



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES

DEPARTMENT OF PURE AND APPLIED SCIENCE

OCT/NOV 2019 EXAMINATIONS

COURSE CODE: PHY 492
COURSE TITLE: LABORATORY PHYSICS III
CREDIT UNIT: 3
TIME ALLOWED: (2½ HRS)

INSTRUCTION: Answer question 1 and any other four questions

QUESTION 1

In an experiment to investigate the action of a full-wave rectifier, a student made the following observations from the voltmeter and milliammeter:

Voltmeter readings = 10V, 9V, 8V, 7V, 6V, 50V, 4V, 2V, 3V, 2V, 1V and 0 V; and

the ammeter readings = 2mA, 3mA, 4mA, 5mA, 6mA, 7mA, 8mA, 10mA, 9mA, 10mA, 11mA and 12mA respectively.

- Tabulate your readings. (2 marks)
- Plot a graph with current, I on the vertical axis and voltage, V on the horizontal axis (8 marks)
- Determine the slope of the graph. (3 marks)
- What does the slope represent? (1 mark)
- Determine the error in the slope. (3 marks)
- State the sources of error. (3 marks)
- Highlights two precautions to be taken to prevent occurrence of errors (2 marks)

QUESTION 2

(a) i). Distinguish between alternating current (AC) and direct current (DC) 4 marks

(b) Draw the symbols for any four of the following as used in electric circuits

Resistor
Rheostat
Battery
Voltmeter
Ammeter

8 marks

QUESTION 3

- (a) List any **six** apparatus used in the experiment to determine the characteristics of a measured a.c. voltages using Cathode Ray Oscilloscope. 6 marks
- (b) Draw the circuit diagram of an experiment to determine the characteristics of an operational amplifier by measuring the voltage gains and bandwidths. 6 marks

QUESTION 4

- (a) Draw and label the circuit diagram for an experiment to determine the characteristic of a junction diode. 7 marks
- b) Write the functions of following components of electric circuits: Rheostat, Resistor, Battery, Voltmeter, and Ammeter 5 marks

QUESTION 5

- (a) List any six apparatus used in the experiment to measure the thickness of paper or tinfoil by means of interference fringes. 6 marks
- (b) Draw the experimental set-up of the experiment to measure the thickness of paper or tinfoil by means of interference fringes. 6 marks

QUESTION 6

- (a) i. Write the lens formula 3 marks
- ii. Give the meaning of all letters used in (i) above. 3 marks
- iii. A convex lens produces a four times enlarged image at a distance of 25 cm from the lens. Find the focal length of the lens. 3 marks
- (b). Draw the diagram for an experiment to determine the focal length of a concave lens using a convex lens 3 marks