

26. Inner membrane is highly folded/have cristae to provide a large surface area; for attachment of enzymes; (2 marks)
27. Baking; brewing; processing of dairy products; e.g Cheese, yoghurt, sour milk, production of organic acid; e.g oxalic, citric, vinegar, butyric acid; (2 marks)
28. (a) **Arteries**
Thick muscular walls
No valves
Narrow lumen
- Veins**
Thin muscular walls;
Valves present;
Wide lumen;
- (b) Arteriosclerosis;
29. (When humidity is high the air around the leaf gets saturated with water vapour hence) less space for water vapour from the leaf to occupy/low saturation deficit/low diffusion gradient;

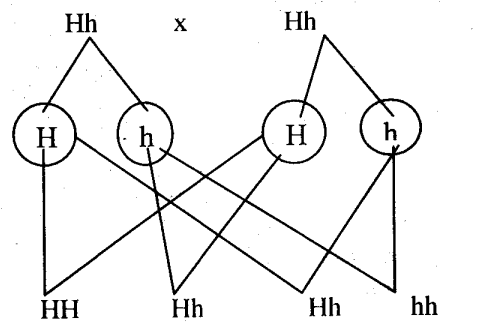
30.4.2 Biology Paper 2 (231/2)

- 1.0 (a) (i) Parents genotype HH; hh; (2 marks)
(ii) Hh; (1 mark)

- (b) F₁ selfed
(Parental genotypes)

(Gametes)

(Fertilization)

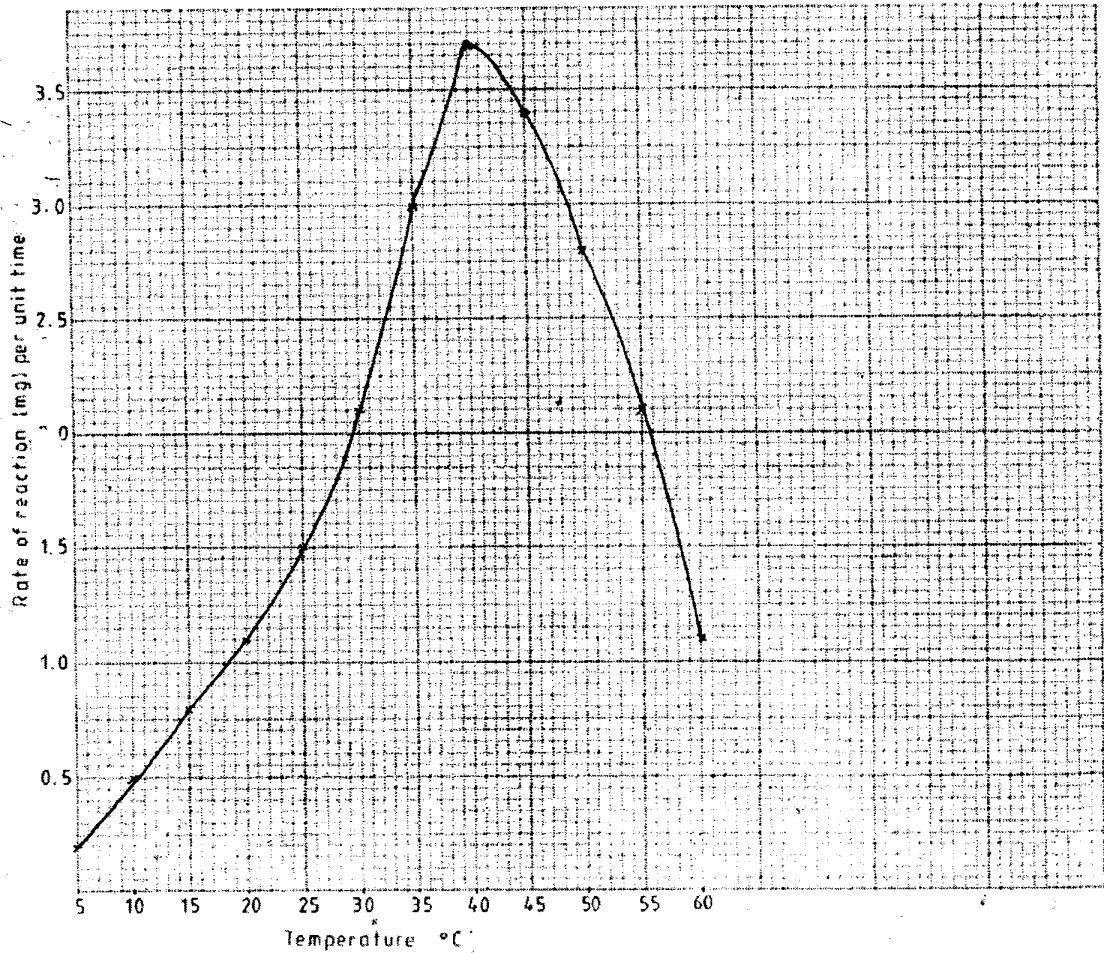


(3 purple)
(1 white)

- (c) The gene for purple colour is dominant while the gene for white colour is recessive; (4 marks)
2. (a) Herbivorous; (1 mark)
- (b) (i) Tooth J is narrow/sharp/chisel like while tooth L is broad/ridged/has cusps; J has one root while L has 2/3/4 roots ; (1 mark)
(ii) Tooth J is used for cutting/biting while tooth L is used for grinding/crushing/chewing; (1 mark)
- (c) (i) Diastema; (1 mark)
(ii) For manipulation of food by the tongue; (1 mark)
- (d) Calcium phosphate; (1 mark)

3. (a) (i) Using a living organism to regulate/control/reduce/check the population of another organism;
- (ii) Beetles introduced to feed on water hyacinth;
Fish introduced to feed on mosquito larvae;
- (b) (i) Enrichment of water bodies with nitrates/phosphates due to discharge of sewage/run off water containing fertilizers; leading to rapid growth of surface plants/aquatic plants/phytoplanktons; (any one) (1 mark)
(3 marks)
- (ii) (Proliferation of plants) block light from reaching plants underneath; Which will not photosynthesise; The plants die and decompose leading to depletion of oxygen; (as a result) animals also die/suffocate; (3 marks)
- (c) Nitrogen dioxide/sulphur dioxide; (1 mark)
Acc. Nitrogen (IV) oxide & sulphur (IV) oxide
4. (a) (i) Circular muscles of the iris contract while radial muscle relax; reducing the size of the pupil; hence, less light enters the eye; (3 marks)
(ii) The retina is protected from damage; (1 mark)
- (b) Choroid; has a dense network of bold capillaries; from which nutrients diffuse out to supply the eye; (3 marks)
- (c) The blind spot has no photoreceptors; hence no impulses are generated to be transmitted to the brain; (for interpretation) (2 marks)
5. (a) Root hairs/roots absorb water by osmosis; cells of the plant become turgid; leaves become firm and spread out/plants become firm/upright; (3 marks)
- (b) (i) Collenchyma; (2 marks)
(ii) Xylema/Tracheids/vessels/sclerenchyma;
- (c) Steering; Balancing; Braking; Changing direction; Prevent fish from pitching; Any 3 (3 marks)

SECTION B



6. (a) Graph: Scale; Axes: plotting points; curve; (6 marks)
- (b) 33°C; and 52°C; ($\pm 0.5^\circ\text{C}$) (2 marks)
- (c) (i) As temperature increases rate of reaction increases/more products are formed (per unit time); because enzymes become more active; (2 marks)
- (ii) As temperature increases rate of reaction decreases/less products are formed (per unit time); because enzymes become denatured; by high temperature; (3 marks)
- (d) Increase in enzyme concentration; increase in substrate concentration;(2 marks)
- (e) (i) Pepsin; Rennin /chymosin; (1 mark)
- (ii) Wall of stomach/gastric glands; produce Hydrochloric acid;
- (f) (i) Duodenum;
- (ii) Bile juice/salts;

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 cm³; 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;