UNIT – 1
ROLE OF CIVIL ENGINEER

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CIVIL ENGINEERING

Building Construction

Road Construction

Bridge Construction

Dam Construction

Canal Construction

Town planning

Architecture work

Designing work

Metro Construction

Railway Construction

Retaining wall Construction

Civil Engineering

- The main scope of civil engineering or the task of civil engineering is ***planning***, ***designing***, ***estimating***, ***supervising construction***, ***managing construction***, ***execution***, and ***maintenance*** of structures like building, roads, bridges, dams, etc.
- ***One who designs and maintains works of public utility is known as civil engineer***. Civil engineer should have qualities ***like scientific attitude***, ***imaginative*** and ***intuitive approach***, He should have good ***analysis and decision power.*** He should be able to solve engineering problems, by using ***mathematical modeling***, ***scientific principles*** and ***laboratory techniques using computer and information technology***. He should be able to use operation research techniques for solution of management problems.

Objective, Scope and outcome the subject

- Civil engineering is very basic branch connected to human basic needs.
- Civil engineering, every person needs a home, drinking water, transportation (Highways, Railways and Air ways), Education (school, college and university) Hospital, hotel and a work place (Office, Industry and laboratory).
- The construction, design of innovative structures and modals is related to Civil Engineering.
- Multi-Disciplinary projects involves the Civil engineering and other branches.

SPECIALIZATION OF CIVIL ENGINEERING

- Structural Engineering
- Geotechnical Engineering
- Water Resources Engineering
- Transportation Engineering
- Environmental Engineering
- Town Planning
- Surveying & leveling
- Building, Planning and construction
- Advanced Construction

Scope of Civil Engineering

- **GOVT. SECTOR**
  - Chief Engineer
  - Superintendent Engineer
  - Executive Engineer
  - Assistant Engineer
  - Junior Engineer
  - Surveyor Engineer
  - Town Planner
  - Quality Control Analyst
  - Research Fellow
  - Scientist

- **PRIVATE SECTOR**
  - Structure Engineer
  - Transportation Engineer
  - Surveyor Engineer
  - Site Engineer
  - Maintenance Engineer
  - Cement Plants
  - Consultancies
  - Designer
  - Architecture
  - Interior Designer

Impact of Infrastructure Development on the Economic Development of a country

- The infrastructural facilities mainly transportation, power, communication, water resources, banking, science and technology create environment in which Industries and business can grow. Due to the basic facilities which any industry needs are provided by infrastructural sector, country has progressed well. Per capita income and Gross domestic product are the economic measures for assessment of development.
- ***Per Capita Income:***
- Per Capita income is the average income of normal resident of a country in a particular year. It is obtained by dividing national income of a country by its population
- ***Gross domestic Product:***
- Gross domestic product at market price is the value of all fixed goods and services at prices prevailing in the market produced in the domestic territory of a country during a given year.
- Due to the acceleration of progress of infrastructural projects overall development and upliftment of common man can be done. Thus the infracture development is key to economic development of any country.

IMPORTANCE OF INFRASTRUCTURE DEVELOPMENT

- Movements of goods and services become easy.
- Infrastructure contributes to economic development of a country.
- Increasing the productivity of the factors of production.
- Improving the quality of life of its people.
- Increasing the level of investments.
- Improvements in water supply and sanitation have a large impact by Reducing morbidity from major waterborne diseases and reducing the severity of disease when it occurs.

Role of Civil Engineers

Civil engineer is the one who designs and maintains the work of public utilities. Following are the main roles or duties of civil engineers.

- ***Civil engineers main role is in surveying, planning, designing, estimation and execution of structures like buildings, roads, bridges, railways, ports, airports, dams, canals, water and waste water treatment plants, water distribution network and sewerage system.***
- ***To use scientific and engineering principles for solutions of different engineering problems***
- ***To solve different engineering problems with the help of field experience, laboratory techniques, mathematical models, using computer and information technology.***
- ***To implement management techniques for better management of man, material, machines and money.***