

Society is a complex and dynamic entity that encompasses the collective behaviour, relationships and interaction of individuals within a particular group or community.

Characteristics -

- 1 Social Interaction
- 2 Culture
- 3 Social Structure
- 4 Social Norms and Values
- 5 Social Change
- 6 Interdependence
- 7 Diversity

Structures of Technical education in Nigeria

- + Basic Education
- 2 Senior Secondary Education
- 3 Technical Colleges and Vocational Training Institutions
- + Polytechnics and Colleges of Education
- 5 Universities.

THE EARLY DEVELOPMENT OF TECHNOLOGY:

It starts with the beginning of life on earth and goes until the founding of early modern technologies.

- Service: Service (Business), an aggregation of a Service engagement with one or more Service acts between two or more Service System Creating Service Customers
- Science: The study of nature and its dynamic with the sole aim of Identifying the changes that take place and through a scientific method, evolve laws that govern their occurrences.
- Engineering: Engineering is the goal oriented process of designing and making tools and systems to exploit natural phenomena for practical human means, often using results and techniques from science.
- Technology: The sum of techniques, skills, methods and processes used in the production of goods or services or in the accomplishment of objectives, such as Scientific investigation.

* Contributions and Problems of early technology.

Contributions

- Enlightenment technology, Science based a technology has offer better world though the elimination of disease and materials of air, water, and soil have created improvements to standards of living

Problems

resource extraction, emission of dangerous materials and pollution of air, water, and soil have created conditions for unprecedented environmental catastrophe which already caused irreversible damage to the biosphere

* Engineering disciplines and Cadres

The major branches of Engineering are,

Agricultural, Chemical, Civil, Electrical / Electronics,

Mechanical and Metallurgical Engineering

Other engineering includes,

Production, Aeronautical, Software, Biomedical, food, marine,

gas, Petroleum, Biochemical, control and Environmental

Engineering

The Engineering family

The Council for the Regulation of Engineering in Nigeria (COREN) recognizes four levels in engineering which are:

- Craftsmen (Artisan)
- Technicians
- Technologists
- Engineering

(Technical College) disciplines

(OND Holders)

(HND Holders)

(B Eng Holders)

The ratio of Engineering, Technologists, Technicians and Craftsmen is 1:2:4:8.

Four fundamentals of Engineering

Code of Ethics

- Using their knowledge and skill for the enhancement of human welfare and the environment.

- Being honest and impartial and serving with fidelity the public, their employers and clients.

- Striving to increase the competence and prestige of the engineering profession.

- Supporting the professional and technical societies of their

four rules of conduct for Engineers

- A registered Engineer when trust

with the finances of his clients or employer must let his honesty of purpose be above suspicion.

- When you act as a professional adviser, you must let the advice be done absolutely without partiality.

- He must be fully conscious that the profession carries with it great responsibility to the public.

- When the engineer is charged with the service or judicial function as between Owner and Contractor, he must act with entire Impartiality and above all, he must at all times be conscious of the moral responsibility matter for each employer or client of his profession, his associates and Subordinates.
- Engineers shall issue public statements Only in an objective and truthful manner.
- Engineers shall act in professional interest.

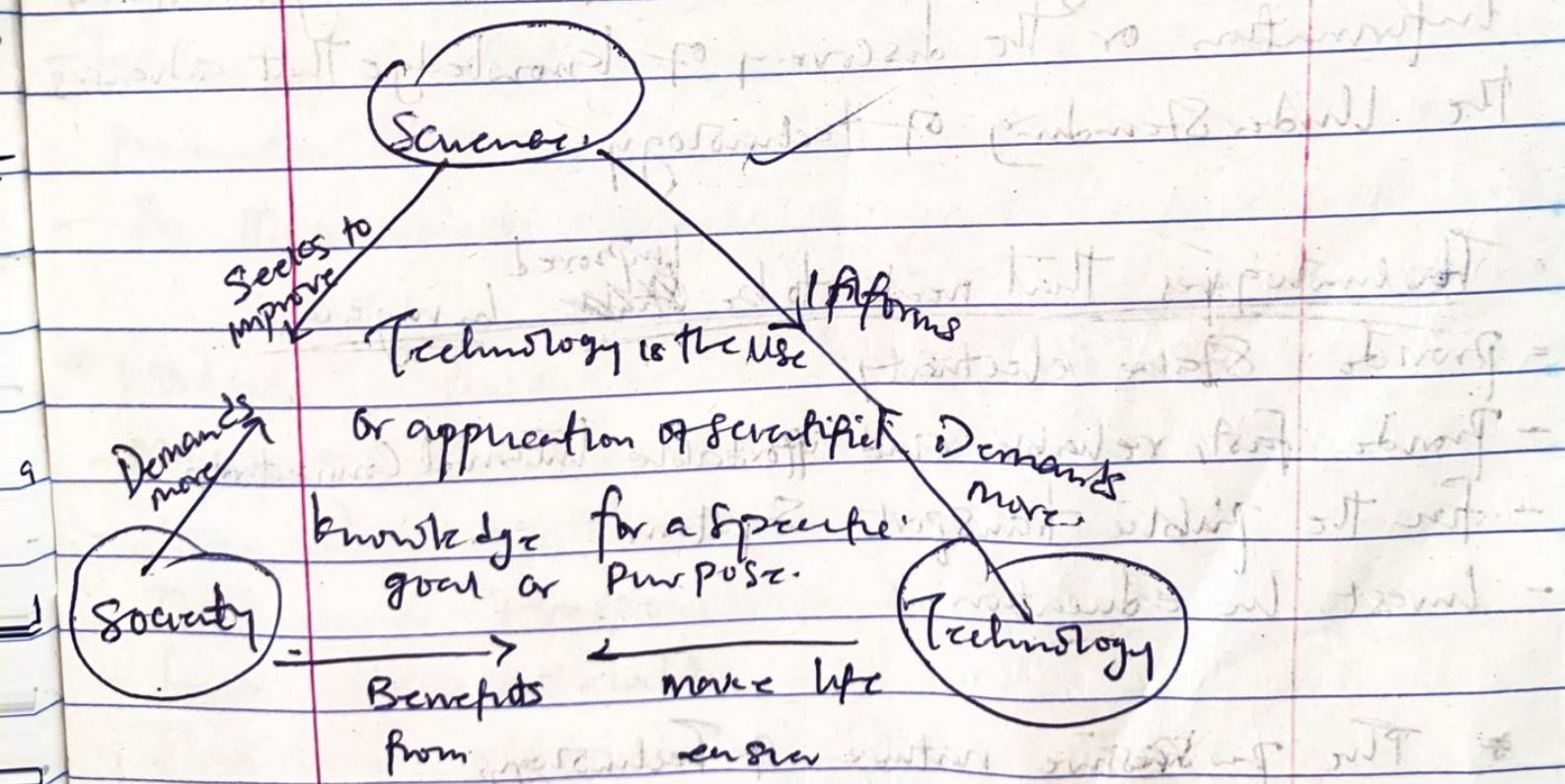
Canons of Engineers

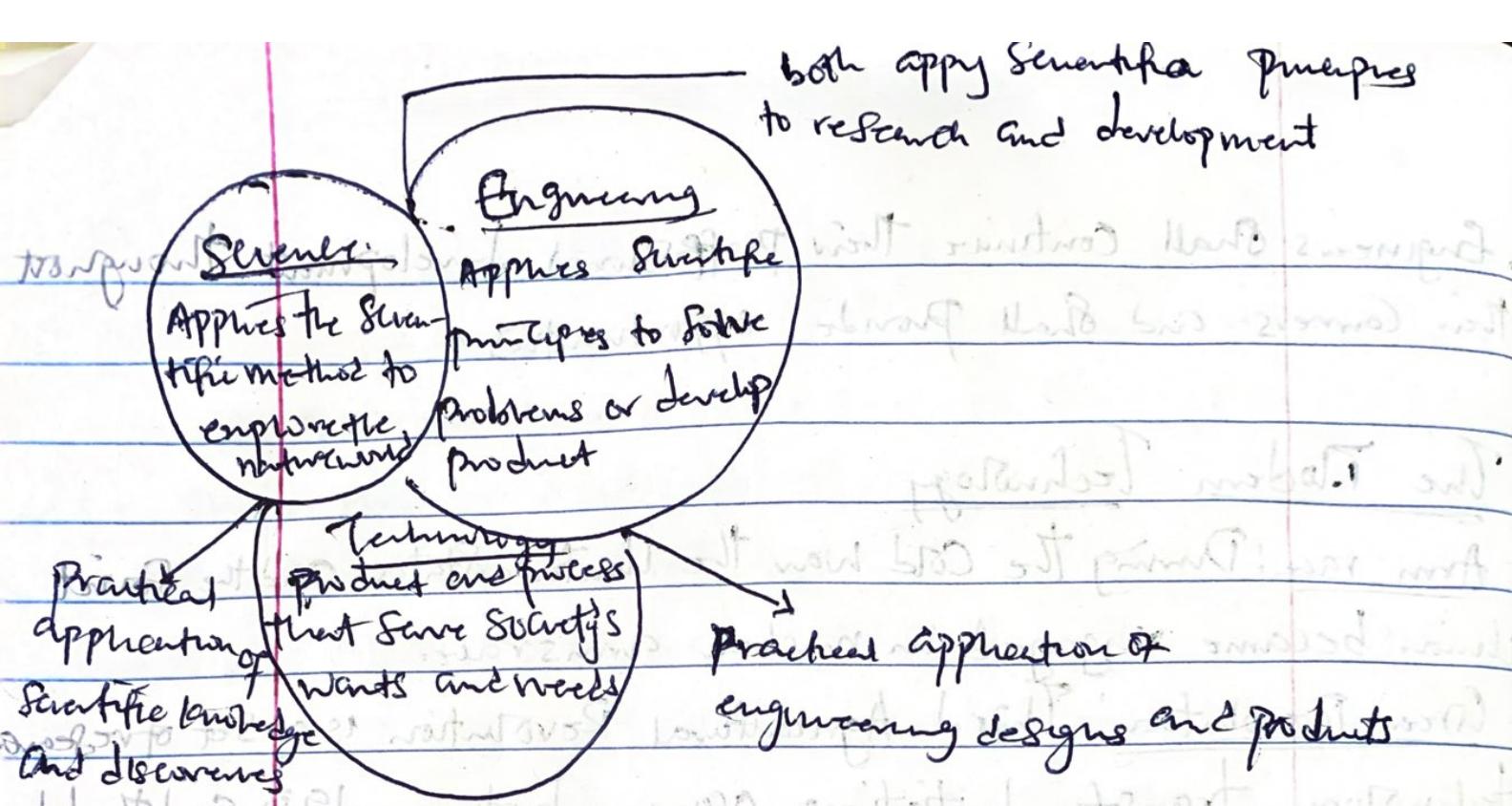
- 1. Engineers shall hold paramount Professional reputation on merit, the Safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their personal duties.
- 2. Engineers shall bind their Services and shall not compete unfairly with others.
- 3. Engineers shall act in such manner as to uphold and enhance the honor, integrity and dignity of the engineering profession and shall act with zero tolerance for bribery, fraud and corruption.
- 4. Engineers shall perform services only in areas of their competence.

- Engineers shall continue their professional development throughout their careers and shall provide opportunities

The Modern Technology

- Arm race: During the Cold War the United States and the Soviet Union became engaged in nuclear arms race.
- Green Revolution: Third Agricultural Revolution is a set of green technology transfer initiatives occurring between 1950 and the late 1960s that increased agricultural production world wide, particularly in the developing world, beginning ^{most} markedly in the late 1960s





- A The early development of Technology.
- B The history of modern technology.
- C The Technological Advancements: Is the generation of information or the discovery of knowledge that advances the understanding of technology.

- Technologies that needs to be ~~more~~ ^{improved} in India
- Provide stable electricity
 - Provide fast, reliable and affordable internet connectivity.
 - for the public transport system.
 - Invest in education.
- * The progressive nature of Technology,
 - * Roles of materials in technology.

Common materials that falls within the scope of material sciences and engineering are

- Metals (ferrous and non-ferrous) and alloys
- Ceramics
- Organic Polymers
- Composites including wood materials
- Semi-Conductors
- Biomaterials
- Advanced Materials

Importance of technology in the manufacturing industry

- Technology is used to maximise product quality and reduce production costs.
- By Maximizing efficiency
- * Woodward's findings in the way they were organised
 - Management structures
 - How work was allocated
 - Definitions of responsibility
 - Levels of accountability
 - Skill levels of the workers

Organization Structures

Group 1: Small Batch and Unit production

Group 2: Large batch and Mass production.

Group 3: Process (Continuous) production.

- Role of technology in the development of power and fuels!
Promotion of energy conservation and increased use of renewable energy.
- Improvement in transportation through technology: Transport Management Solution has been sought after by all and sundry since the time transporting became an industry.

Goals for a fully deployed TMS

- Reduction of costs through efficient routing.
- Load optimization, Carrier mix and model Selection
- Improving accountability together with visibility into the transport chain.
- Enough flexibility at hand for last-minute contingencies to alter the delivery plans.
- The key supply chain execution requirements.

Transportation technology: refers to tools and machines used to solve problems or improve conditions with respect to movement of people and goods.

D). The Technological Development in Nigeria

Evidence Of Lack of Technological Growth In Any Nation

- ① Is the nation able to produce heavy duty equipment
- ② Is she having the technological know-how to explore her natural environment or rather depend on foreign technology.
- ③ Does she export her unfinished products to other countries abroad?
- ④ Is she dependent on other countries for the supply of her spare parts for industrial machinery?
- ⑤ Is she able^{to} produce her own military hardware with which to defend herself if the need arises?

Influence of Foreign Technology on Nigerian Indigenous Technology

- The Government does not value technology as much as they should.
- Nigerians do not understand or trust technology.
- The cost of running a technology company is high.
- It exposes corruption.
- Nigerians do not trust things made in Nigeria.

The main features of Nigeria's National Policy on Technology

- General Policy Objective: Build a strong science, technology and innovation capability and capacity needed to evolve a modern economy

* Specific Policy Objective

- Facilitate the acquisition of knowledge
- Support the establishment and strengthening of organisations
- Encourage and promote the creation of innovative enterprises
- Support mechanisms to harness, promote, commercialise and diffuse locally developed.
- Facilitate and support the creation and maintenance of up-to-date.
- Create and sustain verifiable mechanisms for adequate funding of ST&I activities in Nigeria

The Theoretical Premises of Dependency Theory are that

- Poor Countries provide natural resources, cheap labour and destination for Obsolete technology and Market for wealthy nations, without which the latter could not have the standard of living they are enjoying today

Wealthy nations actively perpetuate a state of dependence by various means.

Acts that are considered illegal by Cossen ✓

- ① Practicing engineering without being registered
- ② falsely claiming to be a registered engineer
- ③ Unauthorized engineering design or supervision.
- ④ Misrepresentation of engineering qualifications or experience.
- ⑤ Violation of engineering codes of ethics.

Powers of Cossen ✓

Registration of Engineers.

Accreditation of Engineering Programs.

Regulation of Engineering Practice

Disciplinary Actions

Continuing Professional Development.

Promotion of Engineering Education and Research

International Collaboration

COPPER

- Is a regulatory body in engineering responsible for the regulation and control of the practice of engineering in the country.

- It set standards for engineering education, registration and professional practice.

- It ensure that engineering practitioners adhere to established guidelines and ethical practices.

Standards

NATE ✓

- Is an association that focuses on promoting safety education and standards within the wireless infrastructure industry.

- It represent a diverse range of professionals involved in the construction, installation and maintenance of communication towers and related infrastructure.

- Communication towers and related infrastructure.

✓
Establish guidelines and ethical practices to improve safety practices, provide training resources, and advocate for its members' interests.

Technical education: Are educational programs that provides theoretical knowledge and practical skills related to a specific branch of technology or engineering.

Vocational education: also known as career and technical education (CTE), focuses on providing individuals with the skills and knowledge required for specific trades crafts or occupation.

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NSE → Nigerian Society of Engineering

COREN → Council for the Regulation of Engineering in Nigeria

Objective Duties of NSE

- ① Professional Development
- ② Advocacy and Representation
- ③ Knowledge Sharing and Research
- ④ Capacity Building
- ⑤ Community engagement

Functions of the engineering professional bodies

- 1 Establishing and Maintaining Professional Standards
- 2 Accreditation and Certification
- 3 Continuing Professional Development
- 4 Advocacy and Representation
- 5 Networking and Collaboration

Objectives of vocational and technical education

- | | |
|---------------------------|---------------------|
| ① Skill Development | ⑥ Lifelong learning |
| ② Employability | |
| ③ Industry relevance | |
| ④ Meeting workforce needs | |
| ⑤ Career advancement | |

(NBTE)

Fraction of National Board for Technical Education

- ① Accreditation
- ② Curriculum Development
- ③ Quality Assurance
- ④ Capacity building
- ⑤ Research and development
- ⑥ Collaboration and partnerships

took place from the mid 20th century onwards.

ii) Information age: is also known as the digital age.

Computer age, refers to the era characterized by the rapid development and widespread of digital technology and information systems.

Space age: represent the period marked by significant advancement in space exploration and technology.

Modern technology with respect to

- ① 'The green revolution'.

is a period of significant advancement in agricultural technology and practice that

⇒ Enumerate any five major Industrial policy measures in

1960

- ① In the 1967-70 periods, Nigeria pursued primary a policy of industrialization based on Import Substitution

② The Central Bank of Nigeria (CBN) Credit guidelines prescribed high allocation of credit to the Industrial Sector

③ The United National Industrial Development Organization (UNIDO) has made efforts at ensuring Nigerian Industrialization

④ In 2009, the federal Government, through the bank of Industry (BOI) Launched the N100 billion textile and garment industrial revival fund

⑤ From 1974 to 1980, the Industrialization Strategy changed swiftly from assemblage plants to heavy duty industrial structure