PAGE NO.: _____
DATE: / /

Q.7.a) $G1 \in [A,a]$ & $G2 \in [B,b]$

$P1 = Aabb$ & $P_2 = AABb$

1st generation

$P_2 P_1 \rightarrow$ Ab ab

↓

AB AABb AaBb

Ab AAbb Aabb

4 offsprings each with probability of 1/4.

2nd generation

↓ AB Ab AB ab

AABb → AB - - - -

Ab - - - -

AB - - - -

Ab - - - -

PAGE NO.: _____
DATE: / /

Similarly,

AB Ab aB ab

AaBb →

AAbb →

aaBb →

We get a total of 64 offsprings with following probabilities.

P(AABb) = 12/64 P(AAbb) = 9/64

P(AaBb) = 25/64 P(aaBb) = 1/64

PAGE NO.: _____
DATE: / /

P(AaBb) = 4/64 P(aaBb) = 4/64

3RD Generation

From 64 offsprings we get 256 alleles for 1 side & 4 for the other.

∴ Total offsprings possible for third generation =

256 X 4

= 1024.

Probability can be obtained by crossing the alleles like we did in second and first generation.

PAGE NO.: _____
DATE: / /

b) The offspring types which can have the mutation â in second generation are →

AaBb	aaBB	AaBB	aaBb
↓	↓	↓	↓
AâBb	aâBB	AâBB	aâBb
Probabilities → $\frac{25}{64}$	$\frac{1}{64}$	$\frac{4}{64}$	$\frac{4}{64}$

In the second generation there will 34 offsprings that will be mutant. They will generate 34×4 alleles for one side & there will be 4 in the other side (AB, Ab, aB and ab)

∴ There will be 544 offsprings in third generation with mutation suppression. Probabilities can be calculated by crossing.