Memorandum: PLANT RESPONSES

SECTION A

1.1:

1.1.1 A✓✓ 1.1.2 C✓✓ 1.1.3 B✓✓ 1.1.4 A ✓✓ 1.1.5 C ✓✓
1.1.6 D✓✓ 1.1.7 A✓✓ 1.1.8 B✓✓ 1.1.9 A✓✓
(9 x 2) (18)

1.2:

1.2.1 Auxin✓
1.2.2 Abscisic acid✓
1.2.3 Sleep movements✓
1.2.4 Tropism✓
1.2.5 Apikal meristem✓
1.2.6 Positively geotropism✓
1.2.7 Phototropism✓
1.2.8 Abscisic acid✓
1.2.9 cytokinin✓
1.2.10 clinostat✓ (10 x 1)
(10)

1.3:

1.3.1 B✓
1.3.2 C✓
1.3.3 A✓
1.3.4 D✓
1.3.5 F✓ (5 x 1) (5)

1.4:

1.4.1 That auxin moves to the side ✓of the plant that is not expose to the light✓ (2)

1.4.2 The plant leaves are turned toward ✓the sun✓ for the more exposure results in more photosynthesis✓ (3)

1.4.3 More auxins will be present✓ on the side not exposed to the sun✓ /in agar block placed in side
OR
Lesser auxins will be present in the side exposed to sunlight (2)

1.4.4 Dependant variable– amount of auxins present✓
Independent variable – expose to light✓ (2)

2.1.1 The shoot reacted positively and have increased in length as higher concentrations of auxin were applied✓
The length of the root have decreased as higher concentrations of auxin were applied✓ (2)

2.1.2 Roots✓ and Shoots✓ be exposed the same consent ration of auxin✓ (3)

2.1.3 They cause **tropic movements**✓ to take place by bringing about cell elongation
Promote **primary growth**✓ by increasing the rate of **cell elongation**.
Promote **cell division**✓ – bring about new growth in plants in spring.
They cause **apical dominance** ✓ (prevent the development of lateral branches near the apex, resulting in a single longer stem. (4)

2.1.4 Auxins can cause leaf fall ✓ – the weed will not be able to Photosynthesised✓ and grow. (2)

2.1.5 10^{-1}/0.1 ✓parts per million✓ (2)

2.1.6 10-3/0.001✓ parts per million✓ (2)

2.1.7 At the tip of the root✓
And that of the shoot✓ (2)

2.1.8 Auxins in the tip of the main shoot move down to the side branches/lateral buds/axillary buds✓
Where the higher concentration of auxins will inhibit✓ and slow down the growth of these side branches✓
While the main shoot grows much more strongly✓ (4)
[21]

3.1.1 Auxins✓- They cause tropic movements to take ✓
Gibberellins ✓-Stimulate the growth✓ of shoots and leaves. ✓
Abscisic acid ✓-growth inhibitor✓, often acting antagonistically to the growth promoters✓. (9)

4.1.1- cells that received the light ✓ (1)

4.1.2 Auxins produced✓ (1)

4.1.3 Auxins is produced at the tip of the stem✓ from where it move down the dark side✓ of the stem causing cell elongation✓ on the dark side causing the coleoptile to bend towards the light source.✓ (2)
[4]

5.1.1 Auxin ✓ (1)

5.1.2 Y✓ (1)

5.1.3 auxins moved✓ to shaded side✓ OR auxins were destroyed✓ by light✓
OR Auxins moved to lower side✓ due to gravity✓
(2)

6 Plants response to environmental stimuli by moving a body part.
Most movements are tropisms✓ – movement of one part of the body in response to the stimuli.
Most tropic movements are slow and they are towards a stimuli source is a positive tropism. ✓
Away from a stimulus source is negative tropism.
Tropisms include geotropism (movement towards or away from gravity and phototropism in response of light. ✓

Auxins
Main group of plant growing substances (plant hormones) ✓

They cause tropic movements to take place by bringing about cell elongation✓
Promote primary growth by increasing the rate of cell elongation.
Promote cell division – bring about new growth in plants in spring. ✓
They cause apical dominance (prevent the development of lateral branches near the apex, resulting in a single longer stem. ✓
They cause fruits to develop from ovaries after fertilisation takes place.

Gibberellins
Gibberellins are another group of growth promoters. ✓
Stimulate the growth of shoots and leaves. ✓
Formed in young leaves around the growing tips and possibly in the roots of some plants. ✓
Like auxins, they promote cell elongation, but unlike auxins, they can stimulate rapid growth in plants with certain inherited forms of dwarfism.
Gibberellins also play a role in the germination of some seeds. ✓

Abscisic acid
Abscisic acid (ABA) is a powerful growth inhibitor, often acting antagonistically to the growth promoters. ✓
Synthesised in chloroplast throughout the shoot, but is particularly concentrated in the leaves, fruits and seeds✓.
ABA appears to promote dormancy in some seeds, and it stimulates the closing of the stomata. ✓ **(17) + (3) = [20]**

CONTENT PRESENTATION:

Criteria	**Scores**			
	0	**1**	**2**	**3**
Synthesis	Not attempted/nothing written other than question number	Attempted but with significant gaps in the logic and flow of the answer	Minor gaps in the logic and flow of the answer	Well structured, demonstrates insight and understanding of question