GEG 228

ENGINEER IN THE SOCIETY

WHAT IS ENGINEERING

The field of engineering has grown so much in recent years that a definition is not easy to come by

Engineering is a profession that involves the application of scientific, technical and mathematical concepts for utilization of natural laws and physical resources to attain practical ends such as the design, manufacture and operation of efficient and economical structures, machines, processes and systems.

Note the following quotes:

1. Art without engineering is dreaming and engineering without art is calculating: Steven Roberts

2. A scientist describes what is. An engineer creates what never was.

3. Engineering is easy, it is the problems that are hard

4. Engineering is the art or science of making practical

The application of Science for the efficient utilization of natural resources to produce wealth is engineering.

The application of science in the planning, design, construction and maintenance of manufactured entity.

WHO IS AN ENGINEER

A person who has been trained in the design, construction, and use of engines or machines, or in any of various branches of engineering

Engineers are problem solvers who search for quicker, better, less expensive ways to meet tough challenges.

People who are qualified in or practice engineering are described as engineers, and may be licensed and formally designated as professional, chartered or incorporated engineers.

TOP REASONS TO BE AN ENGINEER

1. Engineers work to solve global problems such as world hunger, clean water, protecting the environment and improving the quality of everyday life.

2. Engineering allows you to use your creativity every day.

3. Engineering gives you the chance to collaborate with other professionals such as lawyers, doctors, government officials, scientists, statisticians and more.

4. Engineering is a global endeavour, frequently affording the opportunity for travel.

5. Engineers have the opportunity for rapid advancement in their companies.

6. Engineers frequently have a high level of responsibility and autonomy in their positions.

7. Engineering salaries remain high.

8. Engineering degrees provide excellent preparation for other professional degrees such as medicine, law or business.

9. While working as a scientist frequently requires advanced degrees, engineers are very employable with a bachelor’s degree.

10. Engineering has more impact on the world than any other profession.

ENGINEERING CONTENTS

1. Engineering is an art: Aesthetics as well as functions found in the Great Wall of China, Pyramid and other wonders of the world is truly an engineering genius in the form of art.

2. Engineering is an approximation:

- Engineering problems are sometimes under-defined.

- There are many solutions, good, bad and indifferent.

- The art is to arrive at a good solution.

3. Engineering is measurement, estimation, forecast and projection: River flow, noise and vibration from transport system, earthquake traffic volume, pollution and others.

4. Engineering is about modelling and simulation: Validation and verification of an analysis can be tested through modelling and computer simulation.

5. Engineering is a communication, technical report writing and presentation: Making presentations, producing technical manuals, co-ordinating team of large scale project are all fundamental to engineering practice.

6. Engineering is finance: Design, construction, operations, repair and maintenance costs, hiring, chartering and others determine the viability of the intended projects.

7. Engineering is an invention and design process:

- New devices, material selection and viable processes are developed by engineers to meet the requirement that existing technology do not address

- Enngineers identify and apply the most suitable system to solve engineering related problems using appropriate decision making tools which were acquired through a number of circumstances.

THE ENGINEERING FAMILY

The engineering profession in Nigeria is made up of the following cadres:

1. The Engineer (The Nigerian Society of Engineers – NSE)

2. The Technologist (National Association of Technologists in Engineering – NATE)

3. The Technician (The Nigerian Society of Engineering Technicians – NISET)

4. The Craftsman (The Nigerian Association Of Engineering Craftsmen – NAEC)

TITLES

A registered engineer shall use the abbreviation “Engr.” before his name.

A registered engineering technologist shall use the abbreviation “Engr. Tech” after his name.

A registered engineering technician shall use the abbreviation. “Tech”

TECHNOLOGY

This is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment, Britannica (2008).

It is the study, development and application of devices, machines and techniques for manufacturing and productive processes; the sum of a societ’s practical knowledge, especially with reference to its material culture.

ENGINEERING VS TECHNOLOGY

Engineering is the process of putting things together to get a desired outcome, Technology is engineering that has been proven to work over and over again.

Note: Engineering uses scientific ideas to develop technology

Engineering is detailing and creating hence should include design, procurement, construction and start-up

Technology is proprietary knowledge (know-how) oncee given the establishment/facility can be created with the help of engineering.

ASSIGNMENT

Search the internet and list top 5 Engineering Technologies to focus on in the next five years. Compose one-page write-up to justify the inclusion of one(1) of them on the list.