuse on the design Construction and operation of robots enhancing Automation and human - machine interaction.

(5) Aerospace Engineering: Aerospace engineering deals with the design and development of aircraft, Spacecrafts, and related system.
Study of the behavior of air as it interacts with solid object.

(6) Material Since Engineering: Material engineering Since explores the properties of materials and their Application in various field, including machanical Engineering.

(7) Acoustical Engineering: Acoustical Engineering involves the Study and Control of Sound and vibration. Behavion propagation and characteristics of Sound Waves, Noise Control.

Answer to the Question No — 3

Answer: Here are some common challenges mechanical engineers may encounter in their jobs, along with potential solutions to help you find ways to overcome with them —

→ Licensure and certifications.

→ project deadlines.

→ Safety —

→ Equipment malfunctions —

→ Scope of responsibilities —

→ New technologies.

→ Complex projects.

→ Comunication.

Answer to the question NO-4

Ans: **The Second Law of thermodynamic**

→ The Second law of thermodynamic gives more information About thermodynamic process.

→ Second law may be defined as

"Heat can not flow it self from colder body to a hotter body"

→ The Second law is also used to determine the theoretical limits for the performance of mostly used engineering system like heat engines and heat pump.

The Second law of thermodynamics introduces a new property cell Entropy, S. which is an Extensive property of a system. The entropy change of a closed system is equal to the heat added

Answer to the Question - No - 5.

Answer: Typical Content of a process flow Diagram —

Typically, process flow diagram of a signal unit process include the following —

→ process piping

→ Major Equipment items.

→ Connection with Others Systems.

→ Major bypass and recirculation (recycle) streams.

→ Operation data (temperature, pressure, mass, flow, Rat, density etc) often by stream references to a mass balance.

→ process stream names.

→

Process flow diagram generally do not include:

→ pipe classes or piping line numbers.

→ Instrumentation details.

→ Minor bypass line.

→ Instrumentation.

→ Controllers like Level Control or flow Control.

→ Isolation and shutoff valves.

→ Maintenance vents and drains.

→ Relief and safety valves. → Flanges.