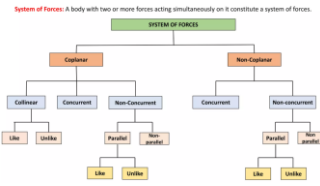


Unit – F130-Principle of Engineering



1. Mathematics

- Application of SI units
- Mensuration (2D and 3D shapes)
- Algebra
- Trigonometry



2. Mechanical Principles

2.1. System of forces

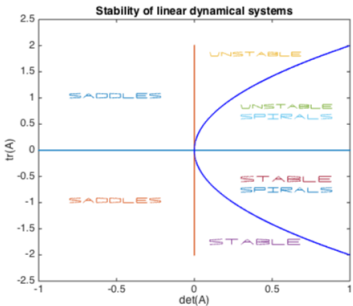
Forces, Moments, Systems of coplanar concurrent forces , Systems of coplanar non-concurrent forces in equilibrium, direct loading of engineering components, Shear loading of engineering components, Stress vs strain graphs



Mid mocks

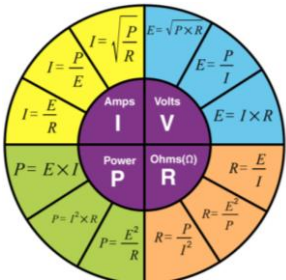
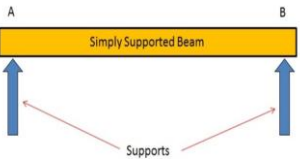
2.3 Linear Dynamic systems

Parameters and applications, Interpretation of graphs, Newton’s Laws of Motion Displacement (S), initial velocity (U), final velocity (V), acceleration (A), Time (T) (SUVAT) Equations, Energy and power, Friction, Conservation of energy , Momentum



2.2 Simply supported beams

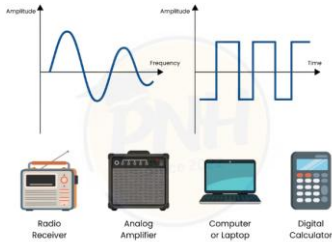
Beams and beam supports, Forces acting on beams, Beam calculations, Bending moment diagrams



3. Electrical/electronic principles

3.1 Electrical Principles

Concepts of electricity,Capacitors and capacitance,Direct Current (DC) networks,Inductors and inductance, Alternating Current (AC), Electrical efficiency



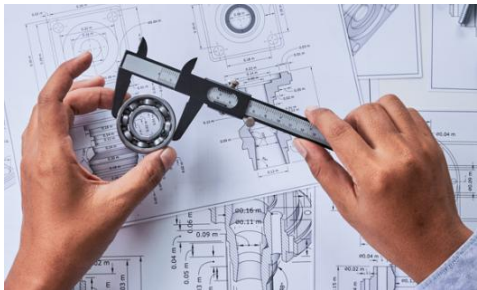
3.2 Analogue and digital circuits

Analogue circuits

Digital logic circuits

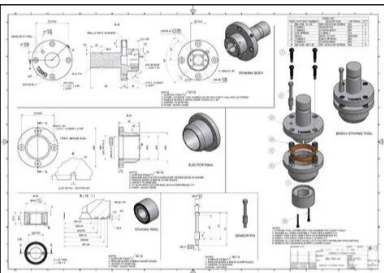


Final Examination



1. Product Analysis

- Functions of the components - standard and non-standard components
- Identification of the mechanical features
- Physical measurements.
- Recording the results



2. CAD mechanical and electronic drawings

- Produce a 2D CAD engineering drawing of a mechanical component
- Produce a CAD engineering drawing of an electronic circuit



NEA unit review

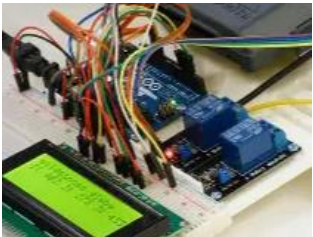
3. Plan the safe manufacture:

- Plan the safe manufacture of a mechanical prototype
- Plan the safe manufacture of an electronic prototype



4. Manufacturing Processes:

- Manufacture a mechanical prototype
- Manufacture an electronic circuit prototype



5. Evaluate a Prototype

- Evaluate a mechanical prototype
- Evaluate an electronic circuit prototype



Assessment and Moderation