INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

HIGHER EDUCATION CERTIFICATE

END OF SEMESTER EXAMINATIONS - AUGUST 2025

PROGRAMME: HEC
YEAR/SEM: YEAR 1/SEMESTER 2
COURSE CODE: FDN 1205
NAME: INTRODUCTION TO ENGINEERING SCIENCE

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Attempt ALL Questions (Each question carries 4 marks)

Question 1:

A good Engineer should demonstrate a range of qualities in 21st Century. Outline four qualities of a good Engineer.

Question 2:

To be a recognized as an Engineer its beyond just having a degree or a diploma. Outline at least four steps one should undergo before being recognized as an Engineer.

Question 3:

Just like any other profession, The field of Engineering is faced with a number of challenges today. Outline at least four challenges faced with Engineers in the 21st century.

Question 4:

Briefly explain any two major human activities affected by civil Engineering

Question 5:

Outline four major areas a civil Engineer can specialize on.

Question 6:

Of recent, many clients on building sites prefer concrete Blocks to Bricks for civil work. Outline at least four advantages of blocks over ordinary bricks.

Question 7:

A Stone is a ‘naturally available construction rock material’ which has been used from the early age of civilization. Briefly explain any two classifications of stones.

Question 8:

Outline at least four basic elements of a building.

Question 9:

Engineers and scientists of all disciplines rely heavily on computers for many aspects of their work. Briefly explain four importance of computers to the Engineering field.

Question 10:

Electrical Engineers are involved in a broad array of manufacturing systems, machines,

communications networks and transportation vehicles. Outline at least four sources of electricity in your country.

Question 11:

Robotics engineering is a field of engineering which centers on building machines that replicate human actions**.** Identify four major areas where Robots can be of great importance to human kind.

Question 12:

Petroleum is a mixture of hydrocarbon molecules and inorganic impurities that can exist in the solid, liquid (oil), or gas phase**.** Outline any four importance of petroleum products

Question 13:

In most countries around the world, plastic bag usage is so much prohibited. Briefly explain why the plastic bags are so much discouraged in our environment.

Question 14:

An oil tanker is carrying 25 barrels of crude oil. If the oil refinery requires the oil to be measured in liters, how many liters of oil is the tanker carry?

Question 15:

Briefly explain four specialization areas that a student pursuing petroleum engineering can specialize on

Question 16:

In a bid to control pollution in air pollution around major cities in the world, activists are advocating for public transport means. Briefly explain how this strategy can address air pollution challenge.

Question 17:

According to the Neologisms Dictionary, how is architecture defined, and what elements does this definition emphasize?

Question 18:

You are an architectural Engineer working on the renovation of a historic building in a rapidly developing urban area. The city has recently embraced advanced smart technologies, and the needs of the population have significantly changed compared to when the building was originally constructed centuries ago. Using the scientific perspective of architecture, outline four key factors you must consider during the renovation.

Question 19:

Identify at least four types of cement that are common on construction sites in your country

Question 20:

Identify four qualities of a good brick

SECTION B

Attempt any three question (Each question carries 20 marks)

Question 1:

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Question 10:

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