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 1209
NAME: FOUNDATION PHYSICS TWO

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Attempt ALL Questions (Each question carries 4 marks)

Question 1:

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Question 2:

Differentiate between an electric motor and a generator

Question 3:

A transformer has 200 turns of the primary coil. Calculate the number of turns on the secondary coil if 240V is to be stepped up to 400V

Question 4:

How many coulombs of charge pass through a conductor while a current of 9A flow throughout it for 1000s?

Question 5:

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Question 6:

A capacitor having a capacitance of 2 μF is charged to a potential difference of 20,000 V. Find the amount charge charged with

Question 7:

State the Gauss's flux theorem of electrostatic and its applications

Question 8:

A charge of 60,000□ crosses two sections of a conductor in 4minute. Find the current through the conductor

Question 9:

A capacitor having a capacitance of 8 μF is charged to a potential difference of 200, 000 V. Find the amount charge

Question 10:

A straight horizontal rod of mass 0.4 kg and length 2 m is placed in a uniform horizontal magnetic field 12T perpendicular to it. Calculate the current through the rod if the force acting on it just balances with its weight.

Question 11:

A capacitor is charged by a 50 V d.c supply. When the capacitor is fully charged, it is found to carry a charge of 3.0□ Find the;

Question 12:

An □□transformer is used to provide a voltage of 3000V for operating a T.V tube. If the transformer has 500 turns on primary and is connected to 240V mains supply. How many turns are in the secondary coil.

Question 13:

A transformer has 200 turns of the primary coil. Calculate the number of turns on the secondary coil if 240V is to be stepped up to 415V.

Question 14:

A charge of 20 □□ crosses two sections of a conductor in 1minute. Find the current through the conductor.

Question 15:

What is the electric field intensity at a distance of 20 cm from charge of 2 micro coulomb in a vacuum

Question 16:

A capacitor having a capacitance of 5 μF is charged to a potential difference of 10, 000 V. Find the amount charge charged with.

Question 17:

A student Wound a long piece of copper wire around an iron nail in the form of a coil. Free ends of the wire are connected to a cell through a switch to complete the circuit. What will happen when;

i) the switch is closed

ii) the number of cells is increased

Question 18:

Briefly explain the domain theory of magnetism

Question 19:

Approximately how many milli-amperes of current flow through a circuit with a 40 V source and 6.8Ω of resistance?

Question 20:

What would be the remaining concentration of 300 g of radioactive substance after 18 hours if the half-life is 3 hours?

SECTION B

Attempt any three question (Each question carries 20 marks)

Question 1:

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Question 2:

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Question 3:

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Find the resultant electric field intensity at C

Question 4:

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(i) At 30 degrees to the field

(ii) At 60degrees to the field

(iii) Parallel to the field

A horizontal wire carrying current of 7A lies in a vertical magnetic field of 0.42T. calculate the force on the wire per unit length

Question 5:

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Question 6:

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Question 7:

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Question 8:

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Question 9:

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Question 10:

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