NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF PHYSICS
2025_2 EXAMINATIONS

COURSE CODE: **PHY310**
COURSE TITLE: **ELECTRONICS I**
CREDIT UNIT: **2**
TIME ALLOWED: **(2 HRS)**
INSTRUCTION: ***Answer question 1 and any other three questions***

Question 1

i. Define the following terms: Depletion, Enhancement, P-Channel, N – Channel and Ohmic mode 10 marks
ii. What are passive filters 5marks
iii. Draw the circuit diagram for the Passive Wien bridge filter 5marks
iv. Sketch a 4-element low-pass active filter 5marks

Question 2

i. What are amplifiers? 4marks
ii. Sketch the cross-sectional of an n-type MOSFET transistor and explain the functions of each. 6marks
iii. Discuss briefly the operations of the JFET Transistor 5marks

Question 3

i. What are high-frequency power amplifiers?
ii. List 5 main characteristics of an amplifier
iii. Sketch and describe briefly the operations of Class A and AB amplifiers

Question 4

i. Define the following terms i. electric current ii. Electric potential iii. Electric charge iv. Electrical energy
ii. Discuss briefly the following i. Half wave rectifier ii. Full rectifier
iii. With the aid of a perfect circuit diagram describe the following i. shunt regulator ii. Series regulator iii. Darlington buffered regulator

Question 5

i. What are filters
ii. Discuss briefly passive and active filters
iii. Discuss briefly the Hum injector filter