Studentsdash - FEG 303 Exam Answers

Question 1

(a) Outline the historical development of engineering and technology.

Engineering and technology started from the early days when humans used stones and sticks to make tools for hunting and farming. This was called the Stone Age. Later, during the Bronze Age, people started using metals like bronze to make better tools and weapons. Then came the Iron Age, where iron was used to build stronger tools, which improved farming and construction.

As time went on, the Industrial Revolution in the 18th and 19th centuries changed everything. Machines were built, and industries like textile, mining, and transport grew fast. Steam engines, electricity, and railways were all major engineering achievements.

In the 20th century, engineering became more advanced with the invention of cars, airplanes, computers, and mobile phones. Now, we are in the digital age, where engineers are using artificial intelligence, robotics, and modern software to solve problems and improve life.

(b) Discuss on the ten roles of engineer in society in general.

1. Problem Solvers
2. Designers
3. Innovators
4. Planners
5. Builders
6. Maintainers
7. Economy Boosters

8. Safety Officers

9. Environmental Protectors

10. Educators and Researchers

Question 2

(a) Science, Technology and Engineering are erroneously taken to be the same. Criticize the above stated statement.

Science is about discovering knowledge and understanding how nature works. Technology is the use of science to create tools or machines. Engineering is the process of using science and technology to build useful things. They are connected but not the same.

(b) In engineering family, write briefly on the cadres in the profession.

1. Technician

2. Technologist

3. Graduate Engineer

4. Corporate Engineer

5. Senior Engineer

6. Chief Engineer/Director

Question 3

(a) Outline the historical development of engineering discipline.

From tool making in ancient times to modern robotics, engineering has evolved through the Egyptian, Roman, and Industrial ages. Each era added new skills and specializations.

(b) State five areas of specialization:

Agricultural Engineering: Farm machinery, Soil and water, Irrigation, Food processing, Structures

Civil Engineering: Structural, Transportation, Geotechnical, Water resources, Environmental

Mechanical Engineering: Thermodynamics, Fluid mechanics, HVAC, Machine design, Manufacturing

Question 4

(a) What do you understand by the term feasibility studies?

Feasibility studies check if a project is possible, affordable, and worth doing before it begins.

(b) Five major contents of a feasibility study report:

1. Technical Feasibility
2. Economic/Financial Feasibility
3. Legal Feasibility
4. Environmental Feasibility
5. Operational Feasibility

Question 5

(a) Describe the three main components of environment.

1. Biotic - living things
2. Abiotic - non-living things
3. Cultural - man-made structures

(b) Air Pollution: Dirty gases in air.

Water Pollution: Dirty water from waste.

Soil Pollution: Waste dumped on land.

(c) Types of erosion:

1. Sheet erosion

2. Rill erosion

3. Gully erosion