BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF SCIENCE AND ENGINEERING
DEPARTMENT OF BIOLOGICAL SCIENCES
BScBHH/HBScEd/BScEd/HBScBioTec
BZH204/BTEC229(PLANT PHYSIOLOGY)

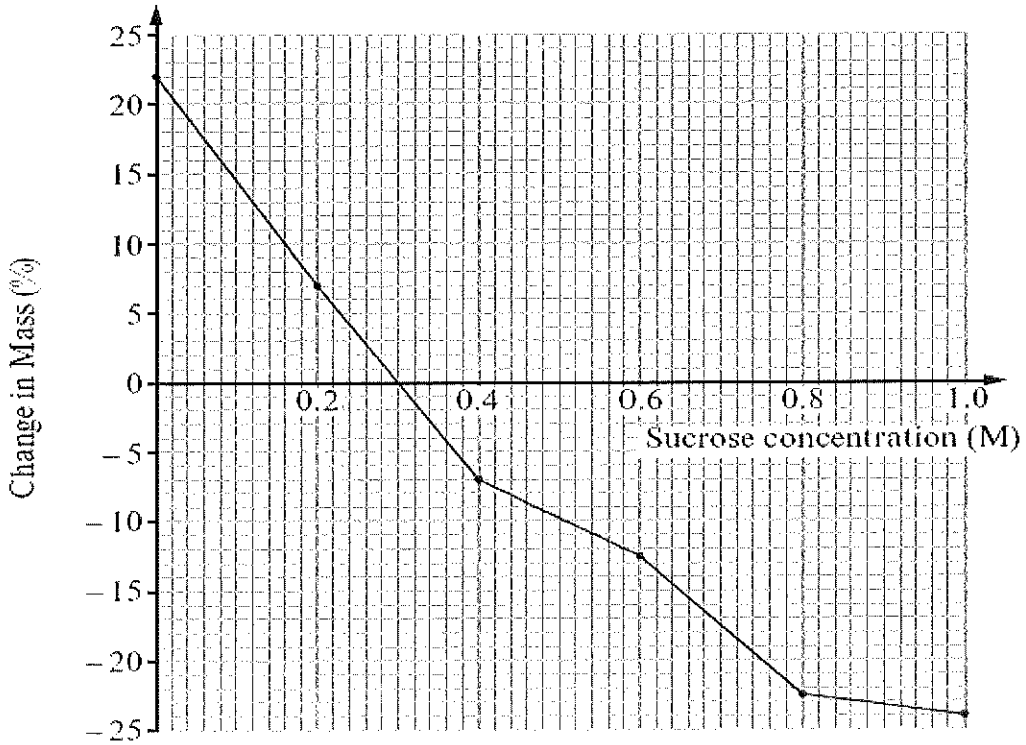
EXAMINATION
2 HOURS (100 MARKS)

OCT 2012

INSTRUCTIONS
Answer FOUR questions. You MUST answer QUESTION 1 (Section A) and any THREE questions from Section B. Each question carries 25 MARKS. Where a question contains subdivisions, the mark value of each subdivision is given in brackets. Illustrate your answers where appropriate with large, clearly labelled diagrams. You should not spend more than thirty minutes on each question.

SECTION A (COMPULSORY)

1. An experiment was carried out to determine the water potential (Ψ_{cell}) of potato. A range of sucrose concentrations were prepared. Potato cylinders were weighed and immersed into each of the solutions. After 2 hours they were blotted dry and reweighed. The percentage change in mass was calculated and the graph below was plotted.



(a)(i) Explain the change in mass in 0.0M (distilled water) and 1.0M sucrose solution. (10 Marks)

(ii) Determine the molar concentration of the potato cylinders. (2 Marks)

(b) Outline a procedure to determine the water of the plant tissue above. (13 Marks)

SECTION B

2. (a) Describe the light dependent reactions of photosynthesis. (18 Marks)
(b) Compare cyclic and non-cyclic photophosphorylation. (7 Marks)

3. (a) Using Munch's hypothesis, describe movement of solutes in plants. (20 Marks)
(b) State the weaknesses of the above hypothesis. (5 Marks)

4. (a) Describe the physiological effects of gibberellins on plant growth. (15 Marks)
(b) Outline the commercial applications of gibberellins. (10 Marks)

5. Write brief notes on any **FIVE** of the following:
(a) Brassinosteroids (5 Marks)
(b) Pressure Potential (5 Marks)
(c) NADPH (5 Marks)
(d) Link reaction (5 Marks)
(e CAM (5 Marks)
(f) Photorespiration (5 Marks)

6. Describe a plant's physiological and molecular responses to heat stress.

END OF PAPER