Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(TAKE HOME)
SEMESTER I
SESSION 2020/2021

COURSE NAME	:	SEMICONDUCTOR PHYSICS
COURSE CODE	:	BWC 30203
PROGRAMME CODE	:	BWC
EXAMINATION DATE	:	JANUARY / FEBRUARY 2021
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS **OPEN BOOK EXAMINATION**

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

Q1 (a) Name **THREE (3)** compound semiconductors. Explain the growth process of one of the compound semiconductor.

(10 marks)

(b) Explain the doping principle of an n-type GaN semiconductor. In your answer, include how the doping process can produce a degenerate semiconductor.

(10 marks)

Q2 (a) Discuss the carrier transport phenomena by correlating drifts and diffusion principles.

(10 marks)

(b) Outline the characterization principles in order to determine the carrier mobility and concentration of a p-type Si semiconductor.

(10 marks)

Q3 (a) A 1N4007 diode burned out due to incorrect connection to the power supply. Explain the possible reason for the above situation.

(10 marks)

(b) Sketch a simple diagram and discuss the process of white light emission from a GaN light-emitting diode (LED).

(10 marks)

Q4 (a) Explain how to produce an Ohmic characteristics of a metal-semiconductor contact.

(10 marks)

(b) By drawing related diagram, differentiate between BJT and FET.

(10 marks)

Q5 (a) List out the procedure before entering clean room. What are the safety precautions need to be taken while working in the clean room?

(10 marks)

(b) Discuss the characterization method in determining the structural quality of a boron-doped Si wafer.

(10 marks)

- END OF QUESTIONS –