

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
INDUSTRIAL AND TECHNOLOGY EDUCATION DEPARTMENT
FIRST SEMESTER EXAMINATION 2022/2023 SESSION

Course Code/Title: ITE 352/ Semi-Conductors Devices

INSTRUCTIONS: Time allowed 2 hours; Answer any four (4) Questions

- (1a) What are semi-conductors
- (1b) Discuss two examples of semi-conductors' material
- (1c) Draw and explain the structure of an atom

- (2a) Explain two main types of semi-conductors
- (2b) Distinguish between the subdivision of extrinsic N-type and p-type semi-conductors
- (2c) What is barrier voltage at a P-N junction?

- (3a) Explain with the aid of a diagram what is forward bias
- (3b) Explain with the aid of a diagram what is reverse bias
- (3c) What is majority charge carrier?

- (4a) Draw an atom with five shells and indicate the letter that is for each shell
- (4b) Draw
 - (i) a PNP transistor and.
 - (ii) an ~~PNP~~ ^{NPN} transistor and indicate the emitter, base and collector on each

- (5a) Draw a common emitter transistor
- (5b) Draw a common base transistor
- (5c) Draw a common collector transistor show the direction of the current flow.