higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

THE HUMAN BODY AND MIND
NQF LEVEL 4

(9020094)

10 November 2022 (X-paper)
09:00–12:00

This question paper consists of 14 pages.

255Q1N2210

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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. Use only a blue or black pen.
5. Write neatly and legibly.

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QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.1.1–1.1.8) in the ANSWER BOOK.

1.1.1 The small intestine is a long, thin, tubed coil about 5 m long.

1.1.2 The trachea is strengthened with C-shaped cartilage rings.

1.1.3 The liver is a hollow, pear-shaped organ.

1.1.4 Arteries have valves to prevent the back-flow of blood.

1.1.5 Smooth muscles are found in the stomach, lungs and uterus.

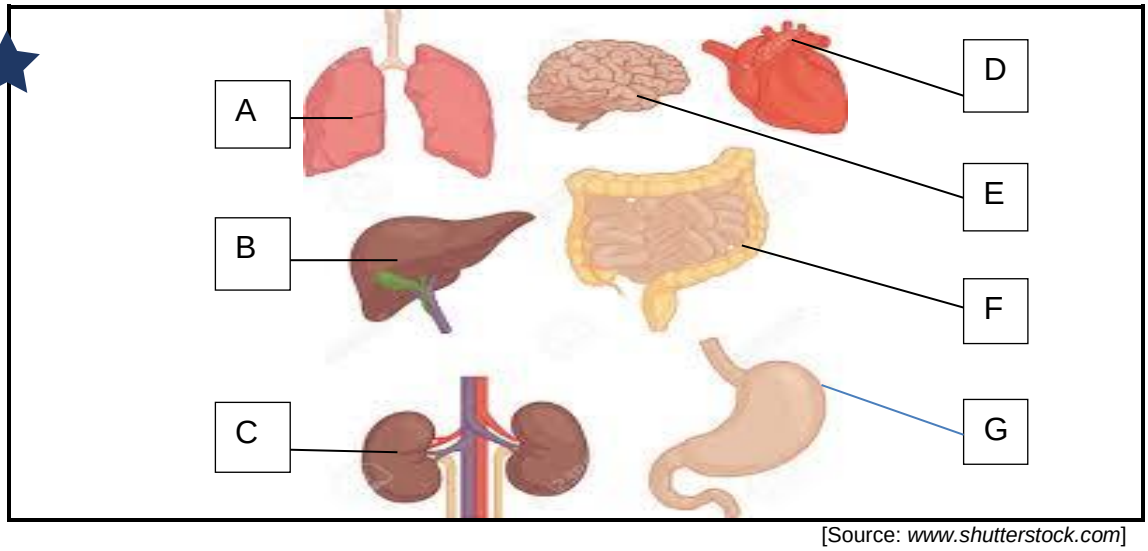
1.1.6 The scapula is a large, flat, square bone.

1.1.7 Kidneys are dark red, bean-shaped organs.

1.1.8 The ovaries are almond shaped glands of the female reproductive system.

(8 × 1) (8)

1.2 Name the organs shown in FIGURE 1 by writing only the answer next to the letter (A–G) in the ANSWER BOOK.



[Source: *www.shutterstock.com*]

FIGURE 1 (7)

1.3 Give the position of the following organs:

1.3.1 Uterus

1.3.2 Kidney

1.3.3 Prostate gland

1.3.4 Testes

1.3.5 Sublingual salivary gland

1.3.6 Sacrum

1.3.7 Patella

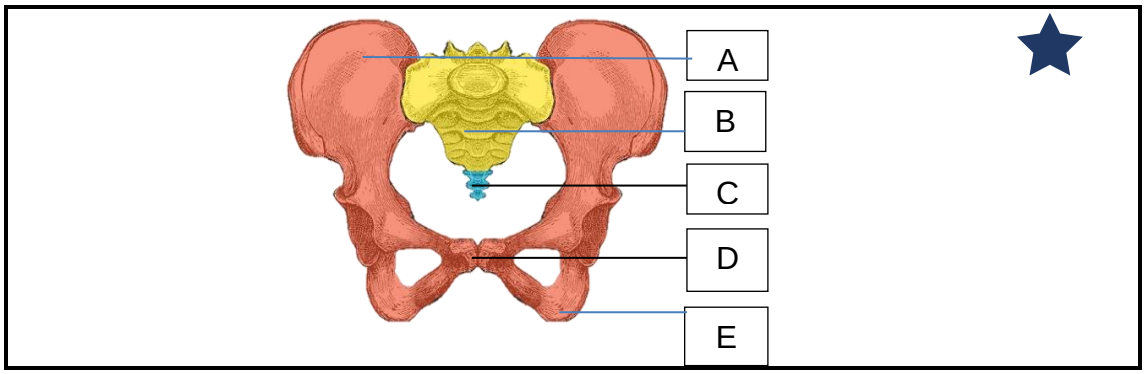
1.3.8 Liver

1.3.9 Diaphragm

1.3.10 Scapula

(10 × 1) (10)

1.4 Name the parts indicated in FIGURE 2 by writing only the answer next to the letter (A–E) in the ANSWER BOOK.



[Source: pharmanewsonline.com]

FIGURE 2 (5)

1.5 The skeleton of the pelvis of a male differs in many ways from that of a female. The most obvious reason for the difference between the male and female pelvis is the different functions of the reproductive organs in the pelvic area.

1.5.1 State the most prominent difference between the male and female pelvis. (2)

1.5.2 Give the function of the male pelvis. (2)

1.5.3 Give the function of the female pelvis. (2)

1.5.4 Indicate whether the following statements refer to the male or female pelvis:

(a) The sacrum is straighter, narrower and longer

(b) The pubic arch is wider and more rounded

(c) The pelvic outlet is larger and wider

(d) The coccyx curves forward and is not able to move

(4 × 1) (4)

[40]

QUESTION 2

2.1 Complete each of the following sentences by choosing an option from the list below. Write only the answer next to the question number (2.1.1–2.1.10) in the ANSWER BOOK.

muscular; digestive; meninges; respiratory; coronary arteries; cilia; immune; skeletal; nails; pleura

2.1.1 The … system gives shape to the body.

2.1.2 … of the cardiovascular system carry oxygenated blood to the heart muscle.

2.1.3 The … system allows movement of the body.

2.1.4 The … system protects the body against germs and bacteria which can cause diseases.

2.1.5 The parotid glands form part of the … system.

2.1.6 … form(s) part of the integumentary system.

2.1.7 … form(s) part of the respiratory system.

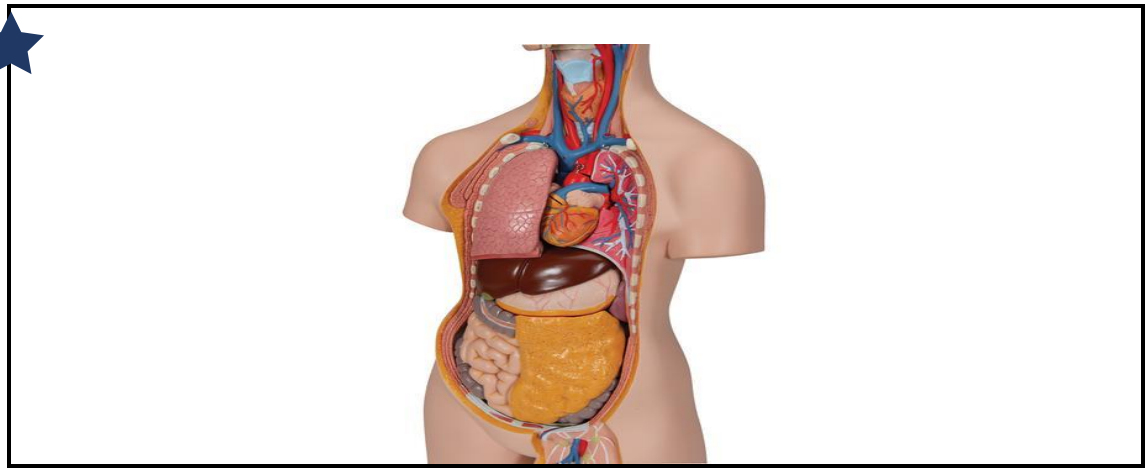
2.1.8 … are membranes that surround the brain and spinal cord.

2.1.9 … are membranes that surround the lungs.

2.1.10 The exchange of gases happens in the alveoli of the …system.

(10 × 1) (10)

2.2 Name FIVE systems shown in the torso in FIGURE 3.



[Source: www.3bscientific.com]

FIGURE 3 (5)

2.3 Give the function of the following organs/glands:

2.3.1 Bladder

2.3.2 Gall bladder

2.3.3 Liver

2.3.4 Epiglottis

2.3.5 Pancreas

2.3.6 Kidneys

2.3.7 Ureters

2.3.8 Trachea

2.3.9 Oesophagus

2.3.10 Adrenal gland

(10 × 1) (10)

2.4 Ludziya works in the maternity ward of a hospital. She is very excited about her new job but she is also worried about the many new-born babies whose skulls look out of shape.

Study FIGURE 4 and answer the questions.



[Source: www.gtsimulators.com]

FIGURE 4

2.4.1 Give FOUR reasons why the facial area of an infant's skull is much smaller than the cranial area of the skull. (4)

2.4.2 Give ONE reason why it is importance to measure the circumference of an infant's skull regularly. (1 × 2) (2)

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2.4.3 Name the suture between the two parietal bones. (2)

2.4.4 Name the TWO fontanelles on the superior side of an infant's skull. (2)

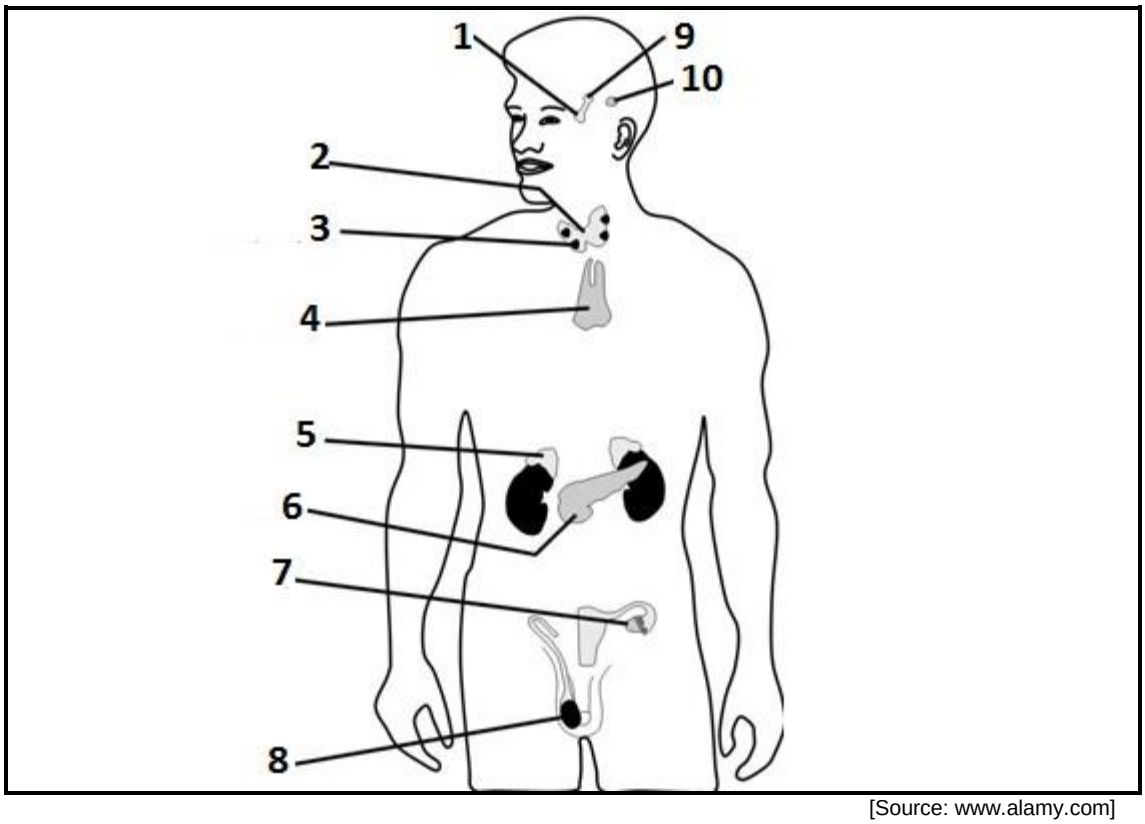
2.4.5 Name the possible cause of a sunken fontanelle. (1)

2.4.6 Give TWO reasons why it is important that the bone plates of the infant's skull overlap. (2 × 2) (4)

[40]

QUESTION 3

3.1 Name the glands of the endocrine system indicated in FIGURE 5 by writing only the answer next to the number (1–10) in the ANSWER BOOK.



[Source: www.alamy.com]

FIGURE 5 (10)

3.2 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (3.2.1–3.2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.2.1	Hormone of the male reproductive system	A	prolactin
3.2.2	Controls the sexual function and the production of sex hormones	B	oestrogen
3.2.3	Hormone of the female reproductive system	C	testosterone
3.2.4	Stimulates milk production in breastfeeding women	D	calcitonin
3.2.5	Controls ovulation and secondary sexual characteristics	E	growth hormone
3.2.6	Makes hormones that control several other glands	F	Luteinising hormone
3.2.7	A hormone that affects biological clock rhythms	G	melatonin
3.2.8	A hormone that promotes the production of lymphocytes	H	progesterone
3.2.9	A hormone that prepares the body for emergency situations	I	adrenalin
3.2.10	A hormone that regulates calcium levels in the blood	J	pituitary gland
		K	melanin
		L	thymosin

(10 × 1) (10)

3.3 Simpiwe complained that she often feels out of breath when she is physically active.
Alungile feels constipated and bloated.
Boniswa's urine has a dark, yellowish colour and it smells when she urinates.
Peter does not sweat at all even when he does exercises.

Name the excretory system that is affected in each person in the case study. Give the name of the person followed by the system. (4)

3.4 The main function of the respiratory system is to deliver enough oxygen to the body tissues and to remove carbon dioxide from the body tissues for optimal functioning of the body.

Briefly explain the difference between *external respiration* and *internal respiration*. (2 × 2) (4)

3.5 The exhalation of carbon dioxide is vital to maintain the pH of the blood. The normal range of the pH of blood is between 7,35 and 7,45.

3.5.1 Give the pH level of blood during acidosis.

3.5.2 Give the pH level of blood during alkalosis.

(2 × 1) (2)

3.6 It is important that oxygen and carbon dioxide are transported through the body.

3.6.1 Name the protein in the blood to which oxygen and carbon dioxide must bind to make the transport of these gases possible. (2)

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

(a) Oxygen binds with the protein mentioned in QUESTION 3.6.1 and then … is formed to transport oxygen in the blood.

(b) Carbon dioxide binds with the protein mentioned in QUESTION 3.6.1 and then … is formed to transport carbon dioxide in the blood.

(2 × 1) (2)

3.7 Name the process where gases move from an area of high concentration to an area of lower concentration. (1)

3.8 If the cardiovascular system and the respiratory system do not function as they should, the body would be influenced negatively.

Explain this statement. (5)

[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 The … nerve is a cranial nerve.

A optic
B sciatic
C phrenic
D median

4.1.2 The path taken by nerve impulses in a reflex is called the …

A sensory path.
B motor path.
C reflex movement.
D reflex arc.

4.1.3 The ability of a neuron to start an impulse in response to a stimulus is …

A conductivity.
B irritability.
C sensitivity.
D initiation.

4.1.4 The … nerves do not form plexuses after leaving the spinal cord.

A cervical
B lumbar
C thoracic
D sacral

4.1.5 The central nervous system consists of the …

A somatic and autonomic systems.
B sympathetic and parasympathetic systems.
C motor and sensory nerves.
D brain and spinal cord.

4.1.6 The … lobe of the brain interprets visual information from the environment.

A occipital
B temporal
C parietal
D frontal

4.1.7 The … controls the coordination of voluntary muscles.

A cerebrum
B cerebellum
C hypothalamus
D thymus

4.1.8 … are released in a synapse to allow neural messages to be passed on from one neuron to the next.

A White blood cells
B Hormones
C Neurotransmitters
D Oxygen

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4.1.9 The autonomic nervous system controls …

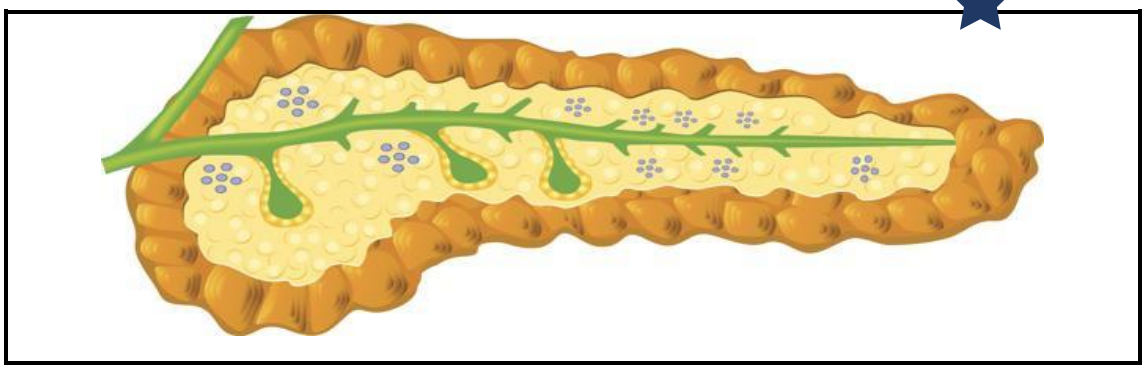
A the beating of the heart.
B running for exercise.
C sitting down when you are tired.
D blowing your nose when you have a cold.

4.1.10 The somatic nervous system controls …

A digestion after you have eaten pizza.
B dancing for fun.
C heart rate when you got a fright.
D size of the pupil when it gets dark.

(10 × 1) (10)

4.2 FIGURE 6 shows an image of the pancreas.



[Source: www.quora.com]

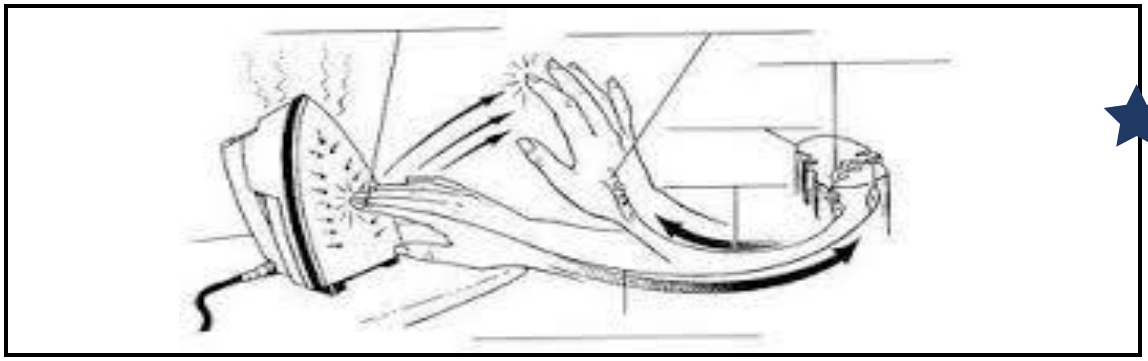
FIGURE 6

4.2.1 Name TWO systems in which the pancreas plays a role. (2)

4.2.2 Name the hormones that are secreted by the pancreas and explain how they control blood sugar levels.

(4 × 2) (8)

4.3 When a person touches a hot surface he/she pulls the hand away immediately without thinking, as shown in FIGURE 7.



[Source: www.istockphoto.com]

FIGURE 7

Briefly explain the process that takes place in the brain to form a reflex arc after a person touched a hot surface. (5)

4.4 Grasping an object is a development milestone during the first year of a baby's life.

Name FOUR processes that take place during this year in a baby's brain, that enable him/her to reach out and grab an object. (4)

4.5 If sensory nerves do not function, it will have a negative influence on the body.
Explain the statement. (3)

4.6 The autonomic nervous system allows body processes to take place without the person making a specific decision, as shown in FIGURE 8.

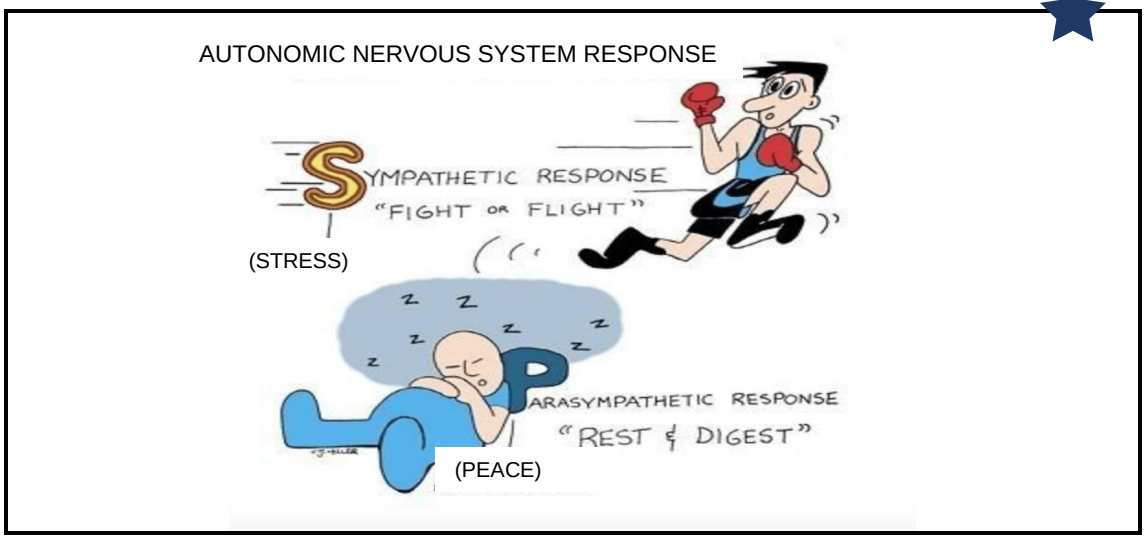


FIGURE 8

Briefly explain the effects of the sympathetic system on the heart, respiratory system, eyes, salivary glands, urinary bladder and the adrenal glands. (6 × 1) (6)

4.7 Briefly explain the effects of the parasympathetic system on the body. (2)
[40]

QUESTION 5

5.1 Choose the correct option from those given in brackets. Write only the answer next to the question number (5.1.1–5.1.10) in the ANSWER BOOK.

5.1.1 Children start to use (pre-linguistic/telegraphic) speech when they are between two and three years old.

5.1.2 Language plays an important role in the transmission of (perceptions/culture).

5.1.3 (Non-verbal/verbal) communication represents communication using one's body.

5.1.4 The development of (communication/technology) plays a big role on social network sites.

5.1.5 Our (perception/language) is influenced by the way we receive information from the environment.

5.1.6 (Closure/constancy) is the ability of one's mind to see things as complete even though we only see part of the whole.

5.1.7 Our (emotions/behaviour) has/have an important effect on our perceptions.

5.1.8 We look at the consequences of behaviour to identify (respondent/operant) behaviour.

5.1.9 People who experience physical health problems are likely to develop (mental/social) disturbances.

5.1.10 Having a healthy mind and positive outlook on life will result in physical (problems/health).

(10 × 1) (10)

5.2 Erik Erikson explained growth of personality across eight stages in his theory of psychosocial development.

Name and explain the first TWO stages of Erikson's theory. (2 × 3) (6)

5.3 Explain the following characteristics of John Bowlby's attachment theory:

5.3.1 Proximity

5.3.2 Safety

5.3.3 Secure base

5.3.4 Separation anxiety

(4 × 1) (4)

5.4 Abby has a very fancy pencil with feathers at the one end.
John's mother told him that he should not steal his friend's pencil because he might be caught and then punished.
Elsa does not want to steal the pencil because other people will think of her as a thief.
Jack's sister said she will not steal the pencil because she might be caught and then she will not be able to go to the beach with her friends.
Peter also did not want to take the pencil because he believes laws exist to protect society.

5.4.1 On which stage of Kohlberg's stages of moral development, is each of the friend's decision based not to steal the pencil? Give an explanation for each choice of stage.

Write the name of each friend followed by the stage and explanation. (4 × 2) (8)

5.4.2 Define *moral development.* (2)

5.5 Siyanda has four children.
Bonita is one year old and learns to know the world through its movements and sensations.
Precious is 18 months old and only sees things from her point of view because she is still very egocentric.
Pulane is five years old and begins to think logically about concrete things.
Sipho is twelve years old and can solve problems and approach problems from different points of view according to his inner value system.

Name the development stage of each child according to the cognitive development theory of Juan Piaget.

Give the name of each child followed by the stage. (4)

5.6 Some people prefer to go to traditional healers and use traditional medicine.

Give THREE possible reasons why some people prefer to go to traditional healers. (3)

5.7 There is a strong connection between the body and the mind.

Give THREE reasons why negative emotions can result in physical problems. (3)

[40]

TOTAL: 200

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