

SOUTHWESTERN UNIVERSITY NIGERIA

KM 20, SAGAMU-BENIN EXPRESSWAY, OKUN OWA, IJEBU-ODE, OGUN STATE.

FACULTY OF PURE & APPLIED SCIENCES

DEPARTMENT OF COMPUTER SCIENCE

HND TO BSC CONVERSION PROGRAMME

2018/2019 THIRD SEMESTER EXAMINATION

COURSE CODE: PHY 411

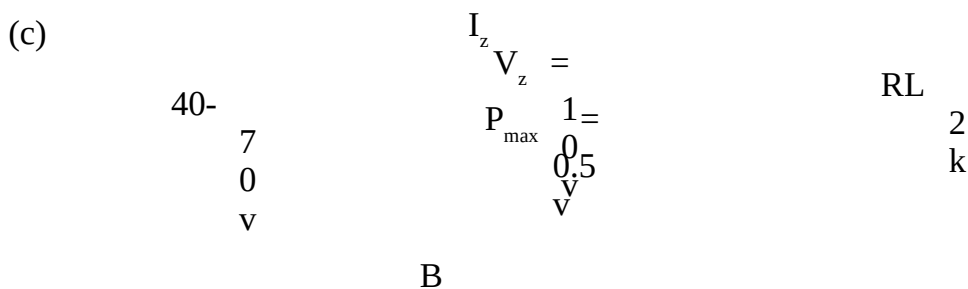
COURSE TITLE: Introduction to Electronics

INSTRUCTION: Answer question 1 and any other three (3). **TIME:** 2hrs

1. (a) (i) Draw the symbols of P-channel and N-channel JFETs and explain the following:

(ii) State five(5) merits and two(2) demerits of field effect transistors

(b) (i) With diagram showing the basic arrangement, construction and symbol, explain application



Calculate the battery current I , I_z and I_L in the above circuit. How will these values be attested if source voltage increases to 70V? Neglect Zener resistance.

2. (a) Outline five(5) applications of Zener Diodes
 (b) Draw the symbol of the following:
 (i) Varactor diode (ii) Schottky diode
 (iii) Tunnel diode
 (iv) Electrolytic capacitor (v) Step-up transformer.

3. (a) With a diagram of a practical circuit arrangement, explain the V-I characteristics of a diode and a graph to show the state of diode conductor in forward and reverse biased conditions.

(b) Enumerate five(5) applications of Field Effect Transistors (FET)

4. (a) What length of a round copper wire of diameter 1mm will have a resistance of $1k\Omega$, if copper conductivity is $60ms/m$. A cylindrical piece of silicon having a diameter of 1mm is doped with $10^{20}m^{-3}$ atoms of phosphorous which is given a resistance of $1k\Omega$, if electron mobility in silicon is $0.1m^2/v-s$?

(b) In terms of energy bands, state the characteristics of semiconductors.