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Support Pack | Grade 12

CAPS

Life Sciences

Practice examination: Paper 1 memo

This support pack consists of a memorandum of answers for Paper 1 of the **Life Sciences Grade 12 CAPS curriculum** so that you or the learners can check their answers and assess their readiness for the examinations. You have permission to print or photocopy this document or distribute it electronically via email or WhatsApp.

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Memorandum of answers

PAPER 1

SECTION A

QUESTION 1

1.1
1.1.1 B
1.1.2 B
1.1.3 B
1.1.4 C
1.1.5 C
1.1.6 D
1.1.7 C
1.1.8 C
1.1.9 B

1.2
1.2.1 gestation
1.2.2 Diabetes mellitus
1.2.3 Eustachian tube
1.2.4 eutrophication
1.2.5 precocial
1.2.6 axon
1.2.7 negative feedback mechanism
1.2.8 goitre
1.2.9 adrenalin

1.3
1.3.1 B only
1.3.2 Both
1.3.3 B only
1.3.4 None
1.3.5 A only
1.3.6 Both

1.4
1.4.1 cerebellum
1.4.2 **a)** C **b)** B
1.4.3 The immediate effect would be lack of stimulation of the thyroid gland to secrete thyroxin. The subsequent effect on the body would be adversity with respect to metabolism.

1.5
1.5.1 A: 46, B: 23, C: 46
1.5.2 Zygote
1.5.3 stages 1 and 2
1.5.4 stages 3 and 4

SECTION B

QUESTION 2

2.1

2.1.1 **a)** W: placenta
b) X: umbilical cord
c) Y: uterine wall

2.1.2 Acts as a shock absorber to prevent the foetus from injury.

2.1.3
- The uterine wall is strong and muscular
- Which enables it to contract and relax during the birth process
- Thus helping to push the foetus/afterbirth through the birth canal.

2.1.4 Any two:
- respiratory/gaseous exchange system
- digestive system
- excretory system

2.1.5 High levels of progesterone inhibits the secretion of FSH.

2.2

2.2.1 Any two: size of needle; thickness and type of thread; colour of thread; time period between attempts; starting distance between needle and thread

2.2.2 It takes more time to thread the needle with both eyes open compared to having one eye open. **OR** It takes less time to thread the needle with both eyes open compared to having one eye open. **OR** The more attempts undertaken to thread the needle, the less time it takes.

2.2.3 To improve the reliability of the results.

2.2.4 The ciliary muscles contract. The suspensory ligament slackens or relaxes, the lens bulges and becomes more convex, the tension on the lens is released, the sclera pulls forward, the refractive power of the lens increases and a clear image is formed on the retina.

2.3

2.3.1 2 – iris; 3 – ciliary muscles

2.3.2 Allows light to enter the eye and to refract light rays.

2.3.3 **a)** Poor light conditions, such as dim light
b) Viewing objects nearer than 6 m

2.3.4 When an object closer than 6 m is seen, the ciliary muscles contract and the ciliary body moves closer to the lens. The tension on the suspensory ligaments decrease, the lens becomes less tense and bulges and becomes convex.

2.4

2.4.1 Shoots will grow towards light. **OR** Shoots will grow away from light. **OR** Light has no influence on the shoot.

2.4.2 It is the control – used to verify the results of the experiment, to allow for one variable only to be measured at a time.

2.4.3 Shoots grow towards the source of light.

2.4.4 The auxins that make the shoot grow towards the source of the light are in the tips.

2.4.5 Make plants grow tall – stimulate seed germination.

QUESTION 3

3.1

3.1.1 Negative feedback mechanism

3.1.2 TSH

3.1.3 It inhibits the pituitary gland – causing it to secrete less TSH.

3.1.4 The pituitary gland secretes TSH so the level of thyroxin in the blood increases. The pituitary gland is sensitive to the amount of thyroxin in the blood and a high level of thyroxin inhibits the production of TSH, so the thyroid gland produces less thyroxin. This is called a negative feedback mechanism.

3.2

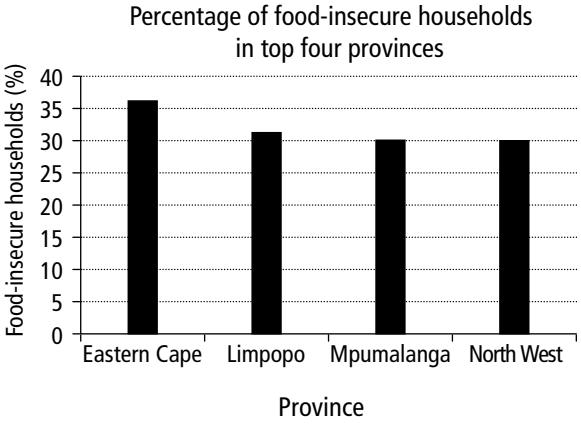
3.2.1 excretion, osmoregulation, thermoregulation

3.2.2 Ruffini's corpuscle/heat receptors in skin are sensitive to and stimulated by heat. Nerve impulses are transmitted to the thermoregulation centre of the hypothalamus. From there impulses are transmitted back to the skin, blood vessels in the skin dilate and more blood flows near the surface and more heat is lost by convection and radiation. Nerve impulses stimulate and activate sweat glands and more blood moves to the sweat glands. More sweat is secreted by sweat pores and more sweat evaporates from the surface of the skin and cools the blood circulating through the skin. Erector muscles relax and hairs lie flat on the skin surface and less air is trapped. The insulation layer is reduced and more heat is lost by radiation and conduction.

3.3

3.3.1 Having access to enough food on a daily basis, so as to ensure healthy living.

3.3.2



3.3.3 **a)** Fertilisers provide nutrients that increase crop growth.

b) Fertilisers are expensive and this can cause food prices to increase – the over-use of fertilisers can cause oxygen deprivation in the soil which will eventually reduce crop production.

3.3.4 **a)** Pesticides ensure that pests do not cause large-scale damage to crops.

b) Pesticides could kill pests as well as their predators – hence more pesticides would have to be used, raising food prices.

3.3.5 Massive unemployment in the country; increase in the size of the human population; farms destroyed for development; decrease in subsistence farming; prolonged unfavourable environmental conditions.

3.4

3.4.1 393,5 ppm

3.4.2 Carbon dioxide concentration in ppm

3.4.3 Burning of coal/fossil fuels.

3.4.4 Cutting down of trees decreases the amount of carbon dioxide that would have been taken up by the plants for photosynthesis.

3.4.5 Any one:

- Use public transport/bicycles/walk more.
- Use solar powered heaters/geysers.
- Reduce the need for heating by insulating walls.
- Build energy efficient homes.
- Re-use and recycle.
- Plant trees/reforestation.

SECTION C

QUESTION 4

Mechanism of reflex action

Example: withdrawal of hand after being pricked by a pin/from hot surface (or any other suitable example). Receptors in the skin receive the stimulus. The stimulus is converted into a nerve impulse. The impulse travels along the sensory neuron towards the spinal cord along the dorsal root of the spinal nerve. In the spinal cord, the sensory neuron makes synaptic contact with the connector/interneuron and then the impulses are transmitted along the motor neuron along the ventral root of the spinal nerve to the effector organ/muscle which contracts and pulls the hand away. The reflex action provides a quick response to the stimulus so injury is minimised.

Assessing the presentation of the essay

Criterion	Relevance (R)	Logical sequence (L)	Comprehensive (C)
Generally	All information provided is relevant to the topic	Ideas are arranged in a logical sequence	All aspects required by the essay have been sufficiently addressed
In this essay	Only information relevant to REFLEX ACTION	Movement of impulses from receptors to spinal cord to effectors	The following must be covered: • receptors in skin • stimulus • different types and functions of neurons • name and action of effector
Mark	1	1	1