

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION
FIRST SEMESTER 2018/2019 SESSION EXAMINATION

COURSE TITLE: SEMI CONDUCTOR DEVICES

COURSE CODE: ITE 352

INSTRUCTION: ANSWER QUESTION ONE (1) AND TWO OTHERS

TIME ALLOWED: 2 HOURS

1a. In an electronic circuit, the following elements are connected as shown below:- Task

- i. Calculate the total resistance of the circuit
- ii. The total current of the circuit
- iii. The current through each element of the circuit
- iv. The Voltage across the $1\ \Omega$ resistor
- v. The value of a resistor "X" to be connected across the series/parallel elements to raise the circuit current to 11.67A.

2a. Illustrate the distribution of electrons for the following atoms: Hydrogen atom, Germanium atom. Boron atom and Phosphorus atom.

b. Calculate the amount of extra energies needed by an electron to be excited from the following levels (i) "R" shell to "L" shell (ii) "L" shell to "M" shell and (iii) "M" shell to "O" shell

3. Briefly explain the formation of depletion layer in an extrinsic semiconductor

b. Explain the following

- i. Majority
- ii. Minority charges carriers

4. What is Diode?

b. Draw the circuits for forward and reverse directions for a diode

c. Under BIT illustrate the structure and symbols for PNP and NPN transistors, and also explain the functions of emitter, base and collector