

1. (a) (i) (See graph at the back)

Table 1

Seedlings	B ₁	B ₂	B ₃	B ₄
Length of main root (cm)	0.0 ✓	1.4 ✓ (1.0 – 1.8)	10.2 ✓ (9.0 – 10.5)	16.2 ✓ (14.0 – 16.5)
Growth rate of root /cm/day	0.0 ✓	0.35 ✓	1.7 ✓	2.3 ✓

- (b) (ii) At day one, growth is zero; but from day one to day four, growth increases gradually; And from day four today seven, growth rapidly increased; (03 marks)
- (iii) At day one, growth was zero; because root cells had not divided; However, between day one and day four, root cells were undergoing/gradual division; leading to gradual increase in length; From day four today seven, root cells elongated; leading to rapid increase in length; as more water was being absorbed; (05 marks)

2. (a)

- (i) Specimen L: Cervical vertebra/bone; ✓
Rej. Cervical above
Cervical vertebral/ bones. (01mark)
- Reasons: - Wide neural canal; ✓
- Brunched/short transverse processes; ✓
- Narrow centrum;
- Many facets;
- Vertebruterial canals; (01mark)
- (ii) Specimen M: Lumbar born/ vertebra; ✓
Rej. Lumber alone/vertebrae/bones. (01 mark)
- Reasons: - Broad centrum; ✓
- Narrow neural canal; ✓
- Long transverse processes;
- Broad neural canal;

(b)

Specimen L	Specimen M
Wide neural canal ;	Narrow neural canal
Short transverse processes ;	Long transverse process
Has vertebraterial canals ;	Has no vertebraterial canals
Many facets ;	Few facets
Has narrow centrum ;	Broad centrum

(c)

(i) Specimen L

(02 marks)

- Has many /brunched transverse processes for increasing surface area for muscle attachment;
- Has vertebrarterial canals for passage of vertebral nerves and blood vessels;
- Has wide neural canal for passage of the spinal cord.
- His facets/zygapophyses for articulation with other bones/ vertebra to allow easy movement;
- Has rigid naval arch for protection of spinal cord;

(ii) Specimen M

- Has long developed transverse processes for increasing the surface area for muscle attachment;
- Has thick / broad centrum for supporting the upper body weight;
- Has broad neural spine for providing large surface area for attachment of abdominal muscles;
- Has rigid neural arch for protection of spinal cord;
- Has facets for articulation with adjacent vertebrae; allowing easy movement.

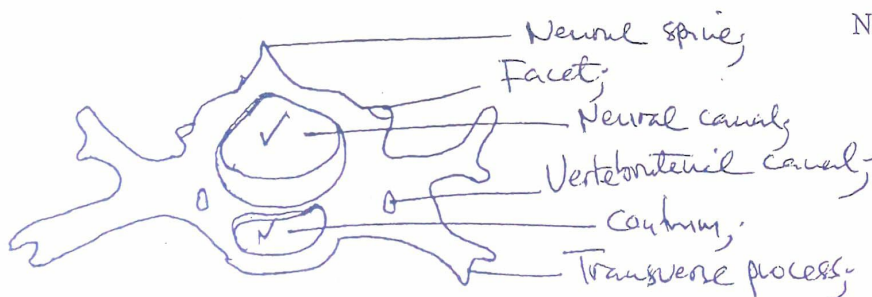
(d)

(02 marks)

- Support, because they have rigid, centrum.
- Movement, because of articular surfaces;
- Protection, hard neural arch protects spinal cord.

(02 marks)

(e) Drawing showing the anterior view of Specimen L;
X1 – X4;



Drawing marks

Neural canal;

Centrum,

M – 01

T – 01

N – 0½

D – 02

L – 02

A – 0½

07

20 marks

3.

(a)

(i) Flower; accept Reproductive organ.

(01 mark)

Reasons: Corolla; Calyx; Anthers; Stigma;

(01 mark)

Any 02 marks

(b)

- Hairy sepals; ✓
- Dull coloured; ✓
- Fused at bottom; and free/split at upper part into five lobes;

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(To be fastened together with other answers to paper)

UCE

Candidate's Name

Signature

Subject Name Paper code/.....

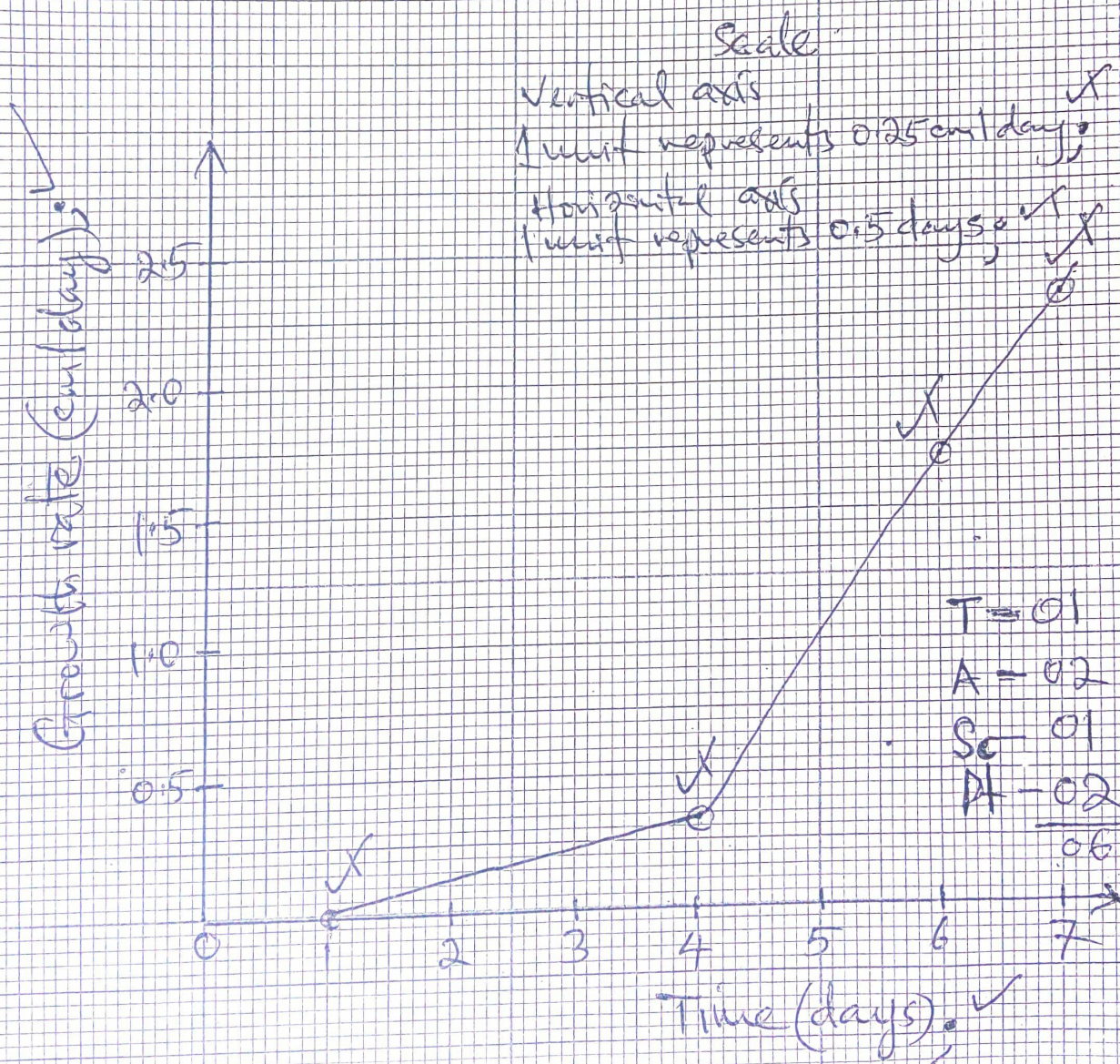
Random No.

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A graph showing the variation of growth rate and time of seedlings;



(any 03 marks)

- (c) (i) Mode: Self-pollination; (01 mark)
Feature: Anthers above the stigma; (01 mark)
(d) (i) Type of ovary: Superior ovary; (01 mark)
Reason: Floral parts emerge below ovary; (01 mark)

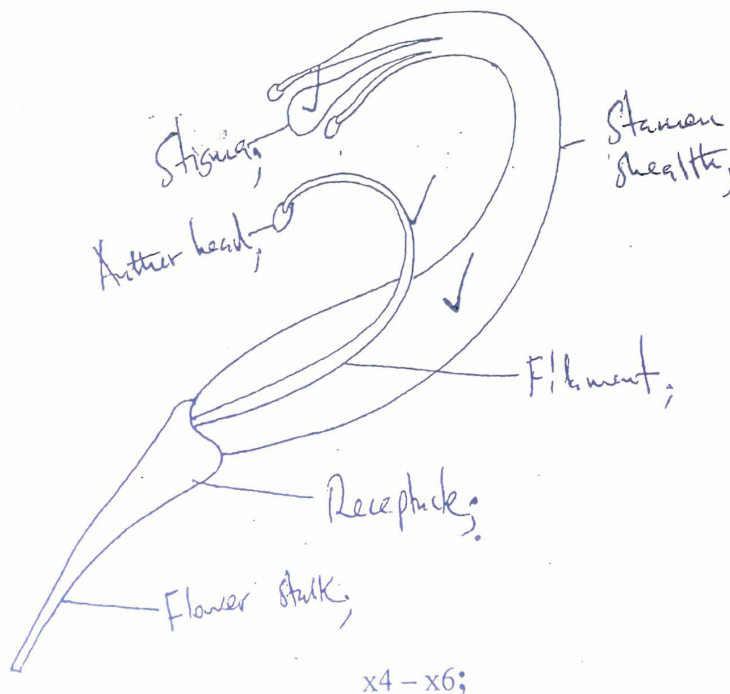
(e)

Specimen S

Specimen T

Has three types of petals (i.e standard, wing & keel)	;	Has one type of petals
Anthers NOT enclosed by petals.	;	Anthers enclosed by petals.
Has no epicalyx	;	Has epicalyx
Fused sepals	;	Free sepals
Hairy sepals	;	Sepals not hairy
Same type of filaments	;	Different types of stamens
Has floral/ pollen/nectar guides	;	Has no floral/nectar/pollen guides

- (f) Draw of remaining part of specimen T.
When petals and sepals have been removed;



Drawing

- Stigma ✓
- Free filament ✓
- Stamen sheath

END

M - 01
T - 01
N - 0¹/₂
D - 02
L - 02
A - 0¹/₂
07
20 marks