

7. **Insect pollinated flowers**

(Entomophilous)

Are scented to attract insects; Have sticky stigma for pollen grains to stick on; Are brightly coloured to attract insects; Presence of nectar to attract insects; Have nectar guides to guide the insect to the nectaries; Stigma/anthers located inside the flower tubular/funnel shaped corolla to increase chances of contact by insects; sticky/spiny/spiky pollen grains which stick on the body of insect; and on stigma; large/conspicuous flowers easily seen by insects/ attract insects; Anthers firmly attached to filament for insects to brush against them; landing platform to ensure contact with anther and stigma; Mimicry to attract (male) insects;

(12 marks)

**Wind pollinated flowers**

(Anemophilous)

Anthers/stigma hang outside the flowers to increase chances of pollination; the style/filament is long to expose stigma/anthers; stigma is hairy/feathery/branched to increase surface area over which pollen grains land/trap pollen grains; pollen grains are smooth/dry/light/small to be easily carried by wind; large amount of pollen grains to increase chances of pollination; Anthers loosely attached to filaments to enable them sway to release pollen; Pollen grains may have structures which contain air to increase buoyancy; Flowers have long stalks holding them out in the wind;

(8 marks)

8. **Regulation of blood glucose;**

The (normal) amount of glucose in the blood is about 90 mg/100 cm<sup>3</sup>; increase in blood sugar level is detected by cells of the pancreas; which secrete insulin; insulin stimulates the liver; to convert excess glucose to glycogen; further excess glucose is converted to fats (until the normal blood sugar level is attained); Excess glucose is oxidized to (Carbon dioxide, water and energy)/excess glucose used in respiration;

Decrease in blood sugar level below the normal level is detected by the pancreas; which secrete glucagon; which stimulates the liver; to convert glycogen to glucose (until the normal sugar level is attained); Fats/amino acids are converted to glucose, Reduced oxidation of glucose ;

**Deamination**

Excess amino acids are deaminated/removal of the amino group; the amino group is converted into ammonia. Ammonia combines with carbon (IV) oxide to form urea; urea is excreted in urine through the kidney;

**Detoxification**

Poisonous substances are converted to less harmful compounds;

**Maintenance of body temperature/Thermoregulation;**

Heat is generated (in the liver) by chemical activities; The heat is distributed;

(20 marks)

30.4.3 **Biology Paper 3 (231/3)**

1. (a) **Identify of bone**

**Where found in mammalian body**

K	Humerus;	Fore limb/upper fore limb/arm/upper arm/foreleg/front leg;
L	Scapula/shoulder Blade;	Shoulder/pectoral(region);
M	Femur/Thigh bone;	Hind limb/upper hind limb/leg/hind leg/upper hind leg/thigh;
N	Tibia/shin bone;	Hind limb//lower hind limb/hind leg/leg;
P	Ulna-Radius;	Fore limb/lower forelimb/arm/lower arm/forearm/ lower foreleg/lower front leg;

(5 marks)

- (b) 1 Condyles/lateral and medial condyles;  
2 Glenoid cavity;  
3 Head;  
4 Patella groove;  
5 Ulna/shaft of ulna/shaft;

(5 marks)

(c) **Anterior**

- (i) Scapula/shoulder blade;  
(ii) Ball and socket;

**Posterior**

- (i) Radius and ulna;  
(ii) Hinge;

(4 marks)

- (d) (Large surface area) for muscle attachment/tendons/ligaments;  
Limit the movement of radius and ulna/  
limits the movement at the joint (acts as a stopper); prevents overstretching  
of the fore arm;

(1 mark)

2.

P. Reducing Sugar To (1 ml of) P add (1 ml of) Benedict's Solution/ Place in hot water bath/ heat/boil; Green to yellow and eventually to orange/ brown colour (precipitate); Reducing sugar present;

Q. Reducing Sugar To (1 ml of) Q add (1 ml) of Benedict's Solution place in hot water bath/ heat/boil; No colour change/ Blue colour (of Benedict's Solution) persists; Reducing Sugar absent;

Non-reducing Sugar To (1 ml of) Q add three drops of dilute hydrochloric acid/Boil (for 5 minutes) Cool, Add sodium hydrogencarbonate (till fizzing stops) Add (1 ml) Benedict's Solution: place in hot water bath/heat/; Green to yellow and eventually to orange/ brown (precipitate) colour; Non-reducing sugar present/ non reducing sugar has been hydrolysed to reducing sugar/ reducing sugar present after hydrolysis;

NOTE:

- (a) Award reducing sugar (food substance) once  
(i) Award Benedict's test for reducing sugar once for either P or Q.  
(ii) Award observation for reducing sugar both for P and Q  
(iv) If P is tested for non-reducing sugar, indicate seen

(12 marks)

3. (a) First three labeled parts on one or more seedlings.

(3 marks)

- (b) (i) Epigeal:

(1 mark)

- (ii) Cotyledons above the ground/soil;

(1 mark)

(c) In W - Grown in the dark/absence of light/insufficient light; (1 mark)

In X - Grown in the light; (1 mark)

(d) (i) Etiolation; (1 mark)

(ii) (Faster growth) to reach light/obtain/get  
Search for light; (1 mark)

(e)

**Seedling in X**

**Seedling in W**

Short internodes/stem

Tall/long internodes/stem;

Thick(er)stem/seedling/plant

Thin(ner)stem/plant/seedling;

Big/large leaves

Small leaves;

Green leaves/stems/cotyledons/ Yellow/light green leaves/stems/cotyledons/

Seedlings

seedlings/Pale green/white;

The first 3 (3 marks)

(f) Seedlings subjected to unidirectional/unilateral source of light/causes auxins to  
Migrate/diffuse to the dark side of the shoot; Higher conc. of auxin on dark side;  
Causing faster growth on that side/cell elongation/cell enlargement than on the  
lit side (hence the bending); (2 marks)