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**KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2020/2021 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF SCIENCE
(COMPUTER SCIENCE)**

Date: 10th December, 2020
Time: 11.30am – 1.30pm

KPH 102 - PHYSICS II

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Discuss and explain what do you understand by term chemical effect of the currents? (4 Marks)
- b) State the experimental facts regarding photoelectric effect. (5 Marks)
- c) With a neat diagram what principle do transformers work. (5 Marks)
- d) Explain the Advantages and disadvantages of an alkaline cell (8 Marks)
- e) Define the following terms;
- i) Photon
 - ii) Threshold frequency
 - iii) Anion
 - iv) Voltmeter (4 Marks)
- f) Explain what is Electric Field and state both Kirchohoffs laws. (4 Marks)

QUESTION TWO (20 MARKS)

- a) State the laws of gases usually associated with the names of Boyle, Charles and Dalton. (9 Marks)
- b) What is a rectifier? With the help of explain one type of rectifier? (7 Marks)
- c) Eight cells, each with an internal resistance of 0.2Ω and an e.m.f. of 2.2 V are connected;
- i) In series
- ii) In parallel.
- Determine the e.m.f. and the internal resistance of the batteries so formed. (6 Marks)
- d) An electric kettle has a resistance of 30Ω . What current will flow when it is connected to a 240 V supply? Find also the power rating of the kettle. (4 Marks)

QUESTION THREE (20 MARKS)

- a) Distinguish between ionic and electronic conduction (3 Marks)
- b) A 100 W electric light bulb is connected to a 250 V supply. Determine;
- i) The current flowing in the bulb (3 Marks)
- ii) The resistance of the bulb. (3 Marks)
- c) A radioactive material emits photons, each having energy of $1.6 \times 10^{-13} \text{ J}$. Calculate the frequency of the electromagnetic radiation emitted by the radioactive material. (6 Marks)
- d) What are the Faraday's laws of electrolysis? (2 Marks)
- e) What are the current carriers in solid conductors, liquids and gases? (3 Marks)

QUESTION FOUR (20 MARKS)

- a) Why alternating current is more used? (3 Marks)
- b) What is the difference between AC and DC current? (6 Marks)
- c) What do you understand by the term electrolytic dissociation? (4 Marks)
- d) Solid sodium chloride is a non-conductor of electricity. However, in fused state, it conducts electric current. Explain. (6 Marks)
- e) Explain how charges flow. (4 Marks)

QUESTION FIVE (20 MARKS)

- a) Determine the maximum kinetic energy of photoelectron ejected from the surface of metal by light of wavelength of 3000 \AA , threshold wavelength of metal = 4500 \AA . (6 Marks)
- b) A source e.m.f. of 5 V supplies a current of 3 A for 10 minutes. How much energy is provided in this time? (4 Marks)
- c) Differentiate between conductor, insulator and semiconductor. (4 Marks)
- d) State and explain ohm's law. (6 Marks)