INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

HIGHER EDUCATION CERTIFICATE

END OF SEMESTER EXAMINATIONS - DECEMBER 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:

Differentiate between chemical and Mechanical Engineering.

Question 2:

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

Question 3:

Differentiate between structural Engineering and Construction Engineering.

Question 4:

Explain at least four major characteristic features about design as used in architectural Engineering.

Question 5:

Outline at least four Architectural design elements

Question 6:

Outline at least four physical characteristics of a line

Question 7:

Identify four major employment areas for petroleum Engineers.

Question 8:

out line four major substances present in petroleum fall.

Question 9:

Explain briefly how oil was made.

Question 10:

Identify four areas where computer usage is crucial for Engineers.

Question 11:

Identify at least four disadvantages of a computer in today's arena.

Question 12:

Briefly explain at least two areas of specialization a young star like you can specialize in as far

as computer Engineering is concerned.

Question 13:

Outline at least four qualities of a good Engineer.

Question 14:

Outline four qualities of a good stone as used in construction.

Question 15:

Identify four qualities of good bricks as used in construction

Question 16:

Identify at least four constituents of a good earth brick.

Question 17:

Chemical Engineering is an essential profession for our growing population. Identify four products made by chemical Engineers a bid to feed our growing population

Question 18:

Briefly explain four ways how pollution can be controlled.

Question 19:

Identify four career opportunities for Electrical Engineers.

Question 20:

Outline four qualities of a good cement as used in construction.

SECTION B

Attempt any three question (Each question carries 20 marks)

Question 1:

a) What is Civil Engineering?

b) What are the main functions of a civil Engineer?

c) List the main discipline of civil Engineering and mention the purpose and application of each discipline.

Question 2:

Any engineer or engineering student that jokes with his or her safety is like joking with his or her entire life. In not more than five(5) points each, briefly explain how safety should be exercised in the following;

(a) Fire safety

(b) Construction and Site safety

(c) Chemical Safety

(d) Electrical safety

Question 3:

a) Other than aeronautic Engineering, mention five (5) Engineering disciplines relevant to the development of your country that youngsters like you can pursue. Mention briefly the sort of problems that engineers in the mentioned disciplines solve. Please list only those that your country needs

b) Explain some strategies that governments have used to control brain drain of Engineers. Use strategies from your country of origin.

Question 4:

(a) Define the term computer engineering.

(b) Explain the main three categories of computer engineering.

(c) As an engineering student, explain six ways how computers are useful in engineering discipline.

Question 5:

a) Who are petroleum engineers and what do petroleum engineers do?

b) Briefly describe 3 categories of petroleum engineers stating clearly how the role of one differs from those of the rest.

c) Since Oil is a non-renewable resource, how would you advise your government to use it sustainably?

Question 6:

(a) Differentiate between batch processing and continuous processing?

b) Mention at least 5 ways in which Robotic Engineers are Important to Society.

c) Define the following terms as used in construction

i) Brick

ii) Stone

iii) Cement

Iv) Mortar

Question 7:

a) a) Explain briefly the meaning of chemical Engineering.

b) b) Identify at least 8 contributions of chemical Engineers in our society

Question 8:

Briefly explain how the following can be used to categorize stones;

a) Geological

b) Physical

c) Chemical

d) Practical

Question 9:

Civil engineering can be broken down into a number of disciplines/ fields/specializations. Mention at least 10 disciplines, stating clearly what each is concerned with

Question 10:

a) a) Explain briefly the meaning of petroleum Engineering.

b) b) Briefly identify major areas of specialization for a petroleum Engineer.

c) c) Briefly explain major methods used to locate oil reservoirs.