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**GARISSA UNIVERSITY**

**UNIVERSITY EXAMINATION 2019/2020 ACADEMIC YEAR ONE**

**SECOND SEMESTER EXAMINATION**

**SCHOOL OF SCHOOL OF PURE AND APPLIED SCIENCES**

**FOR THE DEGREE OF BACHELOR OF EDUCATION**

**COURSE CODE: PHY 111**

**COURSE TITLE: BASIC PHYSICS 11**

**EXAMINATION DURATION: 2 HOURS**

**DATE: 17/12/2020 TIME: 09.00-11.00 AM**

**INSTRUCTION TO CANDIDATES**

* **The examination has FIVE (5) questions**
* **Question ONE (1) is COMPULSORY**
* **Choose any other TWO (2) questions from the remaining FOUR (4) questions**
* **Use sketch diagrams to illustrate your answer whenever necessary**
* **Do not carry mobile phones or any other written materials in examination room**
* **Do not write on this paper**

**This paper consists of THREE (3) printed pages *please turn over***

**QUESTION ONE (COMPULSORY)**

1. Distinguish between the following terms using expressions
2. Electric current and Electric circuit **[6 marks]**
3. Resistivity, Resistance and conductivity **[9 marks]**
4. Show that $R= ρ\frac{l}{A}$, where symbols have their usual meaning. **[3 marks]**
5. When a 12-V automobile battery is connected across unknown resistor, there is a current of 2.5 mA in the circuit. What is the value of the resistor? **[2 marks]**
6. (i) When atoms share electrons, what type of bond do you get? **[1 mark]**

(ii) Of what polarity are impurity atoms in N-type and P-type semiconductors? **[1 mark]**

1. With help of a ray diagram, explain the following terms as used in optics
2. Center of Curvature (C) **[2 marks]**
3. Radius of curvature (R)  **[2 marks]**
4. Focal point (F)  **[2 marks]** .
5. (i) What is an isotope? **[1 mark]**

(ii)Name the three isotopes of hydrogen. **[2 marks]**

**QUESTION TWO**

(a) With help of a ray diagram, distinguish between

1. Parallel ray **[3 marks]**
2. Chief ray **[3 marks]**
3. Focal ray. **[3 marks]**

(b) A concave mirror has a radius of curvature of 30 cm. if an object is placed 45cm,

 20 cm and 10 cm from the mirror

1. Where is the image formed? **[5 marks]**
2. What are its characteristics (Specify where real, virtual, upright, inverted, larger or smaller for each image) **[6 marks]**

**QUESTION THREE**

1. Using a phase diagram, deduce
2. The impendence (Z) **[3 marks]**
3. The phase angle ($(φ)$ [**2 marks]**

 Of a series RLC circuit.

1. A series RLC circuit has a resistance of 250 $Ω$, a capacitance of 50$μf$ and an inductance of 0.300mH. If the circuit is driven by 120-V 60 Hz source, what are
2. The impendence of the circuit **[5 marks]**
3. The current in the circuit **[5 marks]**
4. The phase angle between the current and the voltage. **[5 marks]**

**QUESTION FOUR**

1. What is
2. Radioactivity **[2 marks]**
3. In radioactivity, outline the properties of the radiations

 Alpha ($α)$, betta ($β)$, Gamma ($γ)$ **[9 marks]**

1. State the Bohr’s postulate of atomic structure. **[9 marks]**

**QUESTION FIVE**

1. Using the energy band diagram, the difference between Insulators, Conductors and Semi-conductors [**8 marks]**
2. Outline important characteristics of semiconductor diodes **[6 marks]**
3. Classify diodes. **[6 marks]**