Section A

*Answer **all** questions in this section*

1.Haemophilia is a genetic disorder caused by a recessive sex-linked gene. A phenotypically normal couple got a hemophiliac son.

(a) State the genotypes of the parents (2mks)

Father: X^HY

Mother: X^HX^h

(b) Using a genetic cross, determine the genotypes od the couple's children (4mks)

♂ ♀

Parental phenotype Man with normal blood clotting × Carrier Woman

Parental genotype X^HY × X^HX^h;

Gametes X^H Y X^H X^h;

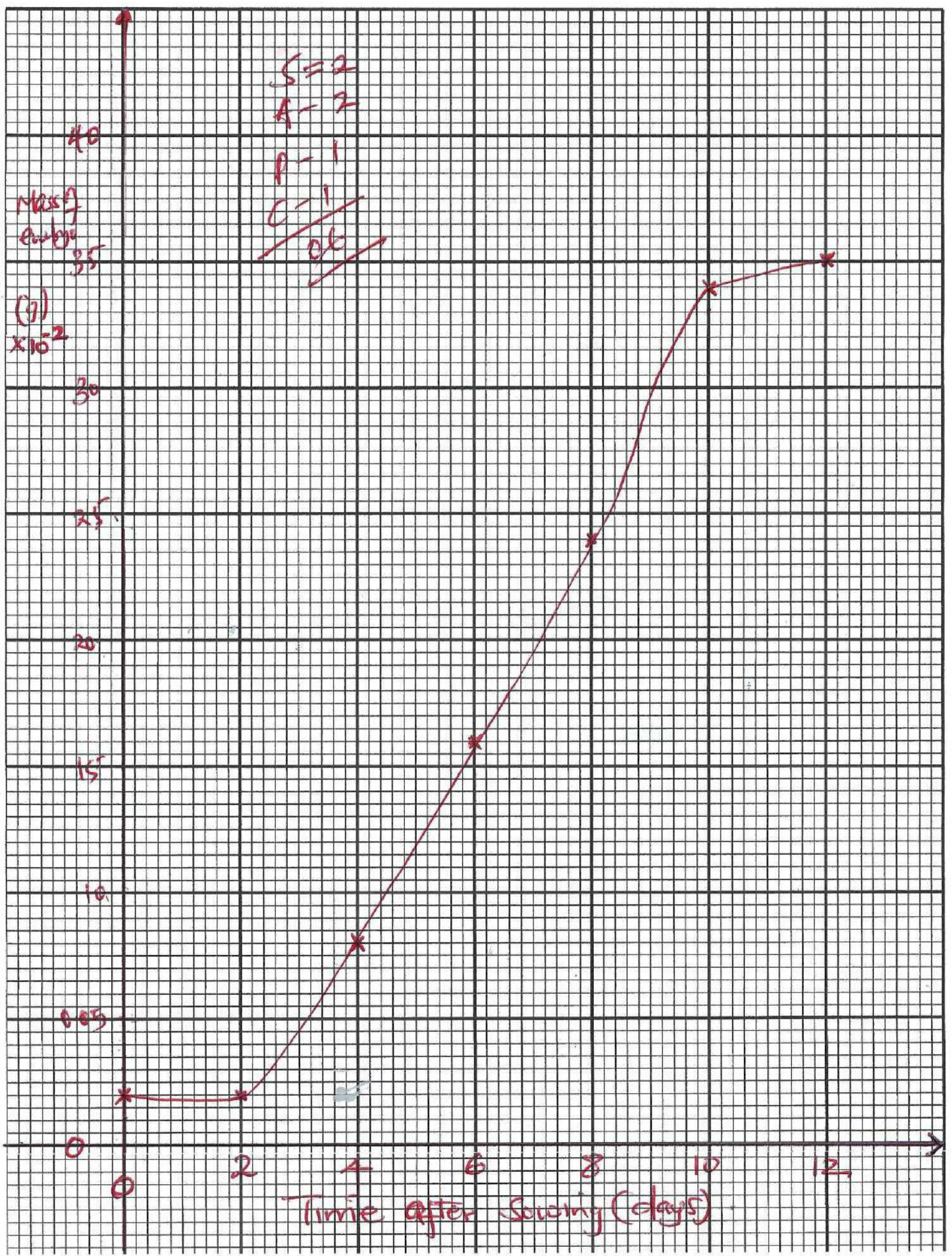
fusion;

F1 – genotypes X^HX^H X^HX^h X^HY X^hY;

F1 – phenotypes Normal daughter; Carrier daughter; Son with Normal blood clotting; Haemophiliac Son.

(c) Explain why hemophilia is common in males than in females (2mks)

Since males have one X and one Y chromosome, and the genes present on X don't have counter genes on Y; only one affected gene (to be present on X) is required for the disease to occur in males;


S = 2
A - 2
P - 1
C - 1
Mass of cube (g) x10^-2
40
35
30
25
20
15
10
0.05
0
0
2
4
6
8
10
12
Time after Sowing (days)