OPENER EXAMS TERM 3

TISMA EXAMS
007

905/2 INTEGRATED SCIENCE (*Practical*)

PAPER 2

CONFIDENTIAL TEACHER'S GUIDE:

General Instructions to Teachers/Examiners

a) This confidential guide provides detailed instructions, expected observations, and marking schemes for the practical examination.
b) Ensure all apparatus and reagents are prepared and checked well in advance.
c) Emphasize safety precautions to candidates before and during the practical session.
d) Supervise candidates closely to ensure they follow instructions and do not engage in any malpractice.
e) Provide assistance only when absolutely necessary and in a way that does not give away answers.
f) The time allocated for this paper is 1 hour 30 minutes. Ensure candidates adhere to the time limit.

Question One: Diffusion Experiment (20 Marks)

Objective: To investigate the effect of temperature on the rate of diffusion using potassium permanganate crystals in water.

Tools and Apparatus:

a) Two (2) 250 ml beakers labeled 'Hot Water' and 'Cold Water'
b) Hot water (already heated, e.g., to around 60-80°C)
c) Cold water (at room temperature, approximately 20-25°C)
d) Potassium permanganate crystals (alternatively, dark food colouring like blue or purple)
e) Small spoon or spatula
f) Stopwatch or timer
g) Measuring cylinder (optional, for precise volume measurement)
h) Safety goggles (recommended)
i) Lab coat (recommended)
j) Heat resistant mat (if hot water is significantly hot)

Procedures for Teachers:

1. **Preparation:**

    i. Ensure hot water is readily available and at an appropriate temperature. Cold water should be at room temperature.
    ii. Pre-label the beakers clearly.
    iii. Portion out small amounts of potassium permanganate crystals for each student/group. Emphasize that only a small crystal is needed.
    iv. Brief students on safety precautions before they begin.

2. **During the Experiment:**