

GRADE 12

LIFE SCIENCES P1

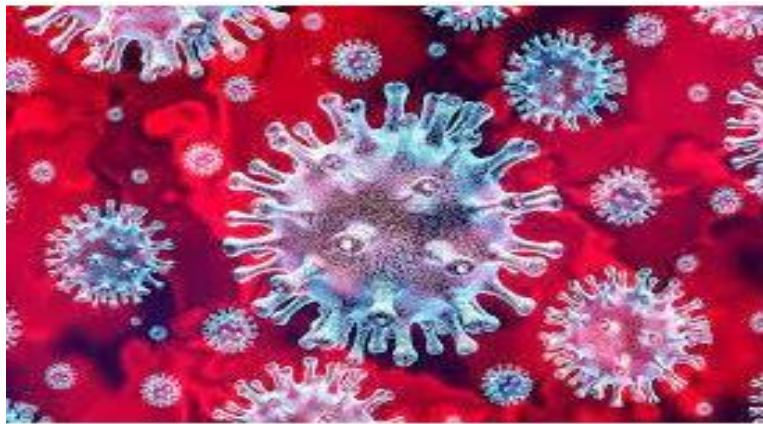
FINAL EXAM MEMO



LAST PUSH

Mopani West District

Rakwadu 2 Circuit



LIFE SCIENCES GRADE 12 P1 MARKING GUIDELINE FINAL PUSH

BIOLOGICAL TERM

1.2	1.2.1	Round window✓ / Fenestra rotunda		
	1.2.2	Acrosome✓		
	1.2.3	Fallopian tube✓		
	1.2.4	Astigmatism✓		
	1.2.5	Optic✓ nerve		
	1.2.6	Alzheimer's✓ disease		
	1.2.7	Endometrium✓		
	1.2.8	Blastula✓/blastocyst		
	1.2.9	Puberty✓		
	1.2.10	Binocular✓ /stereoscopic vision	(10 x 1)	(10)

NW SEPT 24

1.2	1.2.1	Accommodation✓		
	1.2.2	Multiple sclerosis✓		
	1.2.3	Homeostasis✓		
	1.2.4	Endocrine✓ gland		
	1.2.5	Osmoregulation✓		
	1.2.6	Prolactin✓		
	1.2.7	Vasoconstriction✓		(7)

MP SEPT 24

1.2	1.2.1	Umbilical artery ✓		
	1.2.2	Vagina✓		
	1.2.3	Amniotic fluid ✓		
	1.2.4	Peripheral✓ nervous system		
	1.2.5	Abscisic acid✓		
	1.2.6	Anti-diuretic hormone ✓/ ADH		
	1.2.7	Sensory✓ neuron		
	1.2.8	Organ of Corti ✓		
	1.2.9	Homeostasis✓		
	1.2.10	Cataracts ✓	10 x 1	(10)

KZN SEPT 24

- | | | | | |
|-----|-------|----------------|--|-----|
| 1.2 | 1.2.1 | Phototropism ✓ | | |
| | 1.2.2 | Placenta ✓ | | |
| | 1.2.3 | Urethra ✓ | | |
| | 1.2.4 | Vivipary ✓ | | |
| | 1.2.5 | Amniotic ✓ egg | | |
| | 1.2.6 | Herbicides ✓ | | |
| | 1.2.7 | Maculae ✓ | | |
| | 1.2.8 | Acrosome ✓ | | (8) |

EC SEPT 24

- | | | | | |
|-----|-------|----------------------------|---------|-----|
| 1.2 | 1.2.1 | Receptor ✓ | | |
| | 1.2.2 | Chorion ✓ | | |
| | 1.2.3 | Effector ✓ | | |
| | 1.2.4 | Vasodilation ✓ | | |
| | 1.2.5 | Concave ✓ | | |
| | 1.2.6 | Mammary ✓ | | |
| | 1.2.7 | Retina ✓ | | |
| | 1.2.8 | Hypothalamus ✓ | | |
| | 1.2.9 | Synapse ✓ / synaptic cleft | (9 x 1) | (9) |

NSC NOV 23

- | | | | | |
|-----|-------|-----------------------------|---------|-----|
| 1.2 | 1.2.1 | Vivipary ✓ | | |
| | 1.2.2 | Urethra ✓ | | |
| | 1.2.3 | Peripheral ✓ nervous system | | |
| | 1.2.4 | Glycogen ✓ | | |
| | 1.2.5 | Placenta ✓ | | |
| | 1.2.6 | Choroid ✓ | | |
| | 1.2.7 | Myelin sheath ✓ | | |
| | 1.2.8 | Epididymis ✓ | (8 x 1) | (8) |

NSC NOV 22

1.2	1.2.1	Cranium✓		
	1.2.2	Thermoregulation✓		
	1.2.3	Cataract✓		
	1.2.4	Umbilical artery✓		
	1.2.5	Hypothalamus✓		
	1.2.6	Peripheral✓ nervous system		
	1.2.7	Chorionic villi✓		
	1.2.8	Aldosterone✓		
	1.2.9	Amniotic✓ fluid		
	1.2.10	Fovea centralis✓/ yellow spot	(10 x 1)	(10)

MAY/JUNE 23

1.2	1.2.1	Homeostasis✓		
	1.2.2	Mitochondria✓		
	1.2.3	Alzheimer's✓ disease /dementia		
	1.2.4	Choroid✓		
	1.2.5	Precocial✓ development		
	1.2.6	Islets of Langerhans✓		
	1.2.7	Acrosome✓		
	1.2.8	Umbilical artery✓	(8 x 1)	(8)

EC JUNE 23

1.2	1.2.1	Incomplete ✓ dominance		
	1.2.2	Non-disjunction ✓		
	1.2.3	Karyotype ✓		
	1.2.4	Haemophilia ✓		
	1.2.5	Meninges ✓		
	1.2.6	Ovovivipary ✓		
	1.2.7	Parental care ✓	(7 x 1)	(7)

MATCH COLUMN

MAY/JUNE 22

1.3	1.3.1	A only✓✓		
	1.3.2	B only✓✓		
	1.3.3	B only✓✓	(3 x 2)	(6)

NW SEPT 24

1.3	1.3.1	B only✓✓		
	1.3.2	B only✓✓		
	1.3.3	None✓✓	(3 x 2)	(6)

MP SEPT 24

1.3	1.3.1	None ✓✓		
	1.3.2	A only ✓✓		
	1.3.3	B only ✓✓		
	1.3.4	Both A and B ✓✓	(4 x 2)	(8)

KZN SEPT 24

1.3	1.3.1	B only ✓✓		
	1.3.2	A only ✓✓		
	1.3.3	B only ✓✓	(3 x 2)	(6)

EC SEPT 24

1.3	1.3.1	A only ✓✓		
	1.3.2	None ✓✓		
	1.3.3	Both A and B ✓✓		
	1.3.4	A only ✓✓	(4 x 2)	(8)

NSC NOV 23

1.3	1.3.1	B only✓✓		
	1.3.2	Both A and B✓✓		
	1.3.3	A only✓✓	(3 x 2)	(6)

NSC NOV 22

1.3	1.3.1	B only✓✓		
	1.3.2	A only✓✓		
	1.3.3	Both A and B✓✓	(3 x 2)	(6)

MAY/JUNE 23

1.3	1.3.1	Both A and B✓✓		
	1.3.2	None✓✓		
	1.3.3	B only✓✓	(3 x 2)	(6)

EC JUNE 23

- | | | | |
|-----|-------|-----------------|-------------|
| 1.3 | 1.3.1 | Both A and B ✓✓ | |
| | 1.3.2 | A only ✓✓ | |
| | 1.3.3 | None ✓✓ | (3 x 2) (6) |

THE EYE

MAY/JUNE 22

- | | | | |
|-----|-------|---|-------------|
| 1.4 | 1.4.1 | (a) Accommodation✓ | (1) |
| | | (b) Pupillary mechanism✓/Pupillary reflex | (1) |
| | 1.4.2 | (a) B✓ and D✓
(Mark first TWO only) | (2) |
| | | (b) A✓ and B✓
(Mark first TWO only) | (2) |
| | 1.4.3 | (a) C✓ and D✓
(Mark first TWO only) | (2) |
| | | (b) A✓ and C✓
(Mark first TWO only) | (2) |
| | | | (10) |

NSC NOV 22

- | | | | |
|-------|-----|-------------------|------------|
| 1.4.1 | (a) | B✓ - Iris✓ | (2) |
| | (b) | A✓ - Sclera✓ | (2) |
| 1.4.2 | (a) | 2✓ | (1) |
| | (b) | 3✓ | (1) |
| 1.4.3 | (a) | Circular✓ muscles | (1) |
| | (b) | Circular✓ muscles | (1) |
| | | | (8) |

MP SEPT 24

- 3.2 3.2.1 **C✓** - Yellow spot✓/ fovea centralis (2)
- 3.2.2 Light has to pass through **D**, the cornea✓, **E** the pupil✓ and **B**, the lens✓ before reaching **A**, the retina.
(The learner must give the name and letter for each structure to get the mark.) (3)
- 3.2.3 **Pupillary mechanism✓***
- Circular muscle✓ of the iris relax✓
 - radial muscle✓ of the iris contract✓
 - Pupil size increases✓/ dilate
 - More light enters the eye✓
- *1 compulsory mark + Any 6 (7)

NW SEPT 24

QUESTION 2

- 2.1
- 2.1.1 (a) **A - Iris✓**
Controls the size of the pupil✓/amount of light entering the eye (2)
DO NOT ACCEPT: gives the eye colour.
- (b) **E - Optic nerve✓**
Carries impulses to the cerebrum✓ (2)
- 2.1.2 **Prescription lenses✓(glasses or contact lenses)/laser Surgery (treatment) /cornea transplant** (1)
- 2.1.3 FLOWS DIAGRAM SHOULD NOT BE CREDITED.**
- The circular muscles (of the iris) contract✓
 - The radial muscles relax✓
 - The pupil constricts✓
 - The amount of light entering the eye is decreased✓/less light enters the eye
- (4)
(9)

EC SEPT 24

- 2.3 2.3.1 (a) Vitreous humour ✓* / chamber
 - Contains nutrients for the inner eye ✓
 - Maintains eyeball shape ✓
 - Transparent to allow for transmission of light to retina ✓
 (✓* compulsory + ✓ function) (2)
- (b) Cornea ✓*
 - Refraction of light ✓
 - Protection ✓ of the eye
 - Allows light to enter the eye ✓
 (✓* compulsory + ✓ function) (2)
- 2.3.2 - Light entering the eye will not be effectively regulated ✓ /controlled
 - Too much light / too little could enter the eye ✓
 - Distorting images that fall on the retina ✓ /causing blurred vision (3)
- 2.3.3 - Ciliary muscles contract ✓
 - Suspensory ligaments slacken ✓
 - Tension on the lens decreases ✓
 - Lens becomes more convex ✓ / bulged
 - Refractive power of lens will increase ✓/ light rays are refracted more
 (a clear image is focused on the retina) (5)

MAY/JUNE 23

- 3.5 3.5.1 Iris✓ (1)
- 3.5.2 - Helps to maintain the shape of the eye✓
 - Plays a role in refraction of light✓
 - Allows the transmission of light✓
 - Prevents desiccation✓ of structures in the eye
 - Holds the retina in position✓
 - Nourishment✓ of the eye
 - Prevents mechanical injury✓ in the eye (2)
 Any
 (Mark first TWO only)
- 3.5.3 - Area B contains (a high concentration of) photoreceptors✓/
 cones (2)
 - Area C contains no photoreceptors✓/ no rods & cones
- 3.5.4 Astigmatism✓ (1)
- 3.5.5 - Because the lens will become cloudy✓/opaque
 - no/less light will enter the eye✓ (3)
 - causing no sight ✓/weak sight

3.5.6

- The ciliary muscle contracts✓
- The ciliary body moves closer to the lens✓
- The suspensory ligaments slacken✓
- Tension on the lens decreases✓
- The lens becomes more convex✓/rounded
- Light rays are refracted more✓
- To focus the light on the retina✓

Any (6)
(15)

REFLEX ARC & NEURONS

MAY/JUNE 22

- | | | | |
|-----|-------|--------------------|------------|
| 1.5 | 1.5.1 | (a) Myelin sheath✓ | (1) |
| | | (b) Axon✓ | (1) |
| | 1.5.2 | (a) A✓ | (1) |
| | | (b) C✓ | (1) |
| | 1.5.3 | D✓ Synapse✓ | (2) |
| | | | (6) |

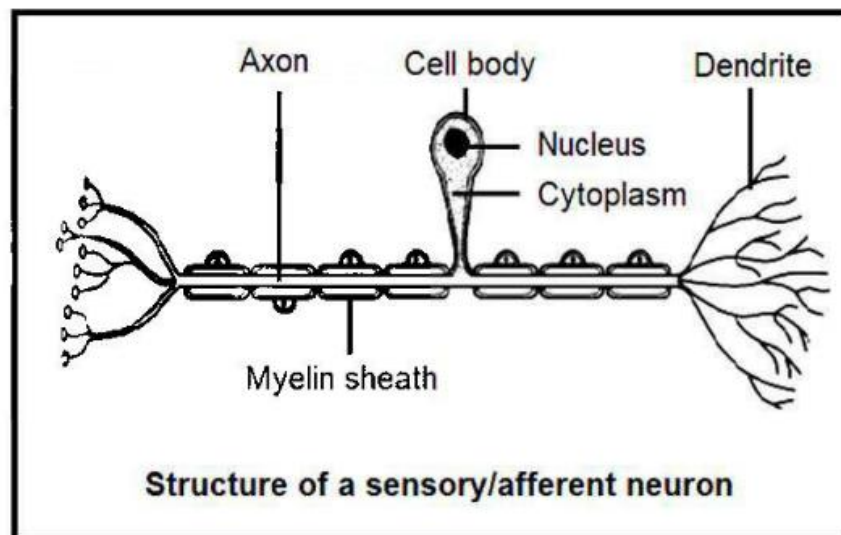
MAY/JUNE 23

- | | | | |
|-----|-------|--------------------------------------|------------|
| 1.4 | 1.4.1 | (a) Peripheral✓ nervous system | (1) |
| | | (b) Autonomic nervous system✓ | (1) |
| | 1.4.2 | Spinal✓ nerves | (1) |
| | 1.4.3 | E✓ - Parasympathetic nervous system✓ | (2) |
| | 1.4.4 | Neurons✓ | (1) |
| | 1.4.5 | - Meninges✓ | |
| | | - Cranium✓/bone tissue | |
| | | - Cerebrospinal fluid✓ | |
| | | (Mark first TWO only) | |
| | | Any | (2) |
| | | | (8) |

MP SEPT 24

- 3.4 3.4.1 A pathway taken by an impulse from a receptor to the effector to bring about the response to a stimulus✓ (1)
- 3.4.2 (a) Synapse✓/Synaptic gap (1)
- (b) Connector neuron✓/ Inter-neuron (1)
- 3.4.3 - It ensures that the impulse moves in one direction only✓
- It prevents continuous stimulation of the neuron✓/ filters weak or constant impulses
- able to transfer impulses to multiple neurons simultaneously✓
(Mark first ONE only) Any (1)
- 3.4.4 Sensory neuron→ Connector/ interneuron→ Motor neuron✓✓ (2)
- 3.4.5 - The person will be able to receive a stimulus✓
- but will not be able to respond to it✓ (2)

3.4.6



THE BRAIN

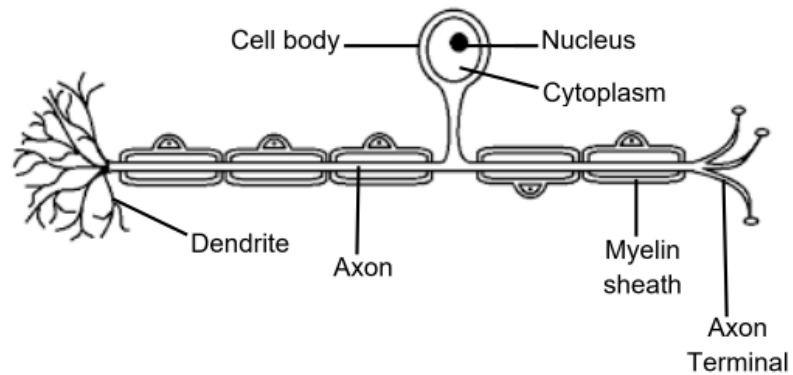
MAY/JUNE 22

- 2.1 2.1.1 Cerebellum✓ (1)
- 2.1.2 - Higher thought processes✓/(intelligence/memory/reasoning)
- Interpretation of all senses✓
- Controls all voluntary actions✓ Any (2)
(Mark first TWO only)
- 2.1.3 (a) Growth hormone✓/GH (1)
 (b) Prolactin✓ (1)
- 2.1.4 - Meninges✓
- Cranium✓ Any (1)
(Mark first ONE only)
- 2.1.5 - It receives✓/ interprets impulses
- from receptors✓ in the skin and
- sends impulses to the blood vessels of the skin✓/ influences
blood flow to the skin and (4)
- the sweat glands✓/influences sweat secretion

EC SEPT 24

- 1.4.1 (a) D ✓ – Cerebellum ✓ (2)
 (b) A ✓ – Cerebrum ✓ (2)
 (c) B ✓ – Medulla Oblongata ✓ (2)
- 1.4.2 - Vertebrae ✓
Prevent mechanical injury ✓
- Cerebral spinal fluid ✓
Cushioning the spinal cord acting as a shock absorber ✓/
prevent friction
- Meninges ✓
Membranes hold the spinal cord in place ✓/ produce cerebral
spinal fluid
(Mark first TWO only) (Any 2 x 2) (4)

1.5 Diagram of sensory neuron



Marking guideline:

- ✓ (T) Suitable title
- ✓✓✓ (L) Labels (Any 3)
- ✓ (D) Correct drawing (sensory neuron) (5)

2.1.6 (a) Carotid artery✓ (1)

(b) Heart✓ muscle
 - Diaphragm✓
 - Intercostal muscles✓ }/Breathing muscles✓
 (Mark first TWO only) Any (2)
 (13)

NW SEPT 24

3.2	3.2.1	B - Cerebellum✓ Coordination of voluntary movements✓/control of muscle tone to maintain balance/body posture	(1) (1)
	3.2.2	Cerebrum✓/Part A	(1)
	3.2.3	Medulla oblongata ✓	(1)

3.2.4 Changes in the direction and speed of movement:

- causes the endolymph in the semi-circular canals to move✓
- the cristae (found in the ampulla) are stimulated✓
- and converts the stimulus into an impulse✓
- which is transmitted via the auditory nerve✓/vestibular nerve
- to the cerebellum✓
- from which impulses are transmitted via motor neurons✓
- to the effector✓/voluntary muscles/ skeletal muscles
- to maintain/restore balance (do no credit, this is in the question).

Any 6 (6)

NW SEPT 24

3.5	3.5.1	A complex brain structure embedded deep into the temporal lobe✓	(1)
	3.5.2	(a) Cerebrum✓	(1)
		(b) Medulla oblongata✓	(1)
	3.5.3	- blocks signals between brain cells✓/makes chemical and molecular modifications to the brain - decrease the brain volume /Makes neurons to shrink (cerebrum/frontal lobe)✓ - decrease the brain volume /Makes neurons to shrink (cerebellum)✓ - damages the liver/pancreas✓	

- 3.5.4 - Slow reflexes✓leading to injuries✓/danger

OR

- Loss of higher order functions✓causing memory loss✓

OR

- Loss of muscle coordination✓leading to loss of balance✓

OR

- Loss of detoxification✓leading to accumulation of toxins✓/Loss of homeostasis of glucose✓leading to diabetes✓/Loss of ability to digest food✓leading to weight loss✓

Any (1 x 2) (2)

- 3.5.5 Alzheimer's✓ disease (1)

3.5.6 **Damage to the pancreas:**

- it will not secrete enough insulin/glucagon✓
- blood glucose level will not be controlled✓/(decreased/increased)
- causing the person to suffer from diabetes✓(mellitus)/the presence of glucose in urine (3)

MP SEPT 24

- 1.5 1.5.1 B - Cerebellum✓ (2)

- 1.5.2 - Coordinates voluntary movement✓
- Controls balance and equilibrium✓
(Mark first TWO only) (2)

- 1.5.3 - Heart beat✓
- Breathing✓
(Mark first TWO only) Any (2)

NSC NOV 23

- | | | | |
|-----|-------|--|-------------|
| 2.4 | 2.4.1 | (a) Spinal cord✓ | (1) |
| | | (b) Pituitary gland✓/hypophysis | (1) |
| | 2.4.2 | A✓ | (1) |
| | 2.4.3 | Between the two hemispheres of the cerebrum✓✓ | (2) |
| | 2.4.4 | (a) - Part D / medulla oblongata which controls breathing✓
- was not injured✓ | (2) |
| | | (b) - The learner (occasionally) lost balance✓
- due to no coordination of voluntary movements✓ by part B | (2) |
| | | (c) - The loss of memory indicates a possible injury to part A ✓/the cerebrum
- which is also responsible for hearing ✓/ (interpretation of) sound | (2) |
| | | | (11) |

NSC NOV 23

- | | | | |
|-----|-------|--|-------------------|
| 2.5 | 2.5.1 | - A rapid involuntary/automatic response✓
- to a stimulus✓ | (2) |
| | 2.5.2 | (a) It ensures that the impulse is transmitted in one direction✓
(Mark first ONE only) | (1) |
| | | (b) It is important for balance✓/movement | (1) |
| | 2.5.3 | - The impulse is transmitted from the receptors in the patellar tendon✓ through the
- sensory neuron✓ and the
- synapse✓ to the
- motor neuron✓ and to the
- quadriceps✓ muscle
(Correct sequence is required) | (5)
(9) |

MALE REPRODUCTIVE SYSTEM

MAY/JUNE 22

- 2.2 2.2.1 Vas deferens✓ (1)
- 2.2.2 - Sperm storage✓
- Sperm maturation✓ Any (1)
 (Mark first ONE only)
- 2.2.3 - The semen will not contain sperm✓ because
- they are not transported✓
- but will contain all other secretions of the accessory glands✓/
 examples thereof
- the vasectomy occurred before✓ the accessory glands Any (3)
- 2.2.4 - The temperature of the testes inside the body will be too high✓
- No/abnormal sperm will be produced✓
- The man will be infertile✓/not able to reproduce (3)
- 2.2.5 - Under the influence of testosterone✓
- diploid cells✓/germinal epithelial cells
- in the seminiferous tubules✓/testes
- undergo meiosis✓
- to form haploid sperm cells✓ Any (4)
 (12)

NW SEPT 24

- 2.3
- 2.3.1 Urethra ✓ (1)
- 2.3.2 (a) Testes/seminiferous tubules. ✓ (1)
 (b) Epididymis ✓ (1)
 (c) Vas deferens/Sperm duct✓ (1)
- 2.3.3 If the scrotum/part G is exposed to high temperature:
 - It will reduce the production of sperms/fewer sperm cells will be
 produced✓ /spermatogenesis
 - in the testes✓
 - causing them to be unhealthy✓/denatured/ poor quality/weak
 - making the person infertile/sterile✓ (4)

2.3.4

T✓

Oogenesis	Spermatogenesis
Takes place in the ovary✓	Takes place in the testes/ seminiferous tubules ✓
Begins before birth✓/during foetal development	Begins at puberty✓
One functional ovum✓ (and 3 polar bodies)/ 1 haploid only	Four functional sperm cells/ 4 haploid sperm cells✓ (numbers
No continuous production after a certain age✓	Continuous production throughout reproductive life✓
Occurs under the influence of testosterone ✓	Occurs under the influence of FSH

(Mark first TWO only)

Any (2 x 2) + 1 for table (5)

MP SEPT 24

- 2.1 2.1.1 A- Testis✓
B- Epididymis✓
C- Vas deferens✓/Sperm duct (3)

- 2.1.2 - Under the influence of testosterone✓
- diploid cells✓/germinal epithelium
- in the seminiferous tubules✓ of the testis
- undergo meiosis✓
- to form (haploid) sperm✓ Any (4)

- 2.1.3 - Tight underwear will pull the testes close to the body✓
- The temperature of the testes will be too high✓/higher pressure on the testes
- and sperm will not mature✓/sperm production is negatively affected
OR
- The testes will be away from the body✓
- The temperature of the testes will therefore be lower than body temperature✓/less pressure on the testes
- for successful sperm production✓ Any (2)

- 2.1.4 (a) - There will be no sperm transported through the vas deferens in the semen✓
- therefore, no fertilisation can take place✓ (2)
- (b) - The fluid part of the semen will still be produced✓
- by the accessory glands✓/seminal vesicles/prostate gland/
Cowper's glands (2)
- (13)

KZN SEPT 24

- 1.4 1.4.1 (a) P✓ - Epididymis✓ (2)
- (b) M✓ - Vas deferens✓ (2)
- (c) O✓ - Scrotum✓ (2)
- 1.4.2 - Produces sperm cells✓/ site of spermatogenesis (2)
- Produces testosterone✓ (2)
- (Mark first TWO only)** (8)
- 2.2 2.2.1 Testosterone ✓ (1)
- 2.2.2 - They hang outside the body ✓
- to expose them at a lower temperature ✓
- than the internal body temperature ✓
- that leads to the development of healthy sperms ✓
- and maintains the sperm count✓
- Any (4)
- (5)

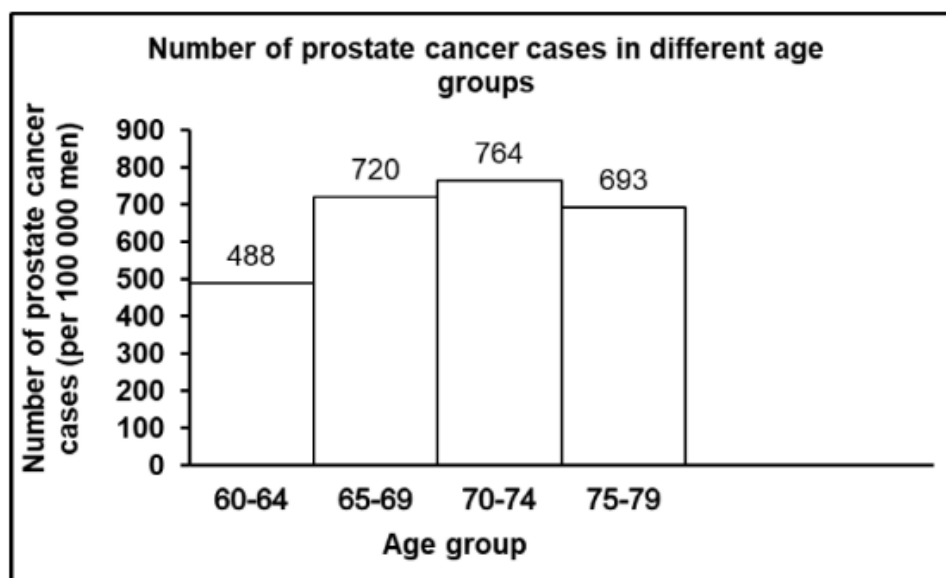
NSC NOV 24

- 2.2 2.2.1 (a) Seminal vesicle✓ (1)
- (b) Testosterone✓ (1)
- 2.2.2 - It is alkaline✓
- to neutralise the acidic conditions of the vagina✓
- It contains mucus✓/provides medium
- to facilitates the movement of the sperm✓
- It contains nutrients✓
- to supply the sperm with energy✓
- Any (1 x 2) (2)
- (Mark first ONE only)**

2.2.3 (a) (70 – 74) ✓

(1)

(b)



Criteria for marking of the graph:

Criteria	Mark allocation
Histogram is drawn (T)	1
Caption of the graph includes both variables (C)	1
Correct labels on the X-axis and Y-axis with correct unit on the Y-axis (L)	1
Correct scale for Y-axis and bars of equal width with no spaces for X-axis (S)	1
Plotting (P) correctly done for: 1- 3 age groups	1
All 4 required age groups only	2

(6)
(11)

If a bar graph or line graph is drawn, marks will be lost for:

- Type of graph
- Scale

If axes are transposed:

- Can get all marks if labels are also swopped and bars are horizontal
- If labels are not corresponding, then:
 - Marks will be lost for labels and scale
 - Plotting can get credit if coordinates are correct for given labels

NSC NOV 22

QUESTION 2

- | | | | | |
|-----|-------|--|-------------|-------------------|
| 2.1 | 2.1.1 | Seminal vesicle✓ | | (1) |
| | 2.1.2 | Transports semen out of the body✓
(Mark first ONE only) | | (1) |
| | 2.1.3 | - Transports its secretions in ducts✓/ secretion not directly in blood
- Does not produce a hormone✓
(Mark first TWO only) | | (2) |
| | 2.1.4 | Spermatogenesis✓ | | (1) |
| | 2.1.5 | - The secretion is alkaline ✓
to neutralise the acidity of the vagina✓/ urethra
- The secretion contains nutrients✓
for the sperm to generate energy for movement✓
- The secretion is a fluid✓/mucus
which facilitates the movement of the sperm cells✓ | Any (2 x 2) | (4)
(9) |

NSC NOV 22

- | | | | | |
|-----|-------|---|-------------|-------------------|
| 2.2 | 2.2.1 | Acrosome✓ | | (1) |
| | 2.2.2 | - Fuses with the nucleus of the ovum✓
- Carries genetic material✓ | Any | (1) |
| | 2.2.3 | - Produce energy✓/ site for cellular respiration
- which is needed for movement✓ of the sperm | | (2) |
| | 2.2.4 | - The oval/torpedo-shaped head✓
- will facilitate faster movement✓
- The presence of an acrosome✓/part A
- enables the sperm to penetrate the ovum✓
- A longer tail✓
- ensures faster movement✓
(Mark first TWO only) | Any (2 x 2) | (4)
(8) |

REPRODUCTIVE STRATEGIES

NW SEPT 24

- | | | | |
|-----|-------|---|-----------|
| 1.5 | 1.5.1 | The type of development where the young can move/walk/run/swim/eyes open/developed down/feather cover and feed/find food directly after hatching✓/ are born fully developed and are not dependent on parents. (1) | |
| | 1.5.2 | Plays a role in gaseous exchange/provides oxygen and nutrients and removes carbon di oxide and waste from the baby's blood/protection of the foetus. ✓ (1) | |
| | 1.5.3 | Fish✓/mammals | Any 1 (1) |
| | 1.5.4 | A✓ - yolk ✓ (sac) | (2) |
| | 1.5.5 | Amnion✓/amniotic fluid | (1) |
| | 1.5.6 | (a) Fish✓ | (1) |
| | | (b) Birds✓/Reptiles/Mammals | Any 1 (1) |
| | | (c) Mammals✓ | (1) |

MAY/JUNE 22

2.3 **Protection**

- The (amniotic) egg is retained inside the mother's body✓*
- to protect the embryo from predators✓
- The allantois✓ protects the embryo
- by removing waste products✓
- The embryo is protected from shocks✓/sudden changes in temperature/dehydration by the:
 - Chorion✓
 - Amnion✓
 - Amniotic fluid✓ inside the amniotic membrane
 - Shell✓/outer covering
 - Air pocket✓

Compulsory 1* + Any 4 5

Nourishment (N)

- The embryo receives nutrients✓
- from the egg yolk✓ in the yolk sac
- and from the albumen✓

Any 2 2
(7)

EC SEPT 24

- 2.2 2.2.1 Internal ✓ fertilisation (1)
- 2.2.2 The male releases semen inside of the female's body ✓ (1)
- 2.2.3 Vivipary ✓ (1)
- 2.2.4 - The baby kangaroo is able to develop within its mother's pouch for an extended period of time ✓ / till 235 days
- This gives greater protection ✓ against environmental threats (accept examples of threats)

OR

- The baby kangaroo latches onto a teat ✓ of the mother
- Providing nutrition ✓
(Mark first ONE only) (Any 1 x 2) (2)
- 2.2.5 Baby kangaroo is ...
- blind ✓
- naked ✓
- relies on parent for nutrition ✓ (Any 2 x 1) (2)

MP SEPT 24

- 1.4 1.4.1 Ovipary✓/ Oviparous (1)
- 1.4.2 Precocial✓ development (1)
- 1.4.3 - The eyes are open✓
- Legs are well developed✓/ functional
- It can feed on its own✓
- The down feathers are well developed✓/ has feathers Any (3)
- 1.4.4 Internal ✓fertilization (1)
(6)

NSC NOV 24

QUESTION 2

- 2.1 2.1.1 External✓ fertilisation (1)
- 2.1.2 - The eggs will dry out✓
- because they have no shells✓/are not amniotic eggs /have no amnion (2)
- 2.1.3 - The male and female bodies are in close contact✓
so that sperm can be released directly onto the ova✓

OR

- Many/up to 6 000 ova are released✓
since fertilisation is external✓
(Mark the first ONE only) Any (1 x 2) (2)
- 2.1.4 - Many/up to 6 000 ova are released✓
since fertilisation is external✓/increasing the chance that some
will be fertilised

OR

- The male and female bodies are in close contact✓
so that sperm can be released directly onto the ova✓
(Mark the first ONE only) Any (1 x 2) (2)
(7)

PLANT RESPONSE

MAY/JUNE 22

- 2.5 2.5.1 - Caffeine✓
- Nicotine✓ (2)
(Mark first TWO only)
- 2.5.2 - The bitter taste✓
will prevent herbivores✓ from feeding on them
- The caffeine will kill pathogenic fungi✓protecting the plants from
disease✓/death Any (2 x 2) (4)
(Mark first TWO only)
- 2.5.3 Thorns✓ (1)
(Mark first ONE only) (7)

MAY/JUNE 22

- 3.1
- Auxins move away from light✓
 - There is a higher concentration of auxins on the dark side of the stem✓
 - Growth is stimulated✓ on the dark side which
 - grows faster✓
 - causing the stem to grow/bend towards the light✓

(5)

MP SEPT 24

- 3.5 3.5.1 Auxins✓ (1)
- 3.5.2 To cancel the effect of unilateral light on plumule growth✓/ to show that the light has no effect on the upward bending of plumule/ to exclude a phototropic response (1)
- 3.5.3 When a plumule is placed horizontally:
- Auxins are attracted by gravity✓
 - There is a high concentration of Auxins on the lower side of the plumule✓
 - Which stimulates growth/ cell elongation/ cell division on the lower side✓
 - There is a low concentration of Auxins on the upper side of the plumule✓
 - Which inhibits growth/ cell elongation/ cell division on the upper sides✓
 - The lower side of the plumule grows faster✓/ uneven growth occurs causing the plumule to grow/ bend upwards
 - The plumule grows away from gravity✓/ the plumule is negatively geotropic (3)
- 3.5.4 The germinating seed is attached to the disc of rotating clinostat✓ (1)

EC SEPT 24

- 2.5 2.5.1 Geotropism ✓ (1)
- 2.5.2 Due to rotation of clinostat
- Gravity will be even on all sides ✓ / there will be no effect of gravity
 - Auxins will be evenly distributed ✓ in the root tip
 - Causing even cell elongation ✓ /growth
 - Causing the root to grow horizontal ✓ /not to bend (Any 3 x 1) (3)
- 2.5.3
- Auxin moves to the dark/shaded side ✓ of the stem
 - High concentration of auxin stimulates growth ✓
 - Leading to increased cell growth/elongation ✓ on that side
 - The stem bends towards the light ✓ (Any 3 x 1) (3)
- 2.5.4
- Mechanical ✓ /thorns
 - Chemical ✓ (2)

KZN SEPT 24

- | | | | |
|-----|-------|----------------------------|------------|
| 1.5 | 1.5.1 | (a) Light✓ | (1) |
| | | (b) Gravity✓ | (1) |
| | 1.5.2 | (a) Root✓ | (1) |
| | | (b) Stem✓ | (1) |
| | 1.5.3 | region P✓ | (1) |
| | 1.5.4 | region S✓ | (1) |
| | 1.5.5 | (a) Negative phototropism✓ | (1) |
| | | (b) Negative geotropism✓ | (1) |
| | | | (8) |

MAY/JUNE 23

- | | | | |
|-----|-------|--|-------------------|
| 3.2 | 3.2.1 | - Auxins promote the development of roots✓
- It brings about (general) root growth✓
causing their downward✓growth/positive geotropism | (3) |
| | 3.2.2 | - In the stem, the auxins stimulate growth✓ on the lower side
causing the stem to grow/bend upwards✓
- In the root, the auxins inhibit growth✓ on the lower side
causing the root to grow/bend downwards✓ | (4)
(7) |

MAY/JUNE 23

- | | | | |
|-----|-------|---|-------------------|
| 2.4 | 2.4.1 | External✓ fertilisation | (1) |
| | 2.4.2 | - To increase the chances of fertilisation✓
- since the gametes may be lost✓/not reach one another
due to predation✓/water currents
OR
- To produce more zygotes✓/offspring
- since many will be lost✓
- because they are preyed on✓/washed away/dry out | (3) |
| | 2.4.3 | The embryos develop inside an egg, outside the female's body✓ | (1)
(5) |

NSC NOV 23

- | | | | |
|-----|-------|---|---------|
| 3.4 | 3.4.1 | (a) (Presence/absence of) auxins✓ | (1) |
| | | (b) Growth of lateral branches✓ | (1) |
| | 3.4.2 | - To ensure that the results are caused only by the presence of auxins✓ which
- increases the validity✓ of the investigation | (2) |
| | 3.4.3 | - It acts as a control✓
- to show that the results of Plant D✓
- are caused by the (presence of) auxins✓
- and not the agar jelly✓ | Any (3) |
| | 3.4.4 | The presence of auxins slows down the growth of lateral branches✓✓ | |

OR

- | | | | |
|--|--|---|------------|
| | | The absence of auxins stimulated the growth of lateral branches✓✓ | (2) |
| | | | (9) |

NSC NOV 22

- | | | | |
|-----|-------|---|------------|
| 2.5 | 2.5.1 | External✓ fertilisation | (1) |
| | 2.5.2 | - Their embryos develop inside eggs✓ that are
- outside the body of the female✓ | (2) |
| | 2.5.3 | - The males release semen all around the female✓
- A large number of gametes/ ova are produced✓ | (2) |
| | 2.5.4 | Graph X✓ | (1) |
| | 2.5.5 | - They will have a higher number of surviving embryos✓/eggs/offspring
- Because their fertilised eggs are attached to the vegetation✓
- where they are protected from predators✓/washing away | (3) |
| | | | (9) |

NSC NOV 22

- | | | | |
|-----|-------|--|------------|
| 3.5 | 3.5.1 | - (Apical) tip of the stem✓ /apical bud
- (Apical) tip of the root✓
(Mark first TWO only) | (2) |
| | 3.5.2 | - Stimulate cell division✓/mitosis
- Stimulate cell elongation✓
(Mark first TWO only) | (2) |
| | 3.5.3 | Gibberellins✓
(Mark first ONE only) | (1) |
| | 3.5.4 | - Increased plant growth✓
- saves species that are facing extinction✓ | (2)
(7) |

INVESTIGATIVE QUESTIONS

MAY/JUNE 22

- | | | | |
|-----|-------|--|-----------------|
| 3.2 | 3.2.1 | - Must have regular menstrual cycles✓
- They must not become pregnant✓
- Diet
(Mark first TWO only) | Any (2) |
| | 3.2.2 | - 250 females per group were used✓/1000 females participated
- Measurement was done for 5 cycles✓
(Mark first TWO only) | (2) |
| | 3.2.3 | Older <u>groups</u> of women have a higher (<u>average</u>) FSH level than the younger <u>groups</u> ✓✓
OR
Younger <u>groups</u> of women have a lower (<u>average</u>) FSH level than the older <u>groups</u> ✓✓
(Mark first ONE only) | (2) |
| | 3.2.4 | - The Graafian/developing follicles secretes oestrogen✓
- but since the number of follicles are low✓/depleted
- less/no oestrogen will be secreted✓ | (3) |
| | 3.2.5 | - A high concentration of progesterone✓
- inhibits the pituitary gland✓/results in reduced FSH secretion
- This will decrease the validity of the investigation✓ | Any (3)
(12) |

NSC NOV 22

- 3.4 3.4.1 (a) Wearing of a facemask✓ (1)
 (b) Carbon dioxide levels in blood✓ (1)
- 3.4.2 - Age✓
 - Healthy✓ individuals (2)
 (Mark first TWO only)
- 3.4.3 150 volunteers were used✓ (1)
 (Mark first ONE only)
- 3.4.4 - To allow the carbon dioxide levels in the blood to go back to normal✓
 - so that each phase will have the same carbon dioxide level as a starting point✓ (2)
- 3.4.5 - To act as a control ✓/baseline
 - To see if it is the facemask that affects the carbon dioxide levels and not the physical activity✓ Any (1)
- 3.4.6 - Receptors in the carotid artery are stimulated✓ and
 - impulses are sent to the medulla oblongata✓
 - The medulla oblongata stimulates the heart✓
 - to beat faster✓ causing
 - more carbon dioxide to be taken to the lungs✓
 - The breathing muscles✓/intercostal muscles and diaphragm
 - contract more actively✓ and
 - the rate/ depth of breathing increases✓
 - More carbon dioxide is exhaled✓
 - The carbon dioxide level in the blood decreases✓ /returns to normal Any (7)

EC SEPT 24

QUESTION 3

- 3.1 3.1.1 - 20 rats were placed into each group ✓
To ensure a large sampling size ✓

OR

- Testing done 3 time over 90 days ✓
So experiment was repeated ✓

OR

- Blood serum samples were harvested at random ✓
In order to obtain an average ✓

(Mark the first ONE) (Any 1 x 2) (2)

- 3.1.2 - By using rats of the same reproductive ages ✓
- Giving the rats the same amount of water ✓

(Mark the first ONE) (Any 1 x 1) (1)

- 3.1.3 - Testosterone level ✓ /amount of testosterone (1)

- 3.1.4 - It is the control / To allow us to compare results ✓
- To show the decrease in testosterone ✓
- Is due to microplastics ✓
- And not the water ✓

(Any 3 x 1) (3)

- 3.1.5 As microplastics accumulate in an organism's body (rats), fertility rates will drop ✓✓

OR

Fewer microplastics within an organism's body (rat) will cause a higher fertility rate ✓✓ (2)

- 3.1.6 - Under the influence of testosterone ✓
- diploid cells in the seminiferous tubules ✓ of the testes
- undergo meiosis ✓
- to form haploid sperm cells ✓ (4)

- 3.1.7 - Low testosterone levels ✓ would result in a
- decrease in spermatogenesis ✓/less sperm will be formed/mature (2)

MAY/JUNE 23

- | | | | | |
|-----|-------|---|---------|-------------|
| 3.3 | 3.3.1 | Adrenal✓ gland | | (1) |
| | 3.3.2 | (a) Aldosterone level✓/ increased aldosterone level | | (1) |
| | | (b) Blood pressure✓ | | (1) |
| | 3.3.3 | - 1 688 volunteers were used✓
- The procedure was done 4 times for each individual✓ | | (2) |
| | | (Mark first TWO only) | | |
| | 3.3.4 | - All factors should be kept constant✓/there should be only one independent variable to ensure the validity✓ of the investigation
- Dietary factors✓/examples can also influence the blood pressure✓ | (2 x 2) | (4) |
| | | (Mark first TWO only) | | |
| | 3.3.5 | To compare the blood pressure before and after the administration of aldosterone✓✓ | | (2) |
| | 3.3.6 | - The high aldosterone✓ level
- will increase the permeability of the renal tubules✓ for salt
- More salt will be reabsorbed✓ | | (3) |
| | | | | (14) |
| 3.4 | | - Adrenalin causes glycogen to be converted to glucose✓ which
- increases the blood glucose level✓
- The breathing muscles are stimulated✓
- to increase the rate and depth of breathing✓
- The heart muscle is stimulated✓
- to pump faster✓
- There is also an increase in blood pressure✓
- increasing the transport of oxygen and glucose✓
- The rate of cellular respiration is increased✓ | Any | (8) |

NSC NOV 23

QUESTION 3

- 3.1 3.1.1 - Degeneration✓/wasting away of nerve tissue
 - Plaque/proteins formed around the nerve tissue✓ Any (1)
 (Mark first ONE only)
- 3.1.2 (a) Worsening ability to remember new information✓ (1)
 (Mark first ONE only)
 (b) Family history✓ (1)
 (c) - Learning ability✓
 - Orientation✓ (2)
 (Mark first TWO only)
- 3.1.3 They:
 - Were all females✓/considered gender
 - Were between the ages of 65 and 75✓/considered age group/age
 - Did not show symptoms of Alzheimer's disease✓ Any (2)
 (Mark first TWO only)
- 3.1.4 They:
 - Used 37 participants✓
 - Conducted the investigation three times a week✓
 - Conducted the investigation for three months✓ Any (2)
 (Mark first TWO only)
- 3.1.5 - Investigation did not establish the relationship between exercise and development of Alzheimer's disease✓
 - since no changes in the nervous tissue were measured✓/period was short
 OR
 - There was no control group✓
 - to show that it is the exercise that improve blood flow✓/higher order-thinking abilities
 OR
 - People who did not show symptoms of Alzheimer's disease were used✓
 - therefore, results do not show prevention of development of Alzheimer's disease✓ Any (1 x 2) (2)
- 3.1.6 - Exercise can improve blood flow to the brain✓ and
 - it can maintain the volume of the hippocampus✓ which will
 - prevent a decrease in higher order thinking✓/cognitive abilities/learning abilities (3)

DEVELOPMENT, IMPLANTATION & FERTILIZATION

MAY/JUNE 22

- 3.3
- After implantation the chorion✓
 - develops many finger-like outgrowths✓
 - called chorionic villi✓
 - The endometrium✓
 - together with the chorionic villi forms the placenta✓
 - The umbilical artery✓
 - and the umbilical vein✓ develops
 - inside a hollow tube✓
 - to form the umbilical cord between the foetus and the placenta✓ Any (6)

KZN SEPT 24

- 2.1 2.1.1 (a) Endometrium ✓/uterus (1)
- (b) Cervix ✓ (1)
- (c) Ovary ✓ (1)
- 2.1.2 (a) It is a site of fertilisation ✓ / allows for the passage of an ovum/zygote. (1)
- (Mark first ONE only)
- (b) - Used for copulation ✓
- Serves as a passage for the baby during birth ✓ / It's a birth canal. Any (1)
- (Mark first ONE only)
- 2.1.3 - Sperms and ova will not come into contact ✓
- Fertilisation will not happen ✓
- And a person will be infertile ✓ Any (3)
- 2.1.4 - It is kept within the uterus✓/inside the mother's body
- Covered by the chorion ✓ } OR extra embryonic membranes✓✓
- and an amnion ✓
- Surrounded by the amniotic fluid✓
- Which serves as shock absorber ✓/prevents mechanical injuries
- and prevents dehydration ✓
- Attached to the mother via placenta ✓
- which produces antibodies ✓
- and filters waste ✓
- Progesterone keeps the endometrium thick ✓
- Prevents miscarriage✓/allows for the attachment of the embryo. Any (5)

MP SEPT 24

- 2.3 2.3.1 Allows flow of menstrual blood from the uterus to the vagina✓
Opening of uterus that seals with mucus plug during gestation✓
Widens during labour to release foetus✓ Any (1)
- 2.3.2 Antibiotics ✓ (1)
- 2.3.3 To dilate the cervix in order allow fertilisation to take place✓/ woman
to fall pregnant (1)
- 2.3.4 - cervix will be blocked✓
- preventing sperms from moving up the uterus✓
- hence fertilisation could not take place✓ (3)
(6)

NSC NOV 23

- 1.5 1.5.1 (a) Zygote✓ (1)
(b) Morula✓ (1)
(c) Blastocyst✓/blastula (1)
- 1.5.2 (a) Fertilisation✓ (1)
(b) Endometrium✓ (1)
- 1.5.3 Mitosis✓ (1)
- 1.5.4 23✓ (1)
- 1.5.5 Chorion✓ (1)
(8)

NW SEPT 24

2.2.1 (a) Implantation✓ (1)

(b) Gestation ✓ (1)

2.2.2 ONLY CREDIT WHEN THE SEQUENCE IS CORRECT, WHERE IT GETS MUDDLED UP, DO NOT CREDIT. PRINCIPLE 8.

- The zygote undergoes mitosis✓
- to form ball of cells✓/morula
- which develops into a hollow ball of cells✓/blastocyst/blastula (3)

2.2.3 The embryo/foetus:

- will not be protected from shock and (mechanical injuries)✓/can get injured easily.
- will not be hydrated✓/can dehydrate.
- will not be kept within a small temperature range/No thermoregulation✓/can overheat/ get too cold.
- will not move freely for growth and development✓/can under-develop muscles. (4)

2.2.4 STRUCTURE ✓SHOULD BE LINKED TO A FUNCTION✓

- **Gaseous exchange**✓: the umbilical vein✓ carries oxygen✓ to the foetus✓

OR

- **Gaseous exchange**✓: the umbilical artery✓ carries carbon dioxide✓ away from the foetus✓

OR

- **Nutrition**✓: the umbilical vein✓ carries nutrients✓ to the foetus.

OR

- **Waste removal**✓: the umbilical artery✓ carries nitrogenous waste✓ away from the foetus✓

Any (2 x 2) (4)

MAY/JUNE 23

- | | | |
|-------|---|-----------------|
| 2.1.1 | Endometrium✓ | (1) |
| 2.1.2 | Fertilisation✓ | (1) |
| 2.1.3 | The (nucleus of the) sperm fuses with (the nucleus of) the ovum✓ | (1) |
| 2.1.4 | <ul style="list-style-type: none">- Zygote divides by mitosis✓- to form a (solid) ball of cells✓- called the morula✓- which develops into a hollow ball of cells✓- called the blastula✓/blastocyst | Any (4) |
| 2.1.5 | <ul style="list-style-type: none">- It is muscular✓to protect the foetus from mechanical injury✓/to allow for parturition/birth- It is flexible✓/can expandto accommodate the growing foetus✓- It is hollow✓to accommodate the growing foetus✓- The thickened endometrium✓allows for implantation✓ /survival of the embryo <p>(Mark first TWO only)</p> | Any (2 x 2) (4) |
| 2.1.6 | <ul style="list-style-type: none">- The secretion is alkaline✓ which- neutralises the acidic conditions✓ of the vagina | (2) |

MENSTRUATION

MP SEPT 24

- | | | | |
|-----|-------|--|---------|
| 2.2 | 2.2.1 | Day 14✓ | (1) |
| | 2.2.2 | - Oestrogen✓
- FSH✓ | (2) |
| | 2.2.3 | -The follicle develops✓ during this period stimulated by increased levels of FSH
-The lining of the endometrium thickens✓ during this period stimulated by increased levels of oestrogen | (2) |
| | 2.2.4 | - Corpus luteum has not disintegrated✓
- and the endometrial lining remains thickened✓ | (2) |
| | 2.2.5 | - The pituitary gland✓
- secretes LH✓
- which causes the Graafian follicle to rupture and release the ovum✓
- This is called ovulation✓

- The empty follicle changes and becomes a corpus luteum✓
- which begins to secretes progesterone✓
- which causes further thickening✓
- of the endometrium✓ | Any (6) |

EC SEPT 24

- | | | | |
|-------|-----|--|-----|
| 3.3.1 | (a) | Ovaries ✓/ graafian follicle /developing follicle | (1) |
| | (b) | Corpus luteum ✓ | (1) |
| 3.3.2 | - | Day 14 ✓ | (1) |
| 3.3.3 | - | LH levels had spiked ✓/peaked | (1) |
| 3.3.4 | - | Implantation/ fertilisation has occurred ✓
- The corpus luteum does not degenerate ✓ /continues to produce progesterone | (2) |
| 3.3.5 | - | High levels of progesterone ✓
- Will inhibit the pituitary gland ✓
- From secreting FSH ✓
- No follicles will be <u>stimulated</u> to develop ✓ | (4) |

NW SEPT 24

- 2.4.1 (a) Day 14✓/day 15 (1)
(b) Days 0-6✓/0-7 (1)
- 2.4.2 The endometrium✓, breakdown/sheds off✓
- 2.4.3 To maintain the thickness of the endometrium(cause)✓/keep it vascular and glandular for implantation (not pregnancy) (effect)✓ (2)
- 2.4.4 **As** the level of oestrogen increases✓, the thickness of the endometrium increases✓ (2)

NB: relationship should be stated in the correct order and if the function is provided it should not be credited.

- 2.4.5 (a) No✓ (1)
- (b) - corpus luteum started to degenerate✓ causing a decrease in progesterone levels✓
- OR**
- progesterone levels have decreased✓ causing the endometrium to break down✓/leading to menstruation
- OR**
- progesterone levels have decreased✓ stimulating the secretion of FSH✓/FSH starts to increase
- OR**
- FSH levels starts to increase✓ stimulating the development of a new follicle✓/ Graafian follicle starts to form
- Any (1 x 2) (2)

2.4.5 (a) No✓ (1)

- (b) - corpus luteum started to degenerate✓ causing a decrease in progesterone levels✓

OR

- progesterone levels have decreased✓ causing the endometrium to break down✓/leading to menstruation

OR

- progesterone levels have decreased✓ stimulating the secretion of FSH✓/FSH starts to increase

OR

- FSH levels starts to increase✓ stimulating the development of a new follicle✓/ Graafian follicle starts to form

Any (1 x 2) (2)

NSC NOV 23

- | | | | |
|-----|-------|--|-----|
| 2.3 | 2.3.1 | (a) - (Graafian) follicle✓ and
- Corpus luteum✓
(Mark first TWO only) | (2) |
| | | (b) - (Intense) pain✓
- Internal bleeding✓
(Mark first TWO only) | (2) |

2.3.2 (a) FSH✓ (1)

(b) Oestrogen✓

OR

LH✓

OR

FSH✓

(1)

2.3.3 The Graafian follicle keeps on producing oestrogen✓/fails to rupture

OR

The increased secretion of oestrogen stimulates the secretion of LH✓

OR

Excess production of FSH can cause the failure to ovulate✓/ Graafian follicle to rupture

(1)

- 2.3.4
- The corpus luteum does not degenerate✓and
 - keeps on secreting progesterone✓
 - This will inhibit the pituitary gland✓
 - from secreting FSH✓
 - Therefore no follicle will develop✓ and
 - no ovulation✓ will take place

Any (5)
(12)

EC JUNE 23

2.4 2.4.1 Progesterone ✓ (1)

- 2.4.2
- The blood concentration of hormone Y increased after day 14 ✓ / ovulation
 - maintaining the thickness of the uterus lining ✓/endometrium (2)

2.4.3 Endometrium ✓ (1)

- 2.4.4
- The level of hormone Y/progesterone decreased ✓
 - resulting in a decrease in the thickness of the uterus lining ✓
 - followed by menstruation ✓
 - This indicates that fertilisation did not occur ✓ (Any 3 x 1) (3)

- 2.4.5
- FSH ✓ / Follicle Stimulating Hormone
 - stimulates the development of the follicles into an ovum ✓
 - LH ✓/ Luteinising Hormone
 - stimulates ovulation ✓ (4)

- 2.3 - Under the influence of testosterone✓
 - diploid cells✓/germinal epithelium cells
 - in the seminiferous tubules✓of the testis
 - undergo meiosis✓ to form
 - haploid sperm✓
- Any (4)

THE EAR

MAY/JUNE 22

- 3.4 3.4.1 (a) Auditory canal✓ (1)
 (b) Ossicles✓ (1)
- 3.4.2 - Collects the sound waves✓
 - Directs the sound waves towards the auditory canal✓ Any (1)
 (Mark first ONE only)
- 3.4.3 - Part D/the ossicles do not vibrate freely✓
 - Fewer/no vibrations will be sent to the oval window✓/inner ear
 - Fewer/no pressure waves will be set up in the cochlea✓
 - The receptors/organ of Corti will be stimulated less✓/not stimulated
 - The cerebrum is stimulated differently✓/not stimulated
 - which leads to hearing loss✓ Any (4)
- 3.4.4 - It equalises pressure✓
 - on either side of the tympanic membrane✓ (2)
- 3.4.5 Grommet✓ (1)
- 3.4.6 C✓ (1)
- 3.4.7 - The cristae are stimulated✓
 - to convert the stimuli to impulses✓
 - The impulses are sent to the cerebellum✓
 - where they are interpreted✓
 - The cerebellum sends impulses to the skeletal muscles✓
 to maintain balance Any (4)

NW SEPT 24

- 3.3 3.3.1 A - ossicles✓ (1)
 F - auditory canal✓ (1)
- 3.3.2 D - Eustachian tube✓ (1)
 Equalizes pressure on either side of the tympanic membrane✓/
 eardrum (1)
- 3.3.3 G ⇒ F ⇒ E ⇒ A ⇒ C ⇒ B✓✓(2 marks or nothing). (2)
- 3.3.4 - Sound waves strike the tympanic membrane✓/eardrum
 - causing it to vibrate✓
 - transferring vibrations to ossicles✓ Any 2 (2)
- 3.3.5 - Pressure waves will not be generated✓in the cochlea
 - The organ of Corti will not be stimulated✓
 - Pressure waves will not be generated✓in the cochlea
 - No stimulus will be converted to an impulse✓
 - Impulse will not be interpreted in the cerebrum✓
 - and the sound will be distorted✓* /will be unclear (COMPULSORY
 MARK)
 - causing less✓/no hearing Any 3 + 1 compulsory* (4)

MP SEPT 24

- 3.3 3.3.1 (a) Cochlea✓ (1)
 (b) Semi-circular canals✓ (1)
- 3.3.2 - The pinna directs sound waves✓
 - into the auditory canal✓
 - The auditory canal transmits sound waves to the
 tympanic membrane✓
 - The tympanic membrane transmits vibrations to the
 ossicles✓ as vibrations
 - The ossicles transmit amplified vibrations✓
 - to the oval window✓
 - which vibrates✓and set pressure waves in the inner ear (6)

NSC NOV 23

1.4	1.4.1	(a) Semi-circular canals✓	(1)
		(b) Round window✓	(1)
	1.4.2	(a) D✓ Eustachian tube✓	(2)
		(b) C✓ Cochlea✓	(2)
	1.4.3	(a) F✓	(1)
		(b) A✓	(1)
			(8)
3.3	3.3.1	Cochlea✓	(1)
	3.3.2	(a) Absorbs excess pressure waves✓/releases pressure from the inner ear/ prevents an echo (Mark first ONE only)	(1)
		(b) It converts stimuli/pressure waves into impulses✓ (Mark first ONE only)	(1)
	3.3.3	- Part A/tympanic membrane will not be able to vibrate✓/vibrate freely - No/less vibrations will be carried to the middle ear✓/ossicles	(2)
	3.3.4	- Middle ear infections cause fluid build-up in the middle ear✓ - which can block the Eustachian tube✓ - The grommet will release the pressure✓ that will build up in the middle ear/ drain the fluid from the middle ear - The pressure on either side of the tympanic membrane is equalised✓ - preventing the tympanic membrane from rupturing✓ and - allowing the ossicles to vibrate freely✓	Any (4)
	3.3.5	- The cristae are stimulated✓ and - convert the stimuli into impulses✓ - The impulses are sent via the auditory nerve✓ - to the cerebellum✓ - which interprets the information✓ and - sends impulses to the skeletal muscles✓ to restore balance	Any (4)

EC SEPT 24

- 2.4 2.4.1 (a) D ✓ – Oval window ✓ (2)
- (b) B ✓ – Cochlea ✓ (2)
- 2.4.2 - Change is speed/ direction of head ✓
- Stimulates the cristae ✓
- Stimulus is converted to an impulses ✓
- Impulse is transmitted to the cerebellum ✓
- Via the auditory nerve ✓
- The cerebellum sends impulses to voluntary / skeletal muscles ✓ to maintain balance (Any 4 x 1) (4)
- 2.4.3 - Long coiled structure ✓
Increased surface area to detect pressure vibrations of endolymph / ✓ enhances the ability to detect low frequency sound

OR

- Presence of mechanoreceptors / organ of Corti ✓
To convert pressure vibrations into a nerve impulse ✓

OR

- Contains fluid ✓ / perilymph and endolymph
Medium through which pressure vibrations are generated and moves through ✓ (Any 1 x 2) (2)

MAY/JUNE 23

- 1.5 1.5.1 Semi-circular canals ✓ (1)
- 1.5.2 Ossicles ✓ (1)
- 1.5.3 (a) D ✓ - Eustachian tube ✓ (2)
(b) C ✓ - Oval window ✓ (2)
- 1.5.4 (a) Maculae ✓ (1)
(b) Cristae ✓ (1)
(8)

EC JUNE 23

- 3.2 3.2.1 Middle ear ✓ (1)
- 3.2.2 Ossicles ✓ (1)
- 3.2.3 - The bones will not move and vibrate ✓ in reaction to sound
- resulting in hearing loss ✓ (2)
- 3.2.4 - Eustachian tube ✓*
- When a person goes skydiving, the atmospheric pressure changes all the time ✓
- When descending, the Eustachian tube cannot equalise the pressure ✓ on both sides of the tympanic membrane/the pressure on both sides will not be the same.
- which may cause the tympanum to rupture ✓/damage
1* compulsory mark + 3 (4)
- 3.2.5 The surface area of the eardrum is larger than that of the oval window, ✓
thus a greater force is concentrated into a smaller area. ✓ (2)

ENDOCRINE & HOMEOSTASIS

NW SEPT 24

- 1.4 1.4.1 F✓ - Growth hormone✓(GH)/somatotropin (2)
- 1.4.2 B✓ - Pancreas✓ (2)
- 1.4.3 A✓ - Ovary✓ (2)
- 1.4.4 E✓ - Thyroid gland✓ (2)
- 1.4.5 C✓ - Testosterone✓ (2)
- (10)**

NW SEPT 24

- 3.4 3.4.1 **Vasodilation involves:**
- The relaxation of (smooth) muscles in blood vessels✓
 - leading to an increase in their diameter (becomes wider)✓
 - this facilitates increased blood flow to the skin/more blood flows to the surface of the skin✓
 - promoting heat loss✓/radiation (4)

- 3.4.2 Sweating - excess heat is absorbed by water/**sweat/fluid**✓, causing to evaporation✓
- Vasodilation - excess heat leaves the skin surface✓through radiation✓ causing **cooling** ✓
- Any 3 (3)
(7)

MP SEPT 24

- 2.4 2.4.1 Cold environmental conditions✓ (1)
- 2.4.2 - Blood vessels dilate✓/blood vessels become wider/vasodilation occurs
 - More blood flows to the surface of the skin✓
 - More heat is lost from the skin✓ (3)
- 2.4.3 - As the environmental temperature increases above body temperature
 - increased sweating will occur✓
 - As the sweat is evaporated✓
 - it allows the body temperature to decrease✓/more cooling of the skin will occur. Any (3)
- 2.4.4 $\frac{38-30}{30} \times 100$ ✓
 = 26,67%✓ (accept 26,7% or 27%) (3)
(10)

MP SEPT 24

- 3.1 3.1.1 A- Glucagon✓
B- Insulin✓ (2)
- 3.1.2 (a) Pancreas✓ (1)
- (b) Islets of Langerhans✓ (1)
- 3.1.3 - Negative feedback reaction✓
- The glucose concentration in the blood drops below normal✓
- The alpha cells/ islets of Langerhans/pancreas detect the drop and secretes glucagon✓
- In the blood✓
- Which is transported to the liver✓/muscle cells
- Glucagon stimulates the conversion of glycogen to glucose✓
- The glucose concentration in the blood returns to normal✓ (6)
- (10)

EC SEPT 24

- 3.2 3.2.1 (a) Adrenal glands ✓ (1)
- (b) Pancreas ✓ (1)
- 3.2.2 To maintain level of thyroxin ✓ within narrow limits ✓ in the body (2)
- 3.2.3 Exocrine
- due to its secretion ✓/pancreatic juice
- into a duct ✓
- Endocrine
- secretion of hormone ✓/glucagon/insulin
- directly into the blood ✓ (4)
- 3.2.4 - Gland C secretes the hormone adrenalin ✓
- increases conversion of glycogen to glucose ✓
- increase in blood glucose levels ✓
- increase in breathing rate ✓
- more oxygen diffuses into blood stream ✓
- increases heart rate ✓
- dilates blood vessels to skeletal muscles ✓
- more blood reaches skeletal muscles ✓ (Any 5 x 1) (5)
- 3.2.5 (a) pituitary gland ✓ / hypophysis / Part A (1)
- (b) Acromegaly ✓ (1)

EC SEPT 24

- 3.4 3.4.1 - Chemoreceptors in the carotid artery are stimulated ✓ by the drop in pH
- Impulses are sent to the medulla oblongata ✓ /medulla oblongata is stimulated
- The medulla oblongata stimulates the heart ✓
- to beat faster ✓ causing
- more carbon dioxide to be taken to the lungs ✓
- the breathing muscles ✓ /intercostal muscles and diaphragm
- contract more actively ✓ and
- the rate/depth of breathing increases ✓
- more carbon dioxide is exhaled ✓
- The carbon dioxide level in the blood decrease ✓ /returns to normal.
(Any 7 x 1) (7)
- 3.4.2 - The athlete would develop hyperthermia ✓
- Proteins/enzymes may denature ✓
- He/she may lose consciousness ✓
- leading to permanent damage ✓/death
(Any 3 x 1) (3)

NSC NOV 23

- 3.2 3.2.1 (a) Kidney✓ (1)
(b) Endocrine✓ system (1)
- 3.2.2 - It releases hormones✓
- directly into the blood✓/and it is ductless (2)
(Mark first TWO only)
- 3.2.3 - Low salt levels are detected by receptor cells✓ in the kidney
- Adrenal glands are stimulated✓ to secrete
- more aldosterone✓
- which stimulates the renal tubules✓
- to be more permeable to salt✓
- This increases the reabsorption of salt✓ and
- the salt levels in the blood increase✓/return back to normal
Any (5)
- 3.2.4 - The secretion of ADH✓
- will increase✓
- which will increase the permeability✓
- of the renal tubules✓ in X
- so that more water is reabsorbed✓ from the filtrate (5)

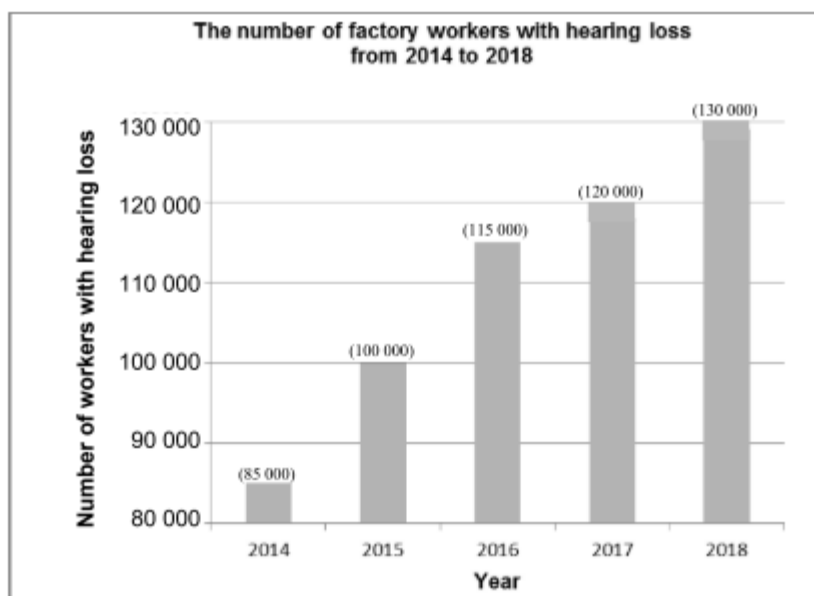
NSC NOV 23

- | | | | |
|-----|-------|--|-------------|
| 3.3 | 3.3.1 | (a) Thermoregulation✓ | (1) |
| | | (b) Hypothalamus✓ | (1) |
| | 3.3.2 | (a) Sweat gland✓ | (1) |
| | | (b) Capillary✓/blood vessel | (1) |
| | 3.3.3 | $\frac{(37,4 - 35,4)}{37,4} \times 100 = 5,35\%$ ✓ | (3) |
| | 3.3.4 | <ul style="list-style-type: none"> - Skin temperature decreased✓/lowers from 37,4 °C to 35,4 °C - because part Q dilated✓/vasodilated - causing more blood to flow to the (surface of the) skin✓ and - part P became (more) active✓/produced more sweat - causing more heat to be lost✓ to the environment - through evaporation✓/ radiation/ convection | (6)
(13) |

MAY/JUNE 23

- | | | | |
|-----|-------|---|---------|
| 2.6 | 2.6.1 | Cochlea✓ | (1) |
| | 2.6.2 | $\left[\frac{(130\ 000 - 85\ 000)}{85\ 000} \right] \times 100 = 52,94\%$ ✓ | (3) |
| | 2.6.3 | <ul style="list-style-type: none"> - More factories✓ were built increase in supply & demand - More workers✓ were employed - Extended exposure to loud sounds✓ - Lack of precautionary measures✓ <p>(Mark first ONE only)</p> | Any (1) |
| | 2.6.4 | <ul style="list-style-type: none"> - The impulse will not be transmitted to the cerebrum✓ - and will not be interpreted✓ | (2) |

2.6.5



Criteria for marking graph:

Criteria	Mark allocation
Type: Bar graph is drawn (T)	1
Caption of the graph includes both variables (C)	1
Correct labels on X-axis and Y-axis (L)	1
Correct scale for Y-axis	
Equal width of bars and spaces (S)	1
Plotting: (P)	
1- 4 co-ordinates are plotted correctly	1
All 5 co-ordinates are plotted correctly	2

(6)

NSC NOV 22

1.5	1.5.1	Negative feedback✓ mechanism	(1)
	1.5.2	(a) Thyroid✓	(1)
		(b) TSH✓/thyroid stimulating hormone	(1)
		(c) Thyroxin✓	(1)
	1.5.3	Goitre✓	(1)
	1.5.4	Hormone A✓	(1)
			(6)

NSC NOV 22

- 2.6 2.6.1 (a) Pancreas✓ /Islets of Langerhans (1)
- (b) Glucagon✓ (1)
- 2.6.2 (a) - The blood glucose levels will remain high✓
 - because the cells will not be able to absorb glucose✓ from the blood
 - excess glucose cannot be converted to glycogen by the liver✓ / muscles (3)
- (b) Diabetes✓mellitus (1)
- 2.6.3 - Adrenalin stimulates the liver✓
 - to convert glycogen to glucose✓
 - to increase the blood glucose levels✓ (3)
- (9)**

MAY/JUNE 23

- 2.5 2.5.1 - It has a duct✓
 - The secretion is released externally✓/not released into blood
 - It secretes sweat✓/It does not secrete a hormone Any (2)
- (Mark first TWO only)**
- 2.5.2 - They receive stimuli✓ from the environment
 - and convert them to nerve impulses✓ (2)
- 2.5.3 - More blood flows to the surface of the skin✓
 to allow more heat to be lost✓
- OR**
- More blood flows to the sweat glands✓
 to increase the production of sweat✓ (2)
- (6)**