

Hillcrest High School

NATURAL SCIENCE

JUNE 2025

Grade 9

MARKS: 120

EXAMINERS: Ms Thrash & Mrs Knox-Whitehead

TIME: 2 Hours

MODERATOR: Mrs Silva

SECTION A : LIFE AND LIVING

[20]

QUESTION 1: MULTIPLE CHOICE QUESTIONS

(10)

- 1.1 B
 - 1.2 D
 - 1.3 C
 - 1.4 C
 - 1.5 B
 - 1.6 A
 - 1.7 B
 - 1.8 C
 - 1.9 B
 - 1.10 D
-

QUESTION 2 :**2.1 TERMINOLOGY****(5)**

2.1.1 Eyepiece / eyepiece lens / ocular lens

2.1.2 cartilage

2.1.3 puberty

2.1.4 Chemical digestion (both words)

2.1.5 Pericardium

2.2 MATCHING COLUMNS**(5)**

2.2.1 F	An eating disorder than can cause a person to become underweight	A. Cytoplasm
2.2.2 D	A health issue that causes airways to swell, wheezing and a tight chest	B. Liver
2.2.3 H	organ which produces insulin to break down sugars	C. TB
2.2.4 A	the jelly like substance where most of the functions of the cell take place	D. Asthma
2.2.5 J	also known as the voice box	E. Trachea
		F. Anorexia
		G. Kwashiorkor
		H. Pancreas
		I. Nucleus
		J. Larynx

TOTAL SECTION A : [20]

SECTION B : LIFE AND LIVING**[40]****QUESTION 3****(4)**

3.1.1 Nucleus ✓ – Contains instructions to direct all cell activities / contains hereditary material called DNA ✓

OR

Cell membrane ✓ - selectively permeable Outer covering / protective layer around cells ✓
(2)

3.1.2 Cell wall ✓ – protects the cell / gives shape and support ✓

OR

Chloroplast ✓ - where photosynthesis takes place / contains chlorophyll for photosynthesis ✓
(2)

(NOTE: do not accept an organelle not provided in the list)

QUESTION 4**(8)**

4.1 Respiratory system (note: NOT “lungs”)
(1)

4.2

4.2.1 **6** - trachea (1)

4.2.2 **7** **alveoli / alveolus** (1)

4.3 c-shaped cartilage rings / mucous lined (1)

4.4 In the alveoli ✓ (NOTE: not just “lungs”) and the cells of the body ✓ (2)

4.5 Alveoli – into the blood ✓
Cells of the body – out of the blood ✓ (2)

QUESTION 5**(7)****5.1 bolus****5.2 oesophagus****5.3 small intestine****5.4 small intestine****5.5 villi****5.6 large intestine****5.7 anus**

QUESTION 6**(6)**

6.1

6.1.1 arteries - 3

(1)

6.1.2 capillaries - 5

(1)

6.2 Left = higher pressure ✓ to the whole body ✓

right is just to the lungs ✓

(3)

QUESTION 7**(5)**7.1 How does the time of day affect the blood sugar levels of a teenager? ✓

(1)

(note: must include both variables and not have a yes / no answer.

Also must have a QUESTION MARK at the end)

7.2 Blood Sugar Level

7.3.1 6:00

7.3.2 The teenager has not eaten all night (anything reasonable on this theme)

7.4 diabetes

QUESTION 8**(10)**

8.1

8.1.1 A - testis / testes / testicles (1)

8.1.2 B vas deferens / sperm duct (1)

8.1.3 E urethra (1)

8.2

Produces sperm
produces testosterone (not just "male hormone") (2)

8.3.1 7 placenta (1)

8.3.2 8 food / nutrients / oxygen from mother to foetus (any one) ✓
Waste removal ✓ (2)

8.4 Place the following words in the correct order for a pregnancy to come to term (1)

- Fertilization
- Zygote
- Implantation
- Embryo
- Foetus

8.5 Copulation canal because it is the passage through which sexual intercourse occurs ✓.
It's also called the birth canal because it is the pathway through which a baby passes during birth ✓ (2)**TOTAL SECTION B : [40]
TOTAL SECTION A & B : [60]**

SECTION C : MATTER AND MATERIALS**[20]**

QUESTION 9 : MULTIPLE CHOICE QUESTIONS**(10)**

9.1 D

9.2 B

9.3 A

9.4 D

9.5 A

9.6 C

9.7 B

9.8 C

9.9 C

9.10 B

QUESTION 10 :**10.1 MATCHING COLUMNS****(5)**

COLUMN A		COLUMN B
10.1.1 F	Reaction of an acid and a base	A combustion
10.1.2 A	A rapid chemical reaction with oxygen that produces heat and light	B electroplating
10.1.3 G	Reaction of Fe with O ₂ in the presence of H ₂ O	C corrosion
10.1.4 E	Covering iron with a layer of a more reactive metal to protect it.	D lubricating
10.1.5 C	An acid or base dissolves or eats away at metals and other strong materials	E galvanising
		F neutralisation
		G rusting

10.2 TERMINOLOGY**(5)**

10.2.1 alkali

10.2.2 electrons

10.2.3 indicator

10.2.4 compounds

10.2.5 group

TOTAL SECTION C : [20]

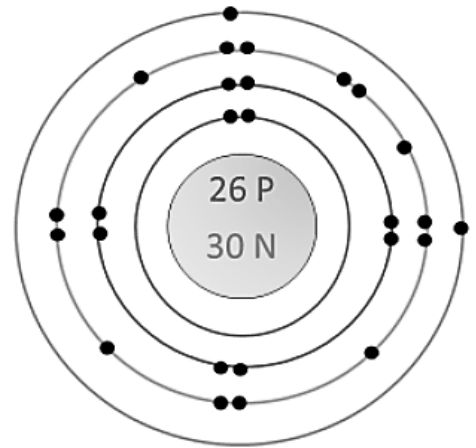
SECTION D : MATTER AND MATERIALS

[40]

QUESTION 11

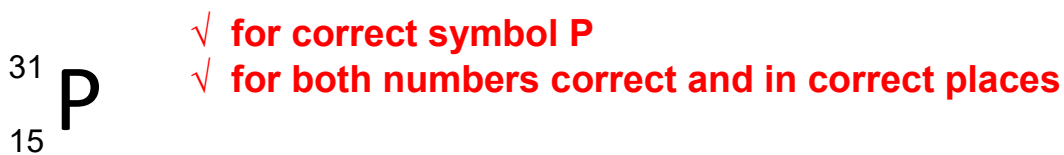
(4)

- 11.1 56 (1)
- 11.2 Number of protons (1)
- 11.3 **SYMBOL** K / Ca / Sc / ... / Br / Kr (1)
- 11.5 **NAME** iron (1)



QUESTION 12

12.1



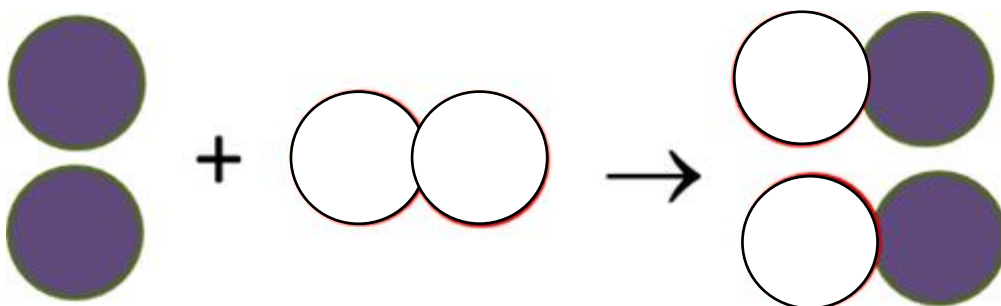
(2)

12.2 $31 - 15 \checkmark = 16 \quad \checkmark$

(2)

QUESTION 13

(6)



13.1 white (1)



13.3 basic. (1)

QUESTION 14 **(12)**

14.1.1 copper ✓ nitrate ✓ (no Stock notation required) (2)

14.1.2 potassium ✓ nitride ✓ (2)

14.2.1 BF₃ (1)

14.2.2 Al(OH)₃ (1)

14.3 ammonia (1)

14.4.1 2 HCl + Ca(OH)₂ → CaCl₂ + 2 H₂O (0 or 1) (1)

14.4.2 N₂ + 3 H₂ → 2 NH₃ (0 or 1) (1)

14.5 C ✓ + O₂ ✓ → CO₂ ✓
(-1 if symbols are all correct but balancing incorrect) (3)

QUESTION 15**(14)**

Acid rain is a form of precipitation with a pH measuring below 5.6 on the pH scale, primarily caused by the release of gases such as SO_2 and nitrogen oxides (NO_x) into the atmosphere from the burning of fossil fuels in power plants, vehicles, and industrial facilities. These gases can also be released from natural sources including volcanic eruptions (releasing SO_2) and lightning strikes (producing nitrogen oxides). These gases, originating from both natural and human sources, react with water and other chemicals, forming sulfuric acid and nitric acid which mix with cloud moisture and can be transported long distances by winds before falling as acid rain, snow, sleet, or fog. The resulting acidity can have detrimental effects on ecosystems, human health, and infrastructure.

The effects on human health include respiratory issues like asthma caused by the toxic non-metal oxide gases in the air, as well as corrosion of water pipes by acid rain, potentially leaching heavy metals into drinking water.

15.1 burning of fossil fuels / volcanic eruptions / lightning strikes (1)

(any ONE; power plants, vehicles, industrial facilities MUST refer to fossil fuels being burnt)

15.2.1 sulfur dioxide (1)

15.2.2 nitrogen monoxide (1)

15.3 H_2SO_4 ✓ and HNO_3 ✓ (2)

15.4 respiratory issues / asthma / heavy metals leach into drinking water (any ONE) (1)

15.5 Soil Acidification: ✓ Harms plant life / agriculture. ✓

Water Pollution / Acidification of lakes and streams: ✓ can make them uninhabitable for aquatic life, especially fish. ✓

Damage to Structures: Acid rain can corrode limestone / cement ✓ and damage zinc roofs. ✓ (any TWO answers, 2 marks each) (4)

15.6 A scale from 0 to 14 that tells us how acidic or basic a substance is. ✓

< 7 = acidic ✓

7 = neutral ✓

7 = basic ✓ (4)

TOTAL SECTION D : [40]

TOTAL SECTION C & D : [60]

GRAND TOTAL : [120]