higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

THE HUMAN BODY AND MIND
NQF LEVEL 4

(9020094)

4 December 2020 (X-paper)
09:00–12:00

This question paper consists of 13 pages.

317Q1N2004

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TIME: 3 HOURS
MARKS: 200

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Start each question on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.

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QUESTION 1

1.1 Choose the correct term from those given in brackets. Write only the term next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 (Veins/Arteries) have valves to prevent backflow of blood.

1.1.2 The (trachea/oesophagus) is kept in shape by C-shaped cartilage rings.

1.1.3 (Lymph/Cerebrospinal fluid) is a clear, colourless fluid containing white blood cells.

1.1.4 The (stomach/heart) is a hollow, muscular, pear-shaped organ about the size of a fist.

1.1.5 The (kidney/spleen) is a dark red, bean-shaped organ.

1.1.6 The (large/small) intestines are a long, thin, coiled tube about 5 meters long.

1.1.7 The walls of (veins/arteries) are thicker and more elastic than other blood vessels.

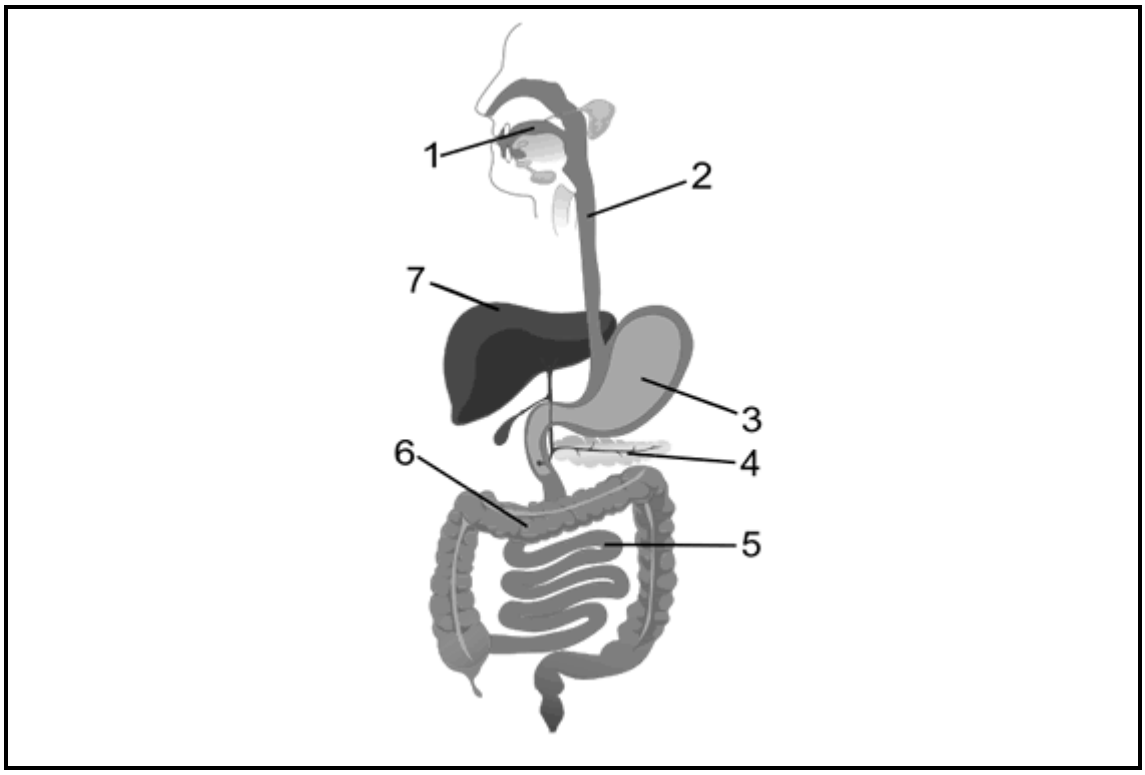
1.1.8 The (diaphragm/pleura) is a dome-shaped that assists with breathing.

1.1.9 The (dermis/hypodermis) consists of adipose tissue.

1.1.10 The (ovaries/testes) are small almond-shaped glands.

(10 × 1) (10)

1.2



[Source: *clipart library.com*]

FIGURE 1

Label the diagram in FIGURE 1 by writing only the answer next to the number (1–7) in the ANSWER BOOK. (7 × 1) (7)

1.3 The size and shape of the male and female pelvis differ.

1.3.1 Redraw and complete the following table in the ANSWER BOOK to differentiate between the male and female pelvis.

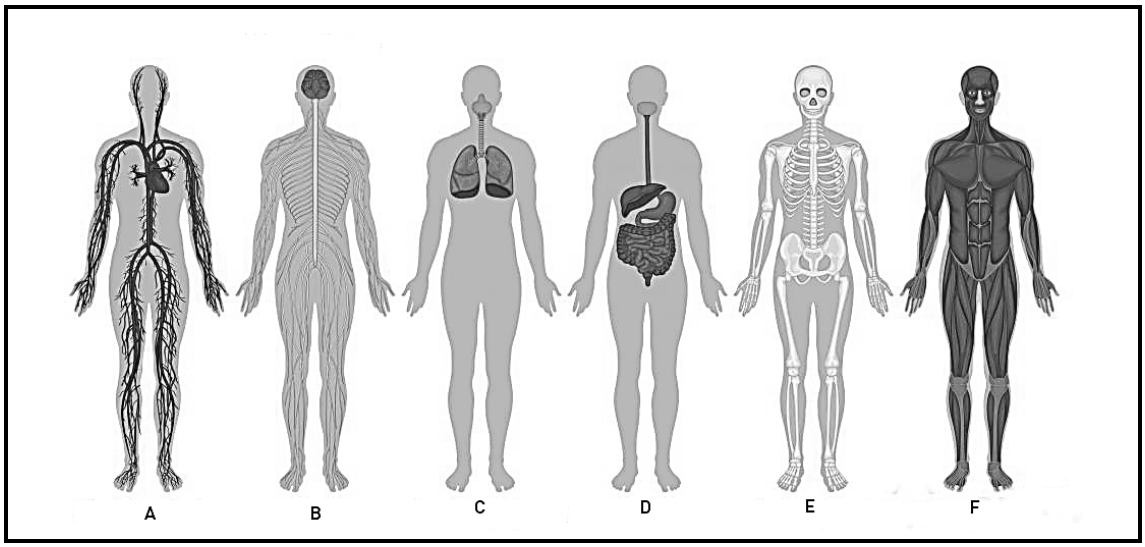
	Male	Female
Pelvic inlet		
Acetabula		
Pubic arch		
Coccyx		

(4 + 4) (8)

1.3.2 Give the key function of the male pelvis. (2)

1.3.3 Give the key function of the female pelvis. (2)

1.4 All systems of the body, shown in FIGURE 2, work together to function optimally.



[Source: *wise GEEK*]

FIGURE 2

1.4.1 Name TWO systems responsible for movement. (2)

1.4.2 Substantiate the answer to QUESTION 1.4.1. (2)

1.4.3 Name TWO systems that form the circulatory system. (2)

1.4.4 Name TWO systems responsible for the circulation of blood and gas exchange. (2)

1.4.5 Identify the system numbered D. (1)

1.4.6 Give the function of system B. (2)

[40]

QUESTION 2

2.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1.1–2.1.10) in the ANSWER BOOK.

2.1.1 There are 21 pairs of spinal nerves.

2.1.2 Voice is produced in the larynx during inhalation.

2.1.3 The two parietal bone plates meet at the sagittal suture.

2.1.4 The heart lies between the lungs in the abdominal cavity.

2.1.5 The lower teeth are situated in the mandible.

2.1.6 The stomach is found below the diaphragm on the left side of the upper abdomen.

2.1.7 Absorption of nutrients occurs in the large intestines.

2.1.8 The cervix connects the vagina to the uterus.

2.1.9 The sublingual salivary glands are situated under the tongue.

2.1.10 Sperm mature in the epididymis.

(10 × 1) (10)

2.2 Identify each of the following organs/structures:

2.2.1 Largest lymphatic organ in the body

2.2.2 Structures at the end of bronchioles

2.2.3 Arteries supplying oxygen to the heart muscle

2.2.4 Structures attaching muscles to bones

2.2.5 Opening for excretion of faeces

2.2.6 Structure closing the oesophagus to prevent food in the stomach from returning to the oesophagus

2.2.7 Flap preventing food from entering the trachea

2.2.8 Skeletal structure that protects the spinal cord

2.2.9 Structure dividing the thoracic cavity and abdominal area

2.2.10 Tube transporting urine from the bladder to be excreted

(10 × 1) (10)

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2.3 Choose one term from the list below for each of the following descriptions and write it next to the question number (2.3.1–2.3.5) in the ANSWER BOOK.

sensory nerves; motor nerves; connector neuron; sensory receptors; relax; contract

2.3.1 A reflex arc begins when the … in the skin detect a stimulus.

2.3.2 The … relay the impulse to the spinal cord.

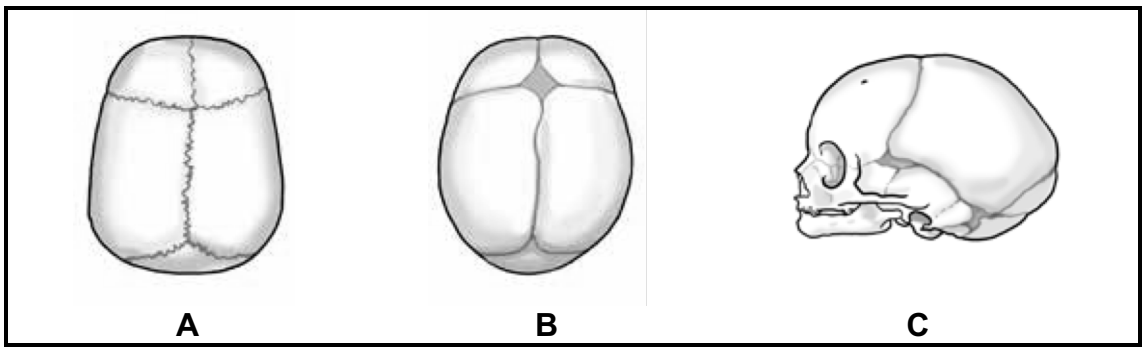
2.3.3 The impulse connects to the … in the spinal cord where the information is interpreted.

2.3.4 The … carry the message back to the muscles.

2.3.5 The muscles of the effector organ … to take action.

(5 × 1) (5)

2.4 You are doing voluntary work at a clinic in your area. The sister in charge asks you to inform the patients in the prenatal waiting area about the features of an infant skull as shown in FIGURE 3.



[Source: *www.skullsumlimited.com*]

FIGURE 3

2.4.1 Refer to A and explain the function of sutures. (1)

2.4.2 Name the diamond-shaped fontanelle in B. (1)

2.4.3 Explain why the fontanelle named in QUESTION 2.4.2 would be sunken. (1)

2.4.4 Give TWO reasons why the infant skull is out of shape after birth.

(2 × 2) (4)

2.4.5 Explain why the facial part of an infant's skull is smaller in proportion to the rest of the skull. (3)

2.5 2.5.1 Give THREE reasons why a female will not to be able to give normal uncomplicated birth. (3)

2.5.2 What is the alternative to a normal birth? (2)

[40]

QUESTION 3

3.1 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (3.1.1– 3.1.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1.1	Medulla oblongata, pons and midbrain	A	somatic motor pathways
3.1.2	Regulates movement and balance of the body	B	brainstem
3.1.3	Substance released into the synaptic space to allow a nerve impulse to be transmitted to next axon	C	cerebellum
3.1.4	Regulates and coordinates basic functions vital for survival	D	neurotransmitter
3.1.5	Part of the brain controlling the rate and depth of breathing	E	spinal cord
3.1.6	Interprets sensations of smell	F	respiratory centre in the medulla oblongata
3.1.7	Immediate involuntary motor response to a sensory stimulus	G	hypothalamus
3.1.8	Takes messages from the body to the brain and spinal cord	H	olfactory nerve
3.1.9	Takes messages from the brain and spinal cord to the body	I	autonomic nervous system
3.1.10	Movement of a gas from areas with a high concentration to areas with a low concentration	J	reflex arc
		K	somatic sensory pathways
		L	diffusion

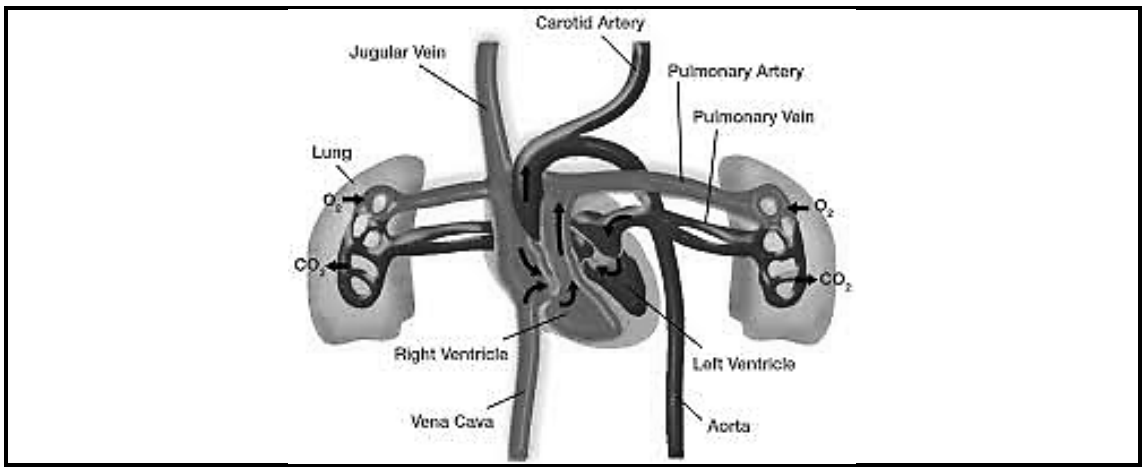
(10 × 1) (10)

3.2 3.2.1 Name FOUR systems responsible for removing waste from the body. (4)

3.2.2 Give the waste product of each system named in QUESTION 3.2.1. (4)

3.3 Explain the elimination of urine from the body. (6)

3.4



[Source: *images.search.yahoo.com*]

FIGURE 4

3.4.1 Explain why the cardiovascular and respiratory systems are dependent on each other. (5)

3.4.2 Choose the correct term from those given in brackets. Write only the term next to the letter (a–b) in the ANSWER BOOK.

(a) (External/Internal) respiration refers to the movement of oxygen from the alveoli in the lungs to the pulmonary capillaries and carbon dioxide from the pulmonary capillaries into the alveoli.

(b) (External/Internal) respiration refers to the movement of oxygen from the pulmonary capillaries into the cell and carbon dioxide from the cells to the pulmonary capillaries.

(2 × 2) (4)

3.4.3 Complete the following sentences by writing only the missing word or words next to the letter (a–b) in the ANSWER BOOK.

(a) Too much carbon dioxide in the blood results in a change in pH leading to …

(b) Too little carbon dioxide in the blood results in a change in pH leading to …

(2 × 1) (2)

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3.5 The main function of the respiratory system is to inhale oxygen and exhale carbon dioxide. Injury to the lungs can cause trauma to the body. Diseases like asthma can also have a negative effect on the respiratory system.

[Source: *livescience.com*]

3.5.1 How will the body react if carbon dioxide is not removed from it? (3)

3.5.2 Give TWO causes of difficult breathing in asthmatics. (2)
[40]

QUESTION 4

4.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (4.1.1–4.1.10) in the ANSWER BOOK.

4.1.1 Gonads is the collective name for …

A male and female primary reproductive glands.
B male and female hormones.
C glands of the endocrine system.
D hormones secreted from the pituitary gland.

4.1.2 The … secreted by the anterior lobe of the pituitary gland stimulates ovaries and testes to produce female and male hormones respectively.

A Luteinising hormone
B growth hormone
C thyroid-stimulating hormone
D prolactin

4.1.3 … triggers muscle contractions of the uterus during delivery of a baby.

A Oxytocin
B Luteinising hormone
C Growth hormone
D Follicle-stimulating hormone

4.1.4 … acts on mammary glands to stimulate milk production during breastfeeding.

A Thyroid-stimulating hormone
B Prolactin
C Luteinising hormone
D Follicle-stimulating hormone

4.1.5 Abnormally high levels of blood sugar:

A Hyperglycaemia
B Hypoglycaemia
C Hypocalcaemia
D Hypercalcaemia

4.1.6 The pituitary gland is controlled by the …

A cerebrum.
B cerebellum.
C medulla oblongata.
D hypothalamus.

4.1.7 The negative-feedback mechanism in the endocrine system …

A only controls the secretion of steroid hormones.
B only controls the under-secretion of hormones.
C directs corrective steps to control imbalances in the secretion of hormones.
D is controlled by the thymus gland.

4.1.8 … stimulates the development of lymphocytes into T-lymphocytes to protect the body against harmful microorganisms.

A Thyroxin
B Thymosin
C Thyroid-stimulating hormone
D Calcitonin

4.1.9 The … secretes melatonin which plays a role in the regulation of the sleep/wake cycles.

A thalamus
B pituitary gland
C brainstem
D pineal gland

4.1.10 A lack of … in the body may cause problems in the development of bones and teeth.

A glucagon
B insulin
C calcium
D protein

(10 × 1) (10)

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4.2 Indicate whether the following actions belong to the somatic or autonomic system:

4.2.1 Walking

4.2.2 Digesting food

4.2.3 Heart rate

4.2.4 Breathing

4.2.5 Swimming

(5 × 2) (10)

4.3 4.3.1 Why is it important that the respiratory system is well protected? (2)

4.3.2 Name FOUR structures that protect the respiratory system. (4)

4.4 Substances secreted by the pancreas ensure that certain functions of the body are performed optimally. Without the pancreas the body is susceptible to serious complications.

4.4.1 In which TWO systems do the pancreas play a role? (2 × 2) (4)

4.4.2 Which TWO hormones are secreted by the pancreas to regulate blood-sugar levels? (2)

4.4.3 Explain the functions of the hormones mentioned in QUESTION 4.3.2. (2 × 2) (4)

4.5 What is the influence of alcohol on the function of the pancreas in the two systems mentioned in QUESTION 4.4.1? (2 × 2) (4)

[40]

QUESTION 5

5.1 Complete the following sentences by choosing a word or words from the list below. Write only the answer next to the question number (5.1.1–5.1.10) in the ANSWER BOOK.

perception; listening; differences; Kohlberg; Piaget; Bowlby; principles; respondent; operant; positive; separation anxiety

5.1.1 … behaviour refers to a specific response to a known stimulus.

5.1.2 The consequences of behaviour are considered when identifying … behaviour.

5.1.3 … is an important skill for good communication.

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5.1.4 Detection, recognition and discrimination describe the level of complexity of …

5.1.5 Closure, constancy and context are … that affect perception.

5.1.6 Cultural … influence moral development.

5.1.7 … developed the theory of moral development.

5.1.8 People are advised to address negative feelings by focusing on … things.

5.1.9 … developed the attachment theory.

5.1.10 A child experiences … when a person they regard as an attachment figure is not available.

(10 × 1) (10)

5.2 Differentiate between *verbal communication* and *nonverbal communication*. (2 + 2) (4)

5.3 Define the term *perception*. (2)

5.4

> Angel likes to touch everything and then put it in her mouth. She likes to crawl and learns that her actions can cause things to happen. Paul is still egocentric and thinks that everything belongs to him. It is not easy for him to see a situation from other people's perspective. Sizwe is an adolescent who can think abstractly. Her thoughts are more flexible, rational and systematic. Kolisile is in primary school and likes to do projects. He understands the concept of conservation.

[Source: *www.sciencedirect.com*]

5.4.1 Name the cognitive development stage for each child in the scenario. (4 × 2) (8)

5.4.2 Which theorist developed the cognitive development stages? (1)

5.5 Is perception important in our daily life? Substantiate the answer. (4)

5.6 Give your opinion about using traditional and/or Western medicine. (5)

5.7 Give THREE reasons for cultural miscommunication. (3)

5.8 Give THREE reasons why a healthy body depends on a healthy mind. (3)

[40]

TOTAL: 200

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