

MEMO**SECTION A****QUESTION 1**

1.1

1.1.1 C √√

1.1.2 D √√

1.1.3 B √√

1.1.4 C √√

1.1.5 D √√

1.1.6 B √√

1.1.7 C √√

(7 x 2) (14)

1.2

1.2.1 Hydathodes √

1.2.2 Hibernation √

1.2.3 Nervous system √

1.2.4 Hormones √

1.2.5 Renal medulla √

1.2.6 Filtration/ultrafiltration √

1.2.7 Retina √

1.2.8 Radial muscles √

(8)

1.3

1.3.1 G √√

1.3.2 D √√

1.3.3 E √√

1.3.4 B √√

1.3.5 C √√

(5 x 2) (10)

1.4

- 1.4.1 The sugar solution ✓ (1)
- 1.4.2 Pure water ✓ (1)
- 1.4.3 - Plastic sheet is used to represent cell membrane ✓
 - but plastic is impermeable ✓
 - not differentially permeable ✓
 - a dialysis tube/ egg membrane should be used instead ✓ any 3 (3)
- 1.4.4 -The sugar solution in the tube would increase in volume ✓
 - while the water in the beaker would decrease in volume ✓ (2)
- 1.4.5 - Possesses large surface area ✓ in contact with soil water
 - Large vacuole ✓ with a lower water potential in the cell sap
 - Cell wall is thin /cell wall porous ✓
 - Cell wall permeable / without a cuticle ✓ (mark first two) (2)
(9)

1.5

- 1.5.1 A Bowman's capsule ✓
 B descending limb of loop of Henlé/Loop of Henlé ✓
 C distal convoluted tubule ✓
 D collecting duct ✓ (4)
- 1.5.2 Sample A has no proteins ✓ ✓
or
 Blood plasma has proteins ✓ ✓ (2)
- 1.5.3 In a person with diabetes sample B would have glucose ✓,
 which is missing in the normal filtrate (1)
- 1.5.4 Due to tubular secretion of ions/ pH regulation ✓ ✓ (2)
(9)

Total Question 1: 50

TOTAL SECTION A: 50

SECTION B**QUESTION 2**

2.1

- 2.1.1 A nucleus ✓
 B epidermis ✓
 C cortex ✓ (3)
- 2.1.2 Pits ✓ (1)
- 2.1.3 - Transpiration pull ✓
 - Capillarity ✓
 pressure ✓ (3) - Root
- 2.1.4 - Transpiration ✓
 - lowers water potential in the chamber ✓
 - creates water potential gradient ✓
 - forcing water to move by osmosis ✓
 - and diffusion ✓ in the direction of Y. (5)
- (12)**

2.2

- 2.2.1 C ✓ (1)
- 2.2.2 A ✓ (1)
- 2.2.3 (i) E ✓ (1)
 (ii) - No stomata on the upper surface ✓
 - fewest on the lower surface ✓ (2)
- 2.2.4 (i) - Plant A ✓ (1)
 (ii) - Smallest average size/smaller perimeter of pore ✓ (more
 vapour leaves nearer the perimeter of the stomatal pore) (2)
- 2.2.5 - Sunken stomata ✓
 - Few stomata ✓
 - Stomata covered with hairs ✓
 - Stomata mainly on the lower
 surface of the leaf ✓ (mark first two) (2)
(10)

2.3

- 2.3.1 X ✓ (1)
- 2.3.2 Wind increases the rate of transpiration ✓
 hence a greater decrease in the mass of the leaves after
 15 minutes ✓ (2)
(3)

Total Question 2: 25

QUESTION 3**3.1**

- 3.1.1 C: renal cortex ✓
 D: renal pyramid/ducts of Bellini ✓
 F: renal pelvis ✓ (3)
- 3.1.2 (i) B: Protection ✓ (1)
 (ii) E: Transports urine from the kidney to the bladder ✓ (1)
- 3.1.3 C/ ✓ (1)
- 3.1.4 - Large surface area/large number of blood capillaries ✓
 - Thin-walled ✓
 - Pores in capillaries ✓ (3)
- 3.1.5 Adrenalin ✓ (1)
- 3.1.6 – Emergencies / crisis / frightened / angered /dangerous situations ✓ (1)
- 3.1.7 - Blood vessels of the skin constrict ✓
 - Heartbeat increases ✓
 - Blood pressure increases ✓
 - Blood supply to the muscles increases ✓
 - Reduced peripheral blood circulation . ✓
 - More glycogen converted into glucose ✓
 - Activities of the stomach and intestine inhibited ✓
 - Rate and depth of breathing increases ✓
 - Metabolic rate of body cells increases ✓
 - Skeletal muscle tone increases ✓ (mark first four) (4)
- 3.1.8 - Excrete waste products ✓
 - Mineral salts regulation ✓
 - Osmoregulation ✓ (mark first 2) (2)
 (17)
- 3.2**
- 3.2.1 Hypohysis ✓ (1)
- 3.2.2 Urine output increased ✓ (1)
- 3.2.3 100th ✓ minute ✓ /120th ✓ minute ✓ (2)

- 3.2.4 (i) Low ✓ (1)
 (ii) - Collecting duct less permeable ✓
 - less water reabsorbed into the blood ✓
 - hence more water in urine/ high urine output ✓ (3)
(8)

Total Question 3: 25

QUESTION 4

4.1

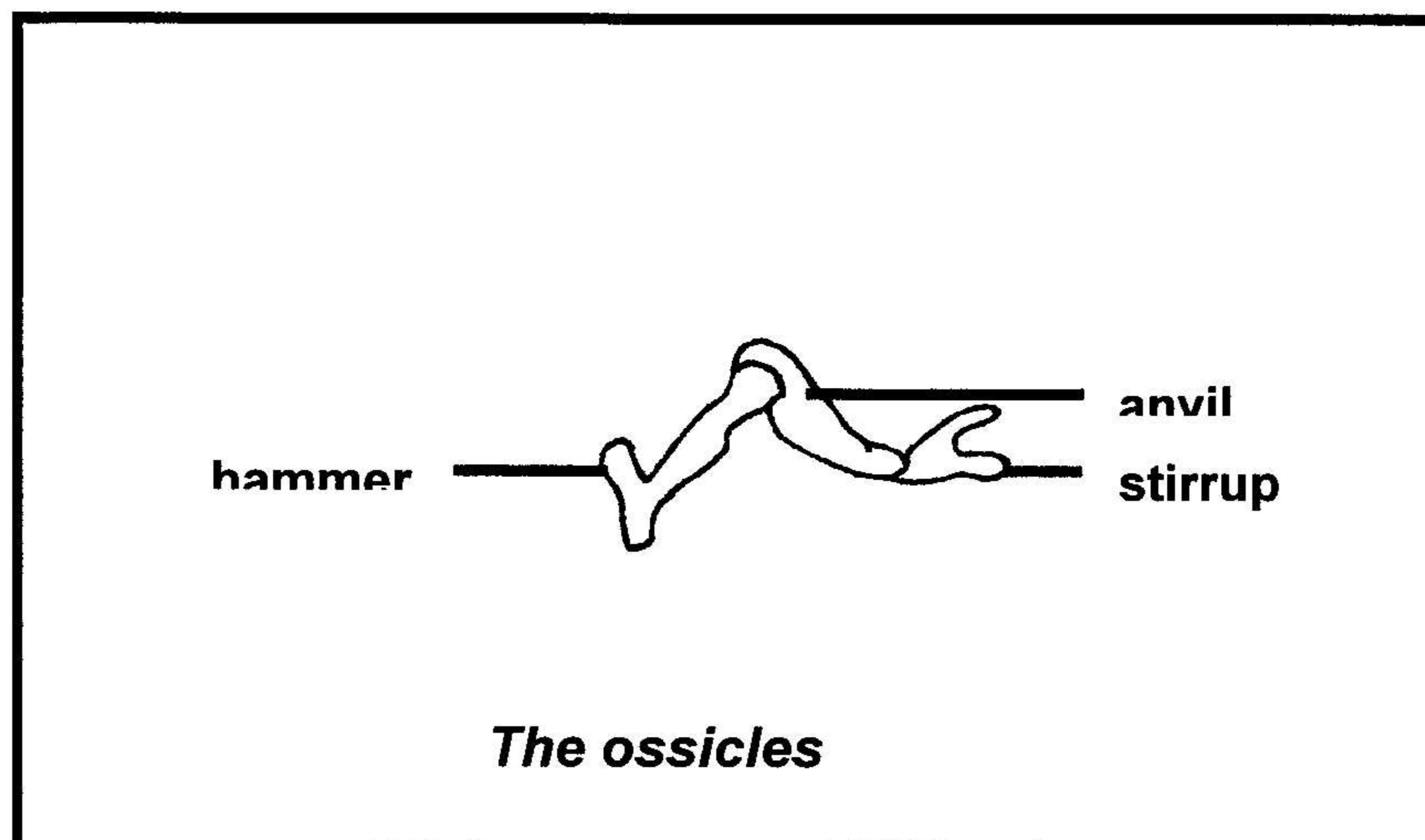
- 4.1.1 (i) A ✓ - Aqueous humour ✓ (2)
 (ii) F ✓ - Yellow spot ✓ (2)
 (iii) B ✓ - Iris ✓ (2)
 (iv) E ✓ - Choroid ✓ (2)
(8)

4.2

- ciliary muscles relax ✓
 - ciliary body goes back to normal position/move backwards ✓
 - suspensory ligaments become taut ✓
 - tension on the lens increases ✓
 - the lens becomes flattened (less convex) ✓
 - the refractive power of the lens is decreased ✓
 - a clear image of the distant object is formed on the retina ✓
- any 5 (5) **(5)**

4.3

4.3.1



Quality of line	1
Correct proportions	1
Caption	1
Labels	3

(6)

- 4.3.2 - Sneezing/coughing causes sudden withdrawal of air from the middle ear ✓
 - which leaves via eustachian tube ✓
 - causing rod to be dislodged ✓ (3)
- 4.3.3 - pressure on the outside of tympanic membrane will increase as he falls to the ground ✓
 - air needs to be taken via the Eustachian tube to equalise pressure on the inside of the tympanic membrane ✓
 - this cannot be done since Eustachian tube is blocked ✓
 - tympanic membrane may burst. ✓ any 3 (3)
(12)

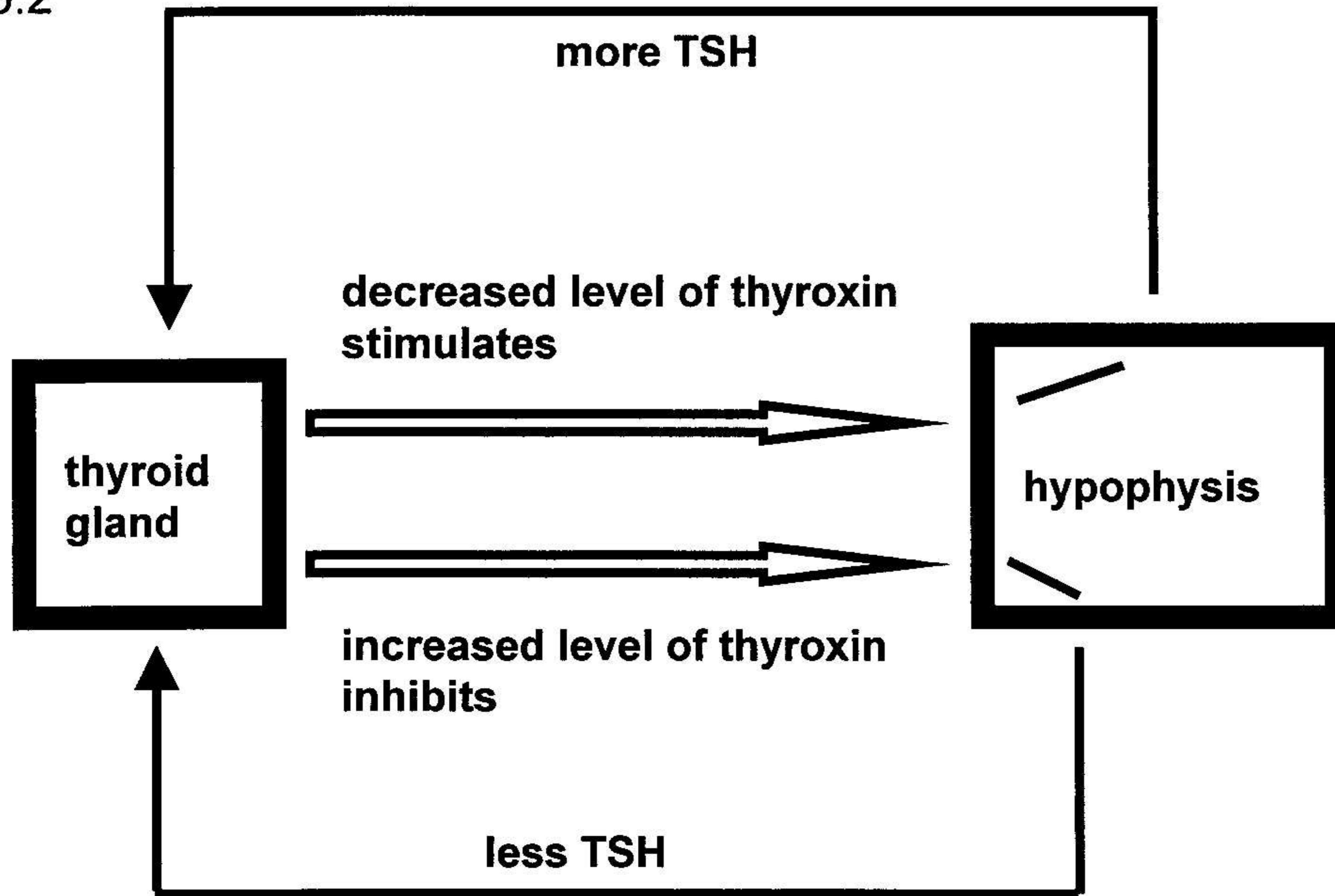
Total Question 4: 25

QUESTION 5

5.1

- 5.1.1 A: Connector neuron/ interneuron ✓
 B: Sensory (afferent) neuron ✓ (2)
- 5.1.2 E ✓ knee / tendon/receptor ✓ (2)
- 5.1.3 - Impulses from reflex centres ✓
 - will not reach the effector (muscle) ✓
or
 - feel ✓
 - but not respond ✓ (2)
- 5.1.4 - Blinking of eyes ✓
 - yawning ✓
 - sneezing ✓
 - coughing ✓
 - peristalsis ✓
 - dilation and constriction of pupil ✓
 - heartbeat ✓ **(mark first two) (2)**
- 5.1.5 - Protective ✓ (1)
(9)

5.2



Feedback mechanism controlling thyroxin production

Caption ✓

Correct direction of the arrows ✓✓

Names of the two glands ✓✓

Any other two correct labels ✓✓

(7)

5.3

5.3.1 (i) Cold conditions ✓

(1)

- (ii) - The dog will lie down and then curl up ✓
- only long hair on the back, side and neck exposed to the cold ✓
- Short hairs on the head, neck, inside of the legs and anterior belly are covered ✓
- reducing surface area exposed to cold air ✓
- this reduces heat loss ✓

any 4 (4)

5.3.2 IV ✓

(1)

5.3.3 Dilated blood capillaries ✓
greater heat loss. ✓

(2)

will allow for

5.3.4 Panting ✓

(1)

(9)

**Total Question 5: 25
TOTAL SECTION B: 100
GRAND TOTAL: 150**