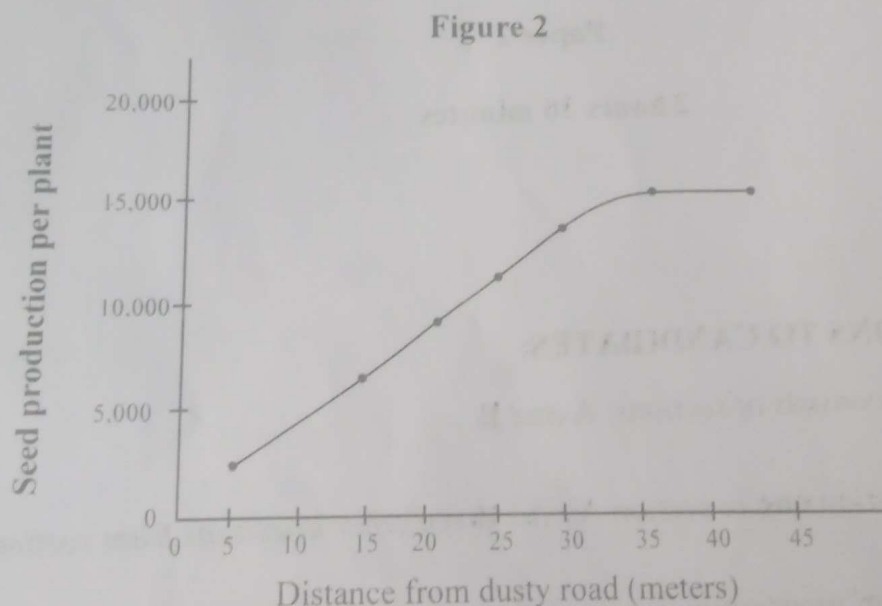
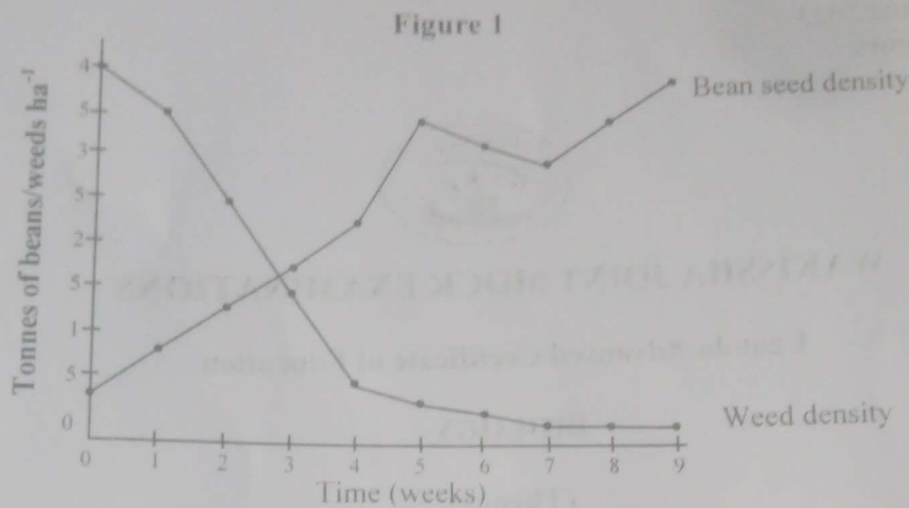


SECTION A (40 MARKS)
COMPULSORY QUESTION

1. The yield of bean plants was monitored against different factors in an uninterrupted field close to a dusty road side.
Figure 1 shows the relationship between weed density and bean seed density ha^{-1} .
Figure 2 shows the variation of yield of beans with distance from the dusty road side.



Questions

- (a) (i) Describe the relationship between weed density and bean seed density in figure 1. (05 marks)
- (ii) Explain the relationship described in (a) (i) above. (11 marks)
- (b) Identify the biological process illustrated in figure 1 above and explain its importance in nature. (04 marks)

- (c) Using figure 2 above, account for the trend of seed production per plant with distance from the dusty road. (13 marks)
- (d) Using a sketch graph, explain how the number of seeds sown per plot will affect seed production per plant. (04 marks)
- (e) State the importance of improved productivity in an ecosystem. (03 marks)

SECTION B (60 MARKS)

Answer *three* questions from this section.

2. (a) Describe,
 - (i) the role played by proteins within the cell membrane, in moving materials inside the cell. (08 marks)
 - (ii) the importance of membrane bound organelles to eukaryotic cells. (04 marks)
 (b) How do inhibitors change the rate of enzyme controlled reactions? (08 marks)
3. (a) Compare anaerobic respiration in a yeast cell and muscle tissue. (08 marks)
- (b) Describe the long term and short term effects of exercise on the respiratory and circulatory systems. (07 marks)
- (c) Explain the factors responsible for efficient diffusion of gases at the alveoli. (05 marks)
4. (a) Distinguish between fertilization in flowering plants and mammals. (06 marks)
- (b) Explain;
 - (i) how double fertilization is avoided in humans. (06 marks)
 - (ii) the functions of hormones secreted by the placenta in mammals. (08 marks)
5. (a) Describe ways mammals prevent invasion by disease causing micro-organisms. (07 marks)
- (b) How have plants defended themselves against herbivory? (07 marks)
- (c) Explain the different ways that have enabled herbivores live a successful herbivorous mode of life? (06 marks)
6. (a) Describe the significance of the products of the light reaction in photosynthesis. (07 marks)
- (b) Differentiate between carbon dioxide fixation in C_4 and C_3 plants. (06 marks)
- (c) Explain the physiological importance of the Calvin cycle. (07 marks)

END