INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

HIGHER EDUCATION CERTIFICATE

END OF SEMESTER EXAMINATIONS - AUGUST 2025

PROGRAMME: HEC
YEAR/SEM: YEAR 1/SEMESTER 1
COURSE CODE: FDN 1106
NAME: FOUNDATION PHYSICS ONE

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Attempt ALL Questions (Each question carries 4 marks)

Question 1:

Differentiate between a vector and a scalar and give at least two examples in each

Question 2:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 379px;">

Question 3:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 473px;">

Question 4:

Differentiate between fundamental quantities and derived quantities and state at least two examples for each.

Question 5:

Differentiate between Heat capacity and specific Heat capacity. State the S. I unit in each case

Question 6:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 384px;">

Question 7:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 560px;">

Question 8:

A 10 cm rod is positioned along the major axis of a concave mirror with a focal length of 10 cm, with its end closest to the pole 20 cm from the mirror. Find the length of the image.

Question 9:

Find the heat required to raise the temperature of 200g of ice from 0 degrees to 30 degree (s.h.c of water is 4200 J/Kg/k and latent heat of fusion is

[Figure from the original paper could not be retrieved]

v:shapes="_x0000_i1025">)

Question 10:

An electrical bulb draws 5 A current when connected to a 100-V wall outlet, Find the resistance of bulb.

Question 11:

A 3.0 Kg sample of a substance is at its boiling point. If 5,360kJ of energy are enough to boil away the entire substance. What is its latent heat of vaporization?

Question 12:

A potential difference of 10 V is applied across a conductor whose resistance is 2.5ohm. What is the value of current flowing through it?

Question 13:

An object 1cm tall is placed 30cm in front of a concave mirror of focal length 20cm. Find the position of the image.

Question 14:

Define pressure and derive its dimensions

Question 15:

A man of weight 75N sits on a table of area $15m^2$. Calculate the

pressure he exerted on the table.

Question 16:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 17:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 18:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 723px;">

Question 19:

With the help of diagrams, differentiate between regular reflection and irregular reflection

Question 20:

Briefly explain two applications of optics

SECTION B

Attempt any three question (Each question carries 20 marks)

Question 1:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 2:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 3:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 4:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 5:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">c)

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 6:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 7:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 8:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 719px;">

Question 9:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">

Question 10:

[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 742px;">
[Figure from the original paper could not be retrieved]

data-filename="image.png" style="width: 705px;">