BINDURA UNIVERISTY OF SCIENCE EDUCATION

FACULTY OF SCIENCE

DEPARTMENT OF ENGINEERING AND PHYSICS

BACHELOR OF SCIENCE EDUCATION(HONOURS) DEGREE

PH 102: THERMAL PHYSICS AND WAVEMOTION

DURATION: THREE HOURS AUG 2024

INSTRUCTIONS

*Answer **ALL** parts of Section A and any **THREE** questions from Section B. Section A carries 40 marks and Section B carries 60 marks.*

SECTION A

Attempt all parts of question 1.

1. (a)(i) When are two bodies said to be in thermal equilibrium? [2]

(ii)State the Zeroth law of thermodynamics [2]

.(b)Explain what is meant by a *temperature gradient*. [3]

(c) One end of a uniform metal rod is maintained at 100 °C and the other at room temperature. Sketch a *labelled* graph to show how the temperature gradient varies with distance along the rod when its sides are:

(i) efficiently lagged, [3]

(ii) unlagged, [3]

(iii) explain the shape of each graph. [4]