AFDELING C

VRAAG 5: WOORDSTRUKTURE

Elke antwoord verdien 1 (een) punt

5.1 aan
5.2 omgekrap
5.3 gaste/kuiergaste/kuiermense
5.4 vlymskerp
5.5 argumenteer
5.6 kwater
5.7 papegaai
5.8 vyande
5.9 vyf
5.10 mannetjie
5.11 vertrek
5.12 dit wil sê
5.13 gespanne
5.14 smoorkwaad
5.15 samewerking
5.16 geraas
5.17 blondine
5.18 lang
5.19 rookgewoonte
5.20 tuis **(Totaal: 20)**

SINSTRUKTURE

Die sinsdeel wat die punte verdien is aangedui.

5.21 Die drie mense stem **nooit** (1) saam **nie**.(1)
5.22 Bes **sal** sy vinger na Tant Minnie **uitsteek**. (1)
5.23 Hulle **word** tuis deur hulle (1) vriende **besoek**.(1)
5.24 Babsie vra **of** (1) dit Linda en Bill **is.** (1)
5.25 **sy opinie vir homself te hou**. (1)
5.26 **mekaar in die hare te vlieg**. (1)
5.27 Babsie **is** ook deur Ben(1) **beledig**. (1)
5.28 Daar is 'n saak **waaroor hulle stry**. (1)
5.29 Gister **het** Ben en Babsie(1) soos kat en hond **baklei**. (1)
5.30 Ben en Babsie loop die hele dag baklei-baklei deur die huis. (1)
(Totaal:15)

Elke antwoord verdien (1) een punt.

6.1 Jy moet 'n nuwe rigting met jou geld/finansies (finansiële beplanning) inslaan. (1)
6.2 Die leeu se spore kan duidelik op die grond gesien word. (1)
6.3 B Jy moet versigtig wes wat jy sê. (1)
6.4 Vandag is die eerste dag van die res van jou lewe waar jou geldsake onder beheer gaan wees. (enige antwoord met hierdie as basis.) (1)
6.5 B Jy moet inneem of absorbeer wat vir jou gesê word. (1)
(Totaal 5)

TOTAAL AFDELING C: 40

GROOTTOTAAL: 80

PHYSICAL SCIENCES: 1. CHEMISTRY

SECTION A

QUESTION 1
1.1 Catalyst
1.2 Homologous series
1.3 Haloalkane
1.4 Unsaturated
1.5 Cathode **(5)**

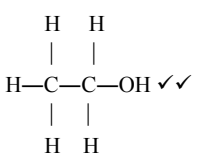
QUESTION 2
2.1 F
2.2 H
2.3 J
2.4 I
2.5 D **(5)**

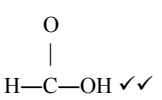
QUESTION 3
3.1 D
3.2 B
3.3 C
3.4 D
3.5 B **(15)**

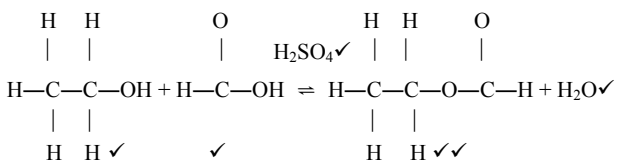
TOTAL SECTION A: 25

SECTION B

QUESTION 4

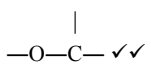
4.1

(2)

4.2

(2)

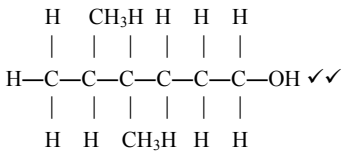
4.3

(6)

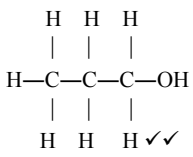
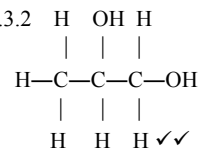
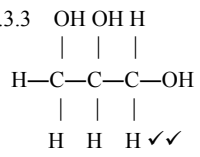
4.4 Ethyl methanoate ✓✓ (2)

4.5 Catalyst (sulphuric acid) ✓ (1)

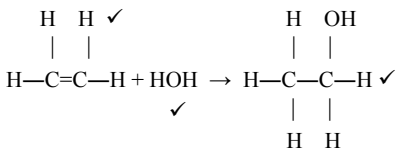
4.6

(2)
(15)

QUESTION 5
5.1 Carboxylic acids ✓ aldehydes ✓ ketones ✓ esters ✓ (4)

5.2

(2)

5.3
5.3.1

5.3.2

5.3.3

(6)

5.4 The intermolecular forces in alcohols are hydrogen bonds.✓ The more OH groups there are, the stronger these forces✓ will be and the higher the boiling point.✓ (3)

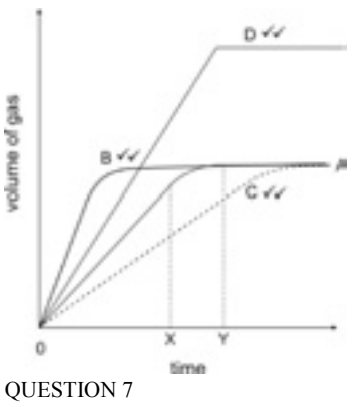
5.5

(3)

5.6 Addition ✓ (1)
(19)

QUESTION 6
6.1
6.1.1 Rate is constant and fast. ✓✓ (2)
6.1.2 Rate is decreasing. ✓✓ (2)
6.1.3 Rate is zero.✓ Reaction is complete.✓ (2)

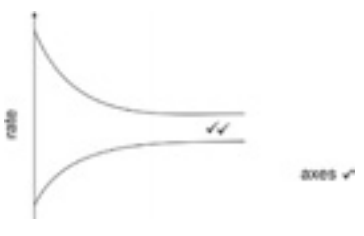
6.2
6.2.1 Increases ✓✓ (2)
6.2.2 Decreases ✓✓ (2)
6.2.3 No change ✓✓ (2)
6.3 volume of gas (6)

(18)



QUESTION 7
7.1 When the rate of the forward reaction equals the rate of the reverse reaction.✓✓ (2)
7.2 Decrease ✓ (1)
7.3 An increase in temperature favours the endothermic reaction.✓ This is the reverse reaction ✓so more reactants are formed.✓ (3)
7.4 No effect ✓ (1)
7.5 There are equal numbers of gaseous moles on either side.✓ B_2 is a solid✓ and is not sensitive to pressure changes. ✓ (3)

7.6 (3)



7.7 $K_c = \frac{[AB]^2}{[A]^2}$ ✓✓ (2)

7.8 Decrease ✓
No effect ✓ (2)
(17)

QUESTION 8

8.1 Chemical energy to electrical energy. ✓✓ (2)

8.2 The zinc electrode ✓✓ (2)

8.3 $Zn \rightarrow Zn^{2+} + 2e^-$ ✓✓ (2)

8.4 $Pb^{2+} + 2e^- \rightarrow Pb$ ✓✓ (2)

8.5 $Zn + Pb^{2+} \rightarrow Zn^{2+} + Pb$ ✓✓ (2)

8.6 $E^\theta_{cell} = E^\theta_{cathode} - E^\theta_{anode}$ ✓
$= -0,13 - (-0,76)$✓
$= 0,63$ V✓ (3)

8.7 Zinc to lead ✓ (1)

8.8 Zinc nitrate and lead nitrate or any soluble salts. ✓✓ (2)

8.9 Saturated KNO_3 (or KCℓ or NaCℓ) ✓ (1)

8.10 To keep the electrolytes neutral. ✓✓ (2)
(19)

QUESTION 9

9.1 The melting point of aluminium oxide is too high.✓ It requires too much energy to keep it molten.✓ (2)

9.2 Graphite ✓ (1)

9.3 $A\ell^{3+} + 3e^- \rightarrow A\ell$ ✓✓ (2)

9.4 $2O^{2-} \rightarrow O_2 + 4e^-$ ✓✓ (2)

9.5 $4A\ell^{3+} + 6O^{2-} \rightarrow 4A\ell + 3O_2$ ✓✓ (2)

9.6 Red mud is a problem for the environment and people. ✓✓
The process is extremely energy intensive. ✓✓ (4)

9.7 Richards Bay is a deep water port. Bauxite is delivered directly to the smelter.✓ No other transport costs involved.✓ (2)
(15)

QUESTION 10

10.1 Ammonia and nitric acid;✓✓ ammonia and sulphuric acid.✓✓ (4)

10.2
10.2.1 Low temperature, high pressure ✓✓ (2)

10.2.2 At low temperature the reaction rate is too low✓ and it takes too long to produce the high yield.✓ At a reasonably high temperature,✓ the reaction rate is fast enough.✓ A high enough yield is obtained at atmospheric pressure.✓ So this pressure is used to keep costs lower.✓ (6)

10.2.3 Vanadium(V) oxide (vanadium pentoxide)✓ (1)

10.3
10.3.1 Ammonia and oxygen. ✓✓ (2)

10.3.2 Catalytic oxidation of ammonia✓ (1)

10.3.3 Platinum/rhodium alloy ✓ (1)

10.4 When too much fertiliser✓ is spread on fields and it rains a lot, the fertiliser will dissolve readily ✓and get leached out of the soil and end up in rivers and lakes.✓ This causes eutrophication,✓ which causes the death of water life – both animal and plant.✓ (5)
(22)

TOTAL SECTION B: 125

GRAND TOTAL: 150

PHYSICAL SCIENCES: 2. PHYSICS

SECTION A

QUESTION 1
1.1 Velocity
1.2 Force
1.3 Doppler
1.4 Electromagnetic
1.5 Threshold **(5)**

QUESTION 2
2.1 F
2.2 D
2.3 J
2.4 B
2.5 H **(5)**

QUESTION 3
3.1 C
3.2 B
3.3 C
3.4 D
3.5 B **(15)**

TOTAL SECTION A: 25

SECTION B

QUESTION 4
4.1
- Ball speeds up and reaches the ground.✓
- Ball bounces up and slows down to highest point.✓
- Comes down again and speeds up until it reaches the ground.✓
- Bounces up once more and slows down to highest point.✓
- Falls back to ground while speeding up. ✓
- After each bounce the velocity is less than before.✓ (6)

4.2 Δx = area between graph and time axis ✓
$= \frac{1}{2} bh$
$= \frac{1}{2} \cdot 0,4 \cdot 4$ ✓
$= 0,8$ m ✓ (3)

4.3

(3)

4.4 Δx = area between graph and time axis ✓
$= \frac{1}{2} bh$
$= \frac{1}{2} .2.0,2$
$= 0,2$ m ✓
So, position relative to starting point is 1,6 m below it.✓ (3)
(15)

QUESTION 5

5.1 $80 \text{ km.h}^{-1} = \frac{80 \times 10^3}{3\,600}$ ✓
$= 22,2 \text{ m·s}^{-1}$ ✓ (2)

5.2 $F\Delta t = \Delta P$ ✓
$F = \frac{mv_f - mv_i}{\Delta t}$
$= \frac{90(0 - 22,2)}{0,01}$ ✓
$= -199\,800$ N ✓
i.e. 199 800 N opposite to the direction of motion ✓ (4)

5.3 $W = \Delta E_k$
$= E_{kf} - E_{ki}$ ✓
$= 0 - \frac{1}{2} mv_i^2$
$= -\frac{1}{2} \times 1\,200 \times (22,2)^2$ ✓
$= -295\,704$ J ✓ (3)

5.4 With a crumple zone the time to come to rest increases.✓ Since $F \propto \frac{1}{\Delta t}$✓, as Δt Increases, F decreases. ✓ Thus the force on people in the car is smaller. ✓ (4)

QUESTION 6

6.1 $v_f = v_i + a\Delta t$ ✓
$= 0 + 1,5 \times 15$ ✓
$= 22,5 \text{ m·s}^{-1}$ ✓ (3)

6.2 $P = F \cdot v$
$= 2\,500 \times 22,5$ ✓
$= 56\,250$ W ✓
$= 56,25$ kW ✓ (4)
(7)

QUESTION 7

7.1 $f_s = \frac{(v + v_s) f_o}{v}$ ✓

$1\,200 = \frac{(340 + 20) f_o}{340}$ ✓

$f_o = \frac{1\,200}{1{,}06}$

$= 1\,132$ Hz ✓ (3)

7.2 $f_s = \frac{(v - v_s) f_o}{v}$

$1\,200 = \frac{(340 - 20) f_o}{340}$ ✓

$f_o = \frac{1\,200}{0{,}94}$

$= 1\,276{,}6$ Hz ✓ (2)

7.3 When the fire engine moves towards the observer. ✓ (1)

7.4 Because the velocity of the sound relative to the observer is smaller✓ so the frequency is higher.✓ (2)

(8)

QUESTION 8

8.1 It must equal to or smaller than the wavelength of the light.✓ (1)

8.2 They get further apart.✓ More diffraction occurs✓ so the wavefronts bend more.✓ (3)

8.3 $\sin\theta = \frac{m\lambda}{a}$ ✓

$= \frac{2 \times 570 \times 10^{-9}}{10 \times 10^{-6}}$ ✓ ✓

$= 0{,}114$ ✓

$\theta = 6{,}5°$ ✓ (5)

(9)

QUESTION 9

9.1 $\lambda = \frac{h}{mv}$ ✓

$= \frac{6{,}63 \times 10^{-34}}{50 \times 10^{-3} \times 80}$ ✓

$= 1{,}66 \times 10^{-34}$ m ✓ (3)

9.2 Their wavelength is so short✓ that it is impossible to make a slit ✓that is narrow enough.✓ (3)

9.3 They should have an extremely small mass.✓ (1)

(7)

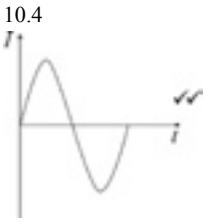
QUESTION 10

10.1 They collect current. ✓✓ (2)

10.2 It is made to rotate by an external agent. ✓ (1)

10.3 Each of the arms of the coil turns clockwise for half a rotation and anticlockwise for the other half ✓i.e. each arm of the coil changes direction every half cycle.✓ The induced current flows in opposite directions every half-cycle✓ and hence so-called alternating current. ✓ (4)

10.4



✓✓ (2)

10.5 Mechanical energy to electrical energy. ✓ (1)

10.6 $V_{rms} = \frac{V_{max}}{\sqrt{2}}$ ✓

$= \frac{325}{\sqrt{2}}$

$= 230$ V ✓ (2)

(12)

QUESTION 11

11.1 To allow current to flow in one direction only. ✓ (1)

11.2 A diode consists of two different types of ✓doped materials joined together. ✓When a battery is connected to a diode with the positive terminal connected to the p side and the negative terminal to the n side, the diode is forward biased.✓ The positive holes in the p material are repelled to the junction by the battery and the electrons are repelled to the junction by the battery.✓ Electrons and holes meet at the junction and the electrons fill the holes and a current flows.✓ This cannot happen when the diode is connected with a reverse bias. ✓ (6)

11.3 It can emit light (LED). ✓ (1)

(8)

QUESTION 12

12.1 Photoelectric emission. ✓ (1)

12.2 No.✓ Every metal has a different work function (threshold frequency) ✓and this will determine the minimum frequency ✓of light required for that particular metal.✓ (4)

12.3 $E = \frac{hc}{\lambda}$ ✓

$= \frac{6{,}63 \times 10^{-34} \times 3 \times 10^{8}}{380 \times 10^{-9}}$ ✓

$= 5{,}23 \times 10^{-19}$ J ✓ (4)

12.4 It is the minimum frequency of radiation (light)✓ required to cause photoelectric emission from the metal.✓ (2)

12.5 It would cause more electrons✓ with the same kinetic energy to be emitted.✓ (2)

(13)

QUESTION 13

13.1 Medical,✓ CDs,✓ DVDs,✓ scanning barcodes,✓ weapons guidance,✓ communication,✓ etc. (ANY 4) (4)

13.2 Medical – makes surgery more accurate ✓✓
CD – makes it convenient to listen to high quality music ✓✓
DVD – makes it possible to watch movies conveniently and with high quality reproduction ✓✓
Scanning barcodes – makes it quicker at the till in a supermarket. ✓✓
Makes it possible to bomb accurately removing the possibility of innocent people being hurt. ✓✓ (disadvantage too)
Communication – makes communication quicker and cheaper✓✓
(ALSO ANY OTHER DISADVANTAGES) (ANY 4) (8)

(12)

QUESTION 14

14.1 Extension ∝ load.✓ Elastic region.✓ Spring returns to original shape with removal of load.✓This persists up to the proportional limit. ✓ (4)

14.2 This is called the proportional limit. ✓✓ (2)

14.3 There is no longer a direct relationship.✓ The spring still returns to its original shape. ✓ (2)

14.4 This is the plastic region.✓ The spring will no longer return to its original shape once this region is reached.✓ Eventually it will break. ✓E is called the breaking point. ✓ (4)

14.5 Creep occurs when a material is subjected to continuous stress✓ (below the critical level)✓ over a period of time✓ usually at high temperature✓. Fracture occurs when too great a stress is placed on an object and it breaks.✓ (5)

14.6 Cold working ✓
Alloying ✓
Sintering ✓
Tempering ✓
Annealing ✓
Introduction of impurities ✓ (ANY 4) (4)

(21)

TOTAL SECTION B: 125

GRAND TOTAL: 150

BUSINESS STUDIES

SECTION A

QUESTION 1

1.1 A
1.2 C
1.3 C
1.4 B
1.5 C
1.6 D 3 x 6 (18)

QUESTION 2

2.1 TRUE
2.2 FALSE
2.3 TRUE
2.4 TRUE
2.5 FALSE 2 x 5 plus a bonus 2 (10)

QUESTION 3

3.1 E
3.2 A
3.3 D
3.4 B
3.5 C 2 x 5 (10)

TOTAL: 40

SECTION B

QUESTION 4

4.1 Fax machine, cellphones, internet, automated production system (3)
High interest rates (3)
New labour laws (3)
Perception changes (3)
Increased urbanization (3)

4.2 Characteristics of the business environment:

Internal environment: micro environment (✓✓), examples from business column (✓✓✓),
External environment: market (✓✓), examples from business column (✓✓✓),
Macro environment (✓✓), examples from business column (✓✓✓)
(plus five extra mark for getting all 15 correct) (20)

4.3 Environmental factors of the macro-environment:

physical, political, technological, economic, social and legal (8)

4.4 Aims of corporate social responsibilities

Meet consumer needs (economic sustainability)
Prevent wastage of the factors of production (environmental sustainability)
Conserve and improving the ecology (environmental sustainability)
Provide employment to, and develop as many people as possible (socio-sustainability)
Pay a fair remuneration for these factors of production (economic-sustainability)
Be involved in community projects (socio-sustainability)

Accept any 4 (12)

4.5 Purpose of SDA

- To develop the skills of the South African workforce.
- To increase the levels of investment in education and training in the labour market and to improve the return on this investment.
- To encourage employers to use the workplace as an active learning environment to acquire new skills, to gain work experience, to employ people who find difficulty in getting employment.
- To encourage workers to participate in learnerships and other training programmes.
- To improve the employment prospects of persons previously disadvantaged by unfair discrimination and to redress those disadvantages through training and education.
- To ensure the quality of education and training in and out of the workplace.
- To assist work seekers to find work, retrenched workers to re-enter the labour market and for employers to find qualified workers.
- To provide and regulate employment services.

Accept any 5 (15)

4.6

2.6.1 Vision: identifies activities that a business intend to pursue
2.6.2 Mission: describes business purpose or reason for existing
2.6.3 Objectives: end goal towards which activities are aimed

Founding formalities	Quite simple	Complicated
Number of owners	Two to twelve individuals	One to fifty(natural or legal persons)
Financial strength	More than a sole trader, but limited	More shareholders can raise more capital
Name	Use any as trading as	Must end with (pty)Ltd(must be registered)
Legal status	Not a separate legal entity	Separate legal entity
Profit distribution	Partners share profits in agreed pro[potion	Owners receive dividends based on the number and
		type of shares held
Financial responsibility of owner for business debts	Unlimited personal responsibility by all the owners	Company is responsible for debts; shareholders' assets are protected
Decision-making	Decisions are made jointly by all owners, unless agreed otherwise	Shareholders appoint a board of directors who can appoint managers to run the business
Continuity of the business	No continuity-if one partner dies, the business is dissolved	Indefinite continuity, unless the company is liquidated
Taxation	Partners are taxed individually for their share of business profits, even if not drawn	Company pays tax for business profits plus secondary tax on profit distributions (tax free for shareholders)
Tax rate in 2005	Can be as low as 43%, depending on the income bracket of the individual concerned	The company pays a 30% flat rate on all profits, plus a secondary tax of 12,5% dividend tax

(20)

2.6.4 Strategies: a unified direction; implies the use of resources to achieve goals
2.6.5 Policies: statements that guide thinking and acting in the decision-making process at different levels of management (20)

QUESTION 5

5.1 An entrepreneur can be roughly defined as someone who has seen a need in the market and has come up with a way to satisfy that need. Entrepreneurship is a key factor of production. It combines the other three factors (capital, labour and resources) to produce goods and services to meet consumer needs.
Entrepreneurs make use of number skills, based on relevant knowledge, in order to combine the factors of production. They use:

- Strategic skills that enable them to see clearly how the business satisfies the market and to run it in such a way that consumers realize the value of what it has to offer.
- Planning and management skills that enables them to set their business in a way that meets the demands of the market and macro-environments, to set goals, and to ensure that resources are available to meet them.
- Human relations skills that help them to interact with people –customers and employees alike
- Financial skills that enables them to manage their income and expenditure, and to assess business investments in terms of their risks and potential
- Marketing skills that enable them to promote their products or services in the best possible way.

(21)

5.2

Insurance: This is short term insurance that provides for compensation by an insurer to an insured party if or when a specified set of circumstances occurs. Such circumstances may include accident, loss of or damage to property, or any one of a number of instances that can be compensated for financially. (2)
Assurance: This is long-term insurance. In this kind of insurance, the insurer takes on the risk of death of a policyholder. Unlike loss in insurance on property, loss in life insurance is certain to occur. (2)

5.3

Characteristics	**Partnership**	**Private company**
Registration	Local authority	CIPRO
Cost of staring up	Low cost	High cost

5.4

- Know your audience
- Get the attention of your audience at the start of your presentation
- Enjoy yourself
- Use visuals during your presentations
- Deliver with impact
- Stay in control
- Use humour carefully
- The importance of eye contacts
- Prepare the venue
- Timing is essential
- Lasting impressions
- Assess the success of your presentation

Accept any five (15)

5.5

The South African Constitution contains wide-ranging provisions in terms of abolishing any form of discrimination and providing for basic human rights for everyone. Inclusivity is embodied in its non-discriminatory provisions. (10)

5.6

- Be well prepared for your presentation. check all background information beforehand
- Never argue with a member of the audience
- Keep calm. Ask for more information if someone in the audience criticizes you or refutes or contradicts what you are saying.
- If you have made a mistake, apologies for your error and thank the individual for pointing the matter out to you.
- If, on the other hand, you are able to convince the audience that you are correct, be gracious about it without making a member of the audience look like a fool.

(20)

SECTION C

QUESTION 6

6.1 Principles of planning

Flexibility	Plans must be adapted to changing technology, conditions and the environment (for example export environment)
Communication	
In writing	Kate must ensure that she communicates her plans with her stuff so that they understand exactly what is expected of them this also avoids any misunderstanding regarding the concept of the plan
Clear and uncomplicated	Plans for Mustardseed& Moonshine must follow so that the stuff and management can implement them correctly
Realistic	Kate must ensure that the plan can be done physically and financially
Time frame	Plans must have a specified time limit so that everyone knows how long they have to complete their task
Scientific basis	All the possible alternatives and factors involved must be analysed and considered before the plan is accepted and implemented

6.2 Strategic plan for Mustardseed& Moonshine

Corporate mission: Establish a pottery club in Woodstock to teach members of the community to make pottery items

Analyse strategy

Internal factors	**External factors**
Staff may not want to run club after work	Crime and theft
Promotion of Mustardseed& Moonshine in community Improved staff loyalty as their families and friends benefit	Community may not want to learn to make pottery

Formulate strategy

Strengths	**Weaknesses**
Knowledge of how to make pottery Staff who live in the area can run the course Access to clay and equipment	Staff may not want to run the club after work Community may not want to learn to make pottery

Implement strategy : **Evaluation and feedback:**

Do market research to determine whether the community is interested in this club Research available venues and costs of these venues Design the course	Analyse the market research Set date for completion

Use the rubric below to assess the answer to Question 7:

Criteria	Answers	Mark allocation	LO	AS
Principles of planning	A minimum of five principles of planning	Maximum 14 marks	1	1
Strategic plan	Outline should contain five topics (steps) from diagram	Maximum 5 marks	1	1
	Example or suggestion: minimum one per topic, maximum three per topic	Maximum 21 marks	1	2
	Note: the suggestions or examples must refer to the case study given in the question paper			

QUESTION 7

Since 1994 more than 600 new acts have been tabled in parliament.

1. The Employment Equity Act. The main purpose of this Act is to eliminate unfair discrimination on the grounds of age, gender and disability in the work force. The challenge that management faces is to create a workforce that represents demographics of the country.
Demographics: the composition of a country's population in terms of age, cultural background, gender etc.
Strategies of responding to the challenges of the employment equity Act:

- Management need to have an employment equity plan in place. This will serve as a road map to guide management in the right direction.
- Management should make use of a change agent to assist business through transitional phase

A change agent is a labour expert from outside who will be able to guide workers and management through the process of transformation in an objective manner

2. Employment Equity Act no 75 of 1997: The purpose of this act is to ensure that fair labour practices such as a reasonable working hours, fair remuneration for work done and sufficient notice before termination of employment are sustained at all times. The provisions of the employment act no 75 of 1997 are:

- work time
- payment
- notice period
- child labour

3. Labour Relations Act no 66 of 1995: The main purpose of this act is to regulate fundamental rights of employees and employers
The implementation of the act will contribute towards the advancement of economic development, social justice, labour peace and democratization of the workplace. The provisions of the labour relations act no 66 of 1995 are:

- freedom of association and general protection
- workers have the right to join trade union and employers have the right to form employers association
- collective bargaining is promoted by the act as it is the desired method of setting wages and conditions of employment
- Provision for legal strikes, go slow and downing tool if negotiations between union representatives and organisational representatives are not fruitful

Structures for collective bargaining and bargaining statutory councils include the CCMA - Commission for Conciliation, Mediation and Arbitration

4. Broad Based Black Economic Empowerment (BBBEE) Act no. 53 of 2003
BBBEE can be seen as a mechanism for transformation
BBBEE policy is not only about ownership but also about improving black people's access to the economy and means of encouraging more black management, promoting employment equity, encouraging skills training organization, nurturing black entrepreneurship and building small and medium-sized black enterprises by means of affirmative procurement.
The seven pillars of BBBEE are:

- ownership,
- management,
- employment
- equity,
- skills development,
- preferential procurement,
- enterprise
- development and
- corporate social investment.

5. Skills Development Act no. 97 of 1998. The main aims of this act are to:

- Improve the level of investment in educating and training in the workforce
- Use the workforce as a learning environment
- Encourage employees to take part in learnership and skill training programmes
- Improve employment opportunities of disadvantage people
- Ensure quality training and education in the workforce

(40)

QUESTION 8

Macro-environment and challenges within each macro-environment	Strategies to address the challenges
Technological environment Technology keeps changing rapidly and has an impact on all types of business	Management need to develop technological strategies such as training staff members on a continious basis to help them to cope better with technological changes
Economic environment A high inflation rates, high interest rates and low economic growth. Prices raising at slow pace or prices even dropping in some cases	-decrease interest rates -businesses should cut costs, because production increase turn over by reducing profit margins
Social environment Government experiences a blackout in delivering services to all citizens because of apartheid era	Improve the quality of education
Physical environment Pollution and global warming are threatening all countries	The amount of sulphur dioxide that each factory is allowed to emit could be capped; companies exceeding a quota to be punished and those that do not exceed the quota to be rewarded
Internal environment South Africa and other developing countries find it difficult to compete in international markets especially in the developed countries	South African industries and other developing countries to be given subsidies like EU or abolish subsidies in other countries
Legal environment New Acts tabled in the parliament affect businesses	-management must have employment equity act in place - management should make use of
	changed agents to assist businesses through its transitional phase
Political environment To democratise state mono policies to enable disadvantages citizens to own factories and business in their own right	Nationalisation of state owned economic activities such as banking and mining industries

ACCOUNTING

QUESTION 1

1.1 D.
1.2 D.
1.3 B.
1.4 C
1.5 A
1.6 D
1.7 B

[2 each = 14]

QUESTION 2

(i) new data
selling price = R40
wages = R8.40 (2)
materials = R16.20 (2)
overheads = R3.90 (2)
fixed costs = R207,000 (2)
Break even = 207,000 / 40(2) - 28.50 (2) = 207,000 / 11.50
= 18,000 units (2)
sales value = 18,000 x R40 = R720,000 (4)

(ii)

selling price	40.00	
variable costs	28.50	
contribution	11.50	(2)
x units	22,500	
	258,750	
fixed costs	207,000	(2)
profit	51,750	(2)

(iii) profit for y/e 30 Nov 2000

selling price	40	
variable costs	30	
contribution	10	
x units	21,000	
	210,000	(2)
fixed costs	187,000	
profit	23,000	(2)

profit = contribution – fixed costs
23,000 = 11.50 x units – 207,000
230,000 (2) = 20,000 units (2)
11.50 (2)

[Total: 36]

QUESTION 3

3.1 (a)

(i) Machinery Account

1998	Jan 1	Bank	50,000 (2)	Dec 31	Bal c/d	50,000
1999	Jan 1	Bal b/d	50,000 (2)	June 30	Disposal	15,000 (2)
				Dec 31	Bal c/d	35,000 (2)
			50,000			**50,000**
2000	Jan 1	Bal b/d	35,000 (2)	Sept 30	Disposal	20,000 (2)
	Jan 1	Bank	24,000 (2)	Dec 31	Bal c/d	79,000
	Oct 1	Bank	40,000 (2)			
			99,000			**99,000**

(ii) Depreciation of Machinery Account

1998	Dec 31	Bal c/d	10,000	Dec 31	P & L	10,000 (2)
1999	June 30	Disposal	3,000 (2)	Jan 1	Bal c/d	10,000
	Dec 31	Bal c/d	12,600	Dec 31	P & L	5,600 (2)
			15,600			**15,600**
2000	Sept 30	Disposal	7,200 (2)	Jan 31	Bal b/d	12,600
	Dec 31	Bal c/d	20,120 (2)	Dec 31	P & L	14,720 (2)
			27,320			**27,320**

[28]

(b) Machinery Disposals Account

1999	June 30	Machinery	15,000 (2)	June 30	Dep Mach	3,000 (2)
				June 30	Bank	10,200 (2)
				Dec 31	P & L	1,800 (2)
			15,000			**15,000**
2000	Sept 30	Machinery	20,000 (2)	Sept 30	Dep Mach	7,200 (2)
	Dec 31	P & L	200 (2)	Sept 30	Bank	13,000 (2)
			20,200			**20,200**

[16]

(c) Balance Sheet extract as at 31 December 2000

Fixed Assets

	Cost	Dep	
Machinery	79,000 (2)	20,120 (2)	58,880 (2)
Office Equipment	25,000 (2)	6,750 (2)	18,250 (2)

[12]

(d) Evaluation should include:

Reducing balance is suited to assets that have a heavier fall in value in earlier years (2) and repair/maintenance costs that increase over life. (2) The combined depreciation and repair charge will even out. (2) It would therefore be appropriate for machinery. (2)Straight line is suited to assets that have an even use over their life (2) where the spread of depreciation complements the even use (2) and fall in value of an asset.

(2) It would therefore be appropriate for office equipment. (2) [16]

(2 mark for each point up to a maximum of 16 marks)

3.2

Workings

	R	R
1 April 1997 Cost		12,000
Depreciation charge at 20%		
1997	2,400 (1)	
1998	2,400 (1)	
1999	2,400 (1)	
		7,200 (1)
Net book value 1 August 2000		4,800 (1)
Proceeds 1 August 2000		5,000
Profit		200 (1)

[6]
[Total: 78]

QUESTION 4

4.1

(a)

	1999		2000	
Return on capital employed	30.6	(2)	20%	(2)
Gross profit margin	50%	(2)	33.3%	(2)
Net profit margin	16.7%	(2)	5%	(2)
Current ratio	2 : 1	(2)	1 : 1	(2)
Liquid ratio	1 : 5 : 1	(2)	0 : 5 : 1	(2)
	4.5 times	(2)	6.4 times	(2)

[24]

(b) Reduction in gross profit margin between 1999 and 2000 (1) - increase in cost of goods purchased/sales prices have not increased to match (2).

Increase in sales of 25% in 2000 (1) - perhaps a drop in prices or more credit offered (1).

Significant reduction in net profit (1) - largely because of gross profit drop.
Expenses are not unreasonably more because of the likely increase in volume of sales (2).

Reduction in current ratio between 1999 and 2000 (1) and change from balance at bank to overdraft (1).

Liquidity ratio decreased (1) - impossible in 2000 for creditors to be met if necessary (1).

Faster movement of stocks in 2000 (1) - perhaps due to lower selling prices (1).

Debtors doubled although only a 25% increase in sales. (1) More credit offered or poorer control. (1)

High level of reliance in 2000 on creditors. (1) Could risk loss of supply. (1)

Large level of drawings in 2000 in excess of profits. (1) Damages business through reduced resources. (1)

Need to reduce drawings, control working capital (1) and consider pricing policy (1).

Return on capital employed has fallen. (1) This is also reflected in the fall in net profit as a percentage of sales. (1)

[24]

4.2
Workings

	R	
Turnover R2 million x 5% gives debtors of	100,000	(2)
Provision for doubtful debts is 4% x R100, 000	4,000	(2)
Existing provision is R4, 000 x ¾	3,000	(2)
Increase in provision to profit and loss account	1,000	(4)

[10]

4.3
Workings

	R000	
Net profit	180	(1)
Add back: Depreciation	30	(1)
Less: Profit on sale	(75)	(2)
	135	(2)
Increase in working capital	(10)	(2)
Cash from operations	125	(2)

[10]
[Total: 68]

QUESTION 5
5.1
Barber Manufacturing
Manufacturing and Trading Account for the year ended 28th February 1999

	R	R	
Opening stock of raw materials	38,300		
Purchase of raw materials	573,000		
	611,300		
Less: closing stock of raw materials	35,400	575,900	(2)
Direct Expenses		63,100	
Direct wages		46,200	
Prime cost		785,200	(2)
Factory expenses			
Indirect wages	38,300		
Rent and rates	15,000	(2)	
Insurance	720	(2)	
Depreciation of premises	5,000	(2)	
Depreciation of plant and machinery	7,056	(2)	66,076
			851,276
Add: WIP at start	40,200		
Less: WIP at close	36,476		3,724 (2)
Cost of goods manufactured			855,000 (2)
Manufacturing profit			42,750 (2)
Finished goods transferred to trading			897,750 (2)
Sales			1,163,400 (2)
Less: cost of sales			
Opening stock of finished goods	58,590		
Transfer from Manufacturing account	897,750	(2)	
	956,340		
Less: closing stock of finished goods	74,340		882,000
Gross profit			281,400 (4)

[Total: 28]

5.2
Workings

Prime cost is direct materials and direct labour

	R	
Opening stock of raw materials	45,000	(1)
Purchases	150,000	(1)
Closing stock of raw materials	(75,000)	(2)
Raw materials consumed	120,000	(2)
Manufacturing wages	50,000	(1)
	170,000	(2)

[10]
[Total 38]

Question 6
(a)
Sandfields Sports Club

Income and Expenditure Account for the year ended 31 December 1999

Income	4,314	(2)
Subscription	120	(2)
Life membership	1,300	(2)
Premises sub-let	5,734	
Expenditure		
Donations	250	(2)
Rates and Insurance	1,730	(2)
Postages	235	(2)
Depreciation	700	(2)
Part-time wages	2,747	(2)
	5,662	
Surplus	72	(2)

Balance Sheet as at 31 December 1999

Fixed Assets			
Premises	12,000	(2)	
Equipment	2,800	(2)	
	14,800		
Current Assets			
Rates prepaid	110	(2)	
Bank	1,439	(2)	
	1,549		
Current Liabilities			
Subscriptions pre-paid	168	(2)	
Premises sub-let	100	(2)	
Part-time wages	40	(2)	
308	1,241		
	16,041		
Accumulated Fund	15,489	(2)	
Life membership	480	(2)	
Surplus	72	(2)	
	16,041		

[38]

(b) Receipts and Payments Account is a summary of the cash and bank transactions for a period. (2)

It is similar to a cash book in a commercial organisation. (2)
It shows the cash position at the end of a period. (2)
It does not include any pre-payments/accruals. (2)

The Income and Expenditure Account is accruals rather than cash based. (2)
It is similar to a Profit and Loss Account in a commercial organisation. (2)
It shows the surplus or deficit for a period. (2)
It includes prepayments and accruals. (2)

The Receipts and Payments Account is normally prepared as a single entry. (2)
The Income and Expenditure Account is normally part of a double entry system. (2)

If a club operates a trading activity any profit/loss may be transferred to the Income and Expenditure Account. (2)

The Receipts and Payments Account includes all transactions for a period and does not distinguish between capital and revenue expenditure. (2)

The Income and Expenditure Account differentiates between capital and revenue expenditure and may include depreciation. (2)

The Income and Expenditure Account is preferred in final accounts as an indicator of annual performance. (2)

(2 mark per point up to a maximum of 28 marks)

[28]

LIFE SCIENCES

SECTION A

QUESTION 1

1.1
1.1.1 C ✓✓
1.1.2 D ✓✓
1.1.3 A ✓✓
1.1.4 B ✓✓
1.1.5 C ✓✓
1.1.6 D ✓✓
1.1.7 A ✓✓ (7 × 2) **(14)**

1.2
1.2.1 endometrium ✓
1.2.2 Cowpers gland ✓
1.2.3 colostrum ✓
1.2.4 circumcision ✓
1.2.5 oxytocin ✓
1.2.6 prolactin ✓ **(6)**

1.3
1.3.1 D ✓
1.3.2 F ✓
1.3.3 H ✓
1.3.4 E ✓
1.3.5 G ✓ **(5)**

1.4
1.4.1 Phosphate, organic base and pentose sugar ✓✓ (2)
1.4.2 A-T ✓ and C-G ✓ (2)
1.4.3 (a) Protein synthesis ✓ (1)
(b) Process 1 is Transcription ✓
Process 2 is Translation
(c) A mRNA ✓
B Amino acid ✓
C tRNA ✓
D Polypeptide (protein) ✓ (4)
(11)

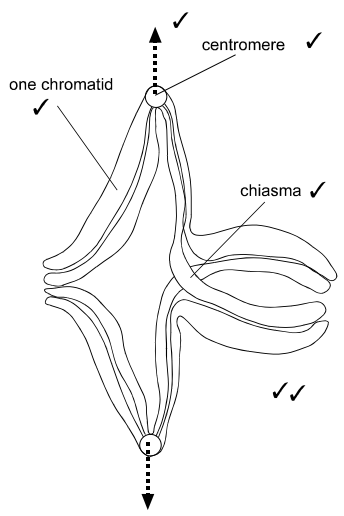
1.5 (a) + (b) - ✓
(c) + (d) + ✓
(e) + (f) - ✓
(f) + (g) - ✓ **(4)**

1.6

1.6.1 Early anaphase ✓ I ✓ (2)

1.6.2 The centromeres are separating to give the hair-pin shape. ✓
It is clearly made of four strands. ✓ (2)

1.6.3 & 1.6.4



(6)
(10)

Total Question 1: 50
TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

2.1.1 Transverse section ✓ Seminiferous tubule✓ (1)

2.1.2 A Interstitial cells✓
B Germinal epithelium ✓
C Spermatocytes ✓
D Spermatids ✓
E Spermatozoan cell ✓
F Sertoli cell v (6)

2.1.3 C ✓ (1)

2.1.4 G leads to the epididymis and from there into the sperm duct. ✓ (1)

2.1.5 A Interstitial cells make up an endocrine gland ✓ that produces the androgen hormones such as testosterone. These maintain the male secondary sexual characteristics. ✓ (2)

F The Sertoli cells support and provide nutrition ✓ for the developing sperm. ✓ (2)
(13)

2.2

2.2.1 The potato plant is formed by asexual reproduction since the tuber is a vegetative structure. The human child is formed by sexual reproduction, the joining of two haploid gametes ✓.

2.2.2 Increase in dry mass is the best way to measure growth, since it measures the increase in the amount of substance in the organism ✓. However, you cannot kill and dry the human child to do this so some other unit that is not destructive has been found.✓ ✓ (2)

2.2.3 The brain and head ✓ (1)

2.2.4 (a) From 14 to 18 years ✓ (1)
(b) Puberty ✓ (1)
(c) The reproductive organs are not needed early in life during the phase of growth of the body . ✓ To develop them earlier than 14 years would take energy needed for growth. Therefore they only start to increase in size once the rest of the body is near mature size. ✓ (2)

2.2.5 Probably male. The reason is the age of puberty. In girls puberty usually starts at around age 12, while in boys it is more like 14 years. (2)

2.2.6 When the potato tuber is put in suitable conditions it starts to grow. Stored starch is changed into sugars that are respired to produce energy needed for growth ✓. This causes the mass of the tuber to drop ✓. After about two and half weeks ✓✓the stem and then the leaves start to grow ✓. Once the leaves grow they start to photosynthesise, making food so less is taken from the tuber and the curve for the tuber flattens while the curve for leaves increases exponentially. ✓ (4)
(14)

2.3 Eg. wide hips, ✓
fat deposits under the skin, ✓
triangular pubic hair ✓ **(3)**

Total Question 2: 30

QUESTION 3

3.1

3.1.1 Germinal epithelium ✓ (1)

3.1.2 In the young foetus before she is even born. ✓ (1)

3.1.3 (a) Y ✓ Because mature sperm are haploid with half the number of chromosomes of the adult cells. Y has 4 units of DNA which is half the adult 8 units of Z. ✓✓ (3)

(b) Z ✓ Because diploid cells have the most chromosomes and therefore DNA and Z has 8 units, more than any of the others. ✓✓ (3)

(c) X would be immature sperm (spermatids). ✓✓The evidence is that they only have half the DNA of the mature sperm and so the DNA has replicated yet to make double stranded chromosomes and is therefore immature. ✓ (2)
(10)

3.2

3.2.1 Autosomal means found on normal chromosomes, not the X or Y chromosome. ✓
Recessive means the trait will only appear in the phenotype of an organism with two copies. ✓ (2)

3.2.2 1, 2, ✓ 3, 4, ✓ 9,10 ✓ (3)

3.2.3 50% chance of being heterozygous for the sickle-cell anaemia gene ✓
The parents of individual 6 are both heterozygous. ✓
The possibility of different offspring is therefore
Ss × Ss

SS, Ss, Ss, ss ✓ i.e. 50% of the offspring are heterozygous. (3)

3.2.4 The sickle-cell allele produces haemoglobin that is different to normal. ✓ The malaria parasite therefore finds it difficult to multiply and the person is resistant. ✓ (2)

3.2.5 The malaria parasite is carried by mosquitoes that breed in warm, wet weather since the larvae live in water ✓. Since the allele provides resistance to dying from malaria there is a selection pressure in favour of the sickle-cell anaemia. ✓ (2)
(12)

3.3

3.3.1 Suspect Y ✓ (1)

3.3.2 Profile Y of his DNA exactly matches that of the skin under the victim's nails, therefore he was the person who was scratched. ✓ (1)

3.3.4 DNA fingerprinting ✓ (1)

3.3.4 To exclude any of the victim's cells. It could be that the cells under the nails were the victim's own and the police therefore need to know this. ✓ (1)

3.3.5 In paternity suits to confirm if somebody is the father of a child ✓
For identifying someone who may have a genetic defect ✓
To identify soldiers killed in action, or parts of bodies after explosions, etc. ✓ (3)

3.3.6 Forensic means producing something that can be used in a court of law. ✓ (1)
(8)

Total Question 3: 30
TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1 Active chromosomes during normal cell activity are very long, thin structures about the width of a single DNA molecule ✓. They are so thin that there is over a metre of chromosome inside each human nucleus ✓. They are like this so the individual genes can be exposed to the chemicals such as RNA they need to work ✓. When nuclear division is about to start they coil up, using histone proteins to control their pattern ✓. The highly folded chromosomes are now much shorter and fatter so cannot be easily knotted up and broken when moving during the division ✓. They become so short and fat that they can be seen with an optical microscope. ✓ **(4)**

4.2 (a) Because the double helices of DNA that arrived from the parent cell during cell division replicate to form a copy of themselves. This means that there will be two sets of DNA when the cell needs to divide again. ✓ (1)

(b) One is the DNA that came from the parent cell ✓, the other is its copy made by DNA replication once cell division is complete ✓. (2)
(3)

4.3

4.3.1 TRUE ✓ (1)
4.3.2 FALSE ✓ (1)
4.3.3 FALSE ✓ (1)
4.3.4 TRUE ✓ (1)
4.3.5 FALSE ✓ (1)
(5)

4.4

4.4.1 4 700 ✓ (1)

4.4.2 Recessive to normal ✓ (1)

4.4.3 No ✓. The haemophilia gene is a result of a mutation. Mutations happen naturally. It occasionally appears by mutation in a family with no history of the disorder. ✓ (2)

4.4.4 Because it is a genetic disorder. The gene is in every cell of the body. It is not caused by a pathogen that can be killed by drugs to 'cure' the disease ✓. (1)

4.4.5 Yes , it can be treated ✓. (1)

4.4.6 No, it is also a social problem ✓. A person with the disorder will usually have his education interrupted ✓, therefore making it difficult to get work ✓. The problems of living with the disease can lead to frustration and depression too ✓. (4)

4.4.7 (a) One of the clotting factors is missing from the haemophilac's blood. These factors can nowadays be extracted from donated blood and injected into the sufferer ✓. (1)

(b) One problem for the haemophiliac is the risk of getting infected from the donated blood. There were cases of such infection in the past. Although care is now taken it is still a worry for the haemophiliac ✓. A second problem is the cost of treatment and the amount of time and energy needed to get regular injections of such a rare substance as the clotting factor. ✓ (2)
(13)

4.5

4.5.1 Organisms are diploid with two sets of chromosomes ✓. The zygote that begins a new life is made by the fusion of two haploid gametes, each with a whole set of chromosomes ✓. Therefore there are two sets of chromosomes in each cell of the organism, carrying two sets of alleles ✓. This arrangement has the advantage that any harmful recessive genes are likely to be hidden by its dominant allele and not cause harm. v (4)

4.5.2 There are not actually two of Mendel's 'factors' in each cell, there are four making two sets ✓. During prophase of meiosis I ✓, homologous pairs of chromosomes form bivalents so the two sets of factors are together ✓. Because each chromosome has two chromatids, there are four factors in each nucleus at this stage. The bivalents line up on the equator at metaphase ✓ and then they are pulled to the poles in anaphase I ✓. This causes pairs of factors to get segregated and go to opposite poles of the cell ✓. In the second division of meiosis each chromosome splits into two chromatids ✓, each chromatid carries one of the factors. Each chromatid becomes a part of a different cell ✓. As four cells are made, each of the four factors (or genes on a chromatid) in the original diploid nucleus is now in a different cell ✓. Each cell now has one factor as stated by Mendel. (8)

Synthesis (3)
(15)

Total Question 4: 40
TOTAL SECTION C: 40

GRAND TOTAL: 150

GEOGRAPHY

Paper 1 - Theory

Question 1

1.1.1 C
1.1.2 A
1.1.3 C
1.1.4 B
1.1.5 D

[/10]

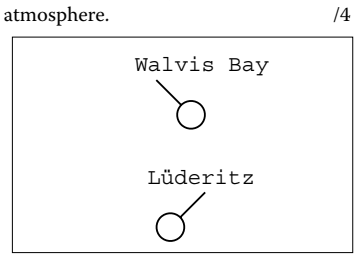
1.2.1 F
1.2.2 T
1.2.3 T
1.2.4 F
1.2.5 T

[/10]

1.3.1 There is a tropical cyclone present. The temperatures over the interior are high at 30°C plus. The mid-latitude cyclones are in a southerly position. /6

1.3.2 a. South Atlantic High Pressure. /2
b. The weather will be sunny skies with very little possibility of rain, stable atmosphere. /4

1.3.3 a.



/4

1.3.4 The Benguela current is a cold current. This results in cooler temperatures. Rainfall is also lower as the cool air is dry and does not contain as much moisture /4

1.3.5 a. Three. /2
b. Wind speeds – increase.
Temperature – remains in the high 20s, slightly higher in centre.
Rainfall – increases, very high around the centre.
Cloud cover – increases, dense wall of cloud around the eye. /8
c. The cyclone struck land (Madagascar) and less moist air was fed into the storm via evaporation. Friction also reduced the wind speeds. /4

1.3.6 Precautions – build on higher ground, away from sea-level to escape storm surges; evacuate to higher ground as the storm approaches; board up homes and tie down loose possessions; have water and basic food supplies available in case of a storm. /6

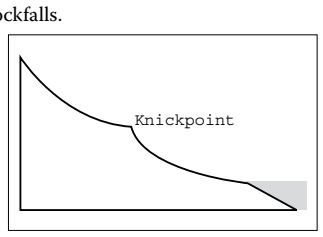
[/40]

1.4.1 A – crest , B – scarp, C – talus, D – pediment. /4

1.4.2 C – talus slope – debris slope that remains at a constant angle. /4

1.4.3 Rockfalls. /2

1.4.4. a.



/4

b. The knickpoint waterfall forms because the base level of the river has changed. The river rejuvenates and begins a new cycle of erosion. The river erodes into its existing channel and a waterfall is formed. /6

c. The waterfall is eroded back and down through time. /2

[/22]

1.5.1 A – captor; B – misfit/beheaded river; C – windgap; D – elbow of capture. /8

1.5.2 The Tano River will have a lower volume and slower velocity than if it was fed by the Black Volta. /4

1.5.3 Dendritic. /2

1.5.4 Dendritic drainage pattern will occur where the rock Is level and uniformly resistant to erosion. /4

[/18]

Total = /100

Question 2

2.1.1 E
2.1.2 A
2.1.3 G
2.1.4 D
2.1.5 F

[/10]

2.2.1 Inversion
2.2.2 Anabatic winds
2.2.3 Sinks
2.2.4 Latent heat
2.2.5 Coriolis force

[/10]

2.3.1 A drainage basin is the entire area drained by a river and its tributaries. /2

2.3.2 Dendritic. /2

2.3.3 Deforestation and overgrazing reduce the amount of vegetation. Vegetation encourages infiltration. Therefore there will be less infiltration and greater runoff. /4

2.3.4 The dam will reduce volume and velocity as it controls the flow of water downstream. This will result in the river having less ability to erode and transport its load (work capacity). /6

[/14]

2.4.1 A – pointed butte, B – conical hill, C – hogsback. /6

2.4.2 D – dip slope, E – scarp slope. /4

2.4.3 Scarp recession, parallel retreat. /2

[/12]

2.5.1 There was 500 mm of rain over ten days. /2

2.5.2 Scientists will collect data about soil moisture, atmospheric vapour and where rivers are flooding. /6

2.5.3 If inside – stay there, take cover under a desk or table. If outside – try to get out of the path of the landslide, run to the nearest highest ground, shelter behind strong buildings, if you can't escape, curl up into a tight ball and protect your head. /6

2.6.1 a. The cyclones are in a more southerly position in January and in a more northerly position in July. /2
b. The cyclones shift because of the seasonal shift of the ITCZ. The zone of maximum insolation is never directly over the equator. It shifts north and south as a result of the Earth's tilted axis and rotation around the sun. This results in a general shift in the circulation of the atmosphere. /4

2.6.2 a. Westerly winds. /2
b. These winds move mid-latitude cyclones from west to east. /4

2.6.3 Tropical cyclones need warm oceans and large amounts of evaporation. Beyond 30° the oceans are too cool and there is not enough moisture in the atmosphere. /4

2.6.4 a. Sub-tropical high pressure cells. /2
b. The weather will be clear skies, with little possibility of rain, stable weather. /4

[/18]

2.7.1 The region is on the eastern side of southern Africa. Moist winds blow up the escarpment during summer and cooling and condensation occur. This results in summer rainfall. /4

2.7.2 Orographic rain. /2

2.7.3 These areas are at high altitude and temperature decreases with an increase in altitude. /4

2.7.4 a At night the air is cooled and contracts, becoming more dense. It sinks into the valley and rests at the bottom of the valley, with warmer air resting above it. /4
b A valley inversion. /2
c Anabatic winds. /2

2.7.5 North-facing slope, this slope receives more direct sunlight in the southern hemisphere as it faces the equator. /4

[/22]

Total = /100

Question 3

3.1.1 Farmstead.
3.1.2 Site.
3.1.3 RDP.
3.1.4 Dispersed.
3.1.5 Rural-urban migration.

[/10]

3.2.1 This occurs when industries cluster together in an area.

3.2.2 **Land redistribution** aims to provide the disadvantaged and the poor with access to land for residential and farming purposes.

3.2.3 This includes all the receipts and payments of a country in one year, i.e. all the trade of goods and services, both visible and invisible.

3.2.4 The economic, political, social and cultural relations across international barriers.

3.2.5 A programme that seeks to improve existing transport infrastructure and to support industry, tourism and agriculture in the area of transport corridors.

[/10]

3.3.1 X: dispersed
Y: nucleated. /4

3.3.2 Farmer can make his/her own decisions; space for farming; no need to share land; a single, continuous farm; maximum use of machines; he/she lives at his/her place of work. /6

3.3.3 Communal farming; overpopulation; cannot make own decisions. /4

3.3.4 Poor roads to bring building materials in for construction. Resistance from local people who use traditional medicines. Lack of skilled workers in the area, and few have building skills. Building may not be sustainable, as it could be built and then not managed or maintained properly. /6

3.3.5 Push factors: lack of employment, no entertainment for young people, may want to further their education and attend secondary school. /6

3.4.1 The CBD is the most accessible part of the city; all transport routes converge there; there is a great demand for land; and it contains mostly commercial functions. /6

3.4.2 Outlying shopping centre or business park; there is a great demand for office space in that area; there is less traffic congestion; and it is a more environmentally pleasing area. /4

3.4.3 Urban renewal is a process whereby the urban area undergoes a revamp. Buildings are renovated and the area is cleaned up. It usually takes place in the transition zone around the CBD. This area tends to the most neglected and the mix of commercial and industrial land use causes urban decay. /6

[/14]

3.5.1 Gross Domestic Product : the total value of all goods and services produced in a country per year. /4

3.5.2 Agriculture. Poor rains, decreased production, disease in animals/crops. /6

3.5.3 This sector involves the manufacture of goods. This creates employment for people and therefore address the unemployment problem. The sector also produces goods that would be otherwise imported. /4

3.5.4 Personal services, transport, trade and catering, finance. Positive economic growth in these years ensured the growth in tertiary activities, especially financial services. /4

[/18]

3.6.1 Encourage investment in the area and create jobs. /4

3.6.2 Coega IDZ and Saldanha IDZ. /4

2.6.3 Racially motivated. Industries relied on incentives, and collapsed when incentives were withdrawn. Industries too far away from their markets. Economic decline in years of sanctions. /6

3.6.4 Law requires an environmental assessment to be completed before any development can take place. /2

3.6.5 Port to handle import/exports. Financial aid/government support for being an IDZ. Skilled workers, abundant labour. Good water and power supply. /6

[/22]

Total = /100

Question 4

4.1.1 E
4.1.2 A
4.1.3 B
4.1.4 D
4.1.5 C

[/10]

4.2.1 Exports.
4.2.2 Food security.
4.2.3 Restitution.
4.2.4 Redistribution.
4.2.5 Social justice.

[/10]

4.3.1 China is a big trading partner. Drawn large to emphasize importance. China is important in SA trade relations. /4

4.3.2 South African leaders may ignore/turn a blind eye to the human rights abuses that take place in China in order to earn money from trade with China. /4

4.3.3 a. Minerals, food products. South Africa has a wealth of minerals. China needs raw materials for her industries. Huge population/market to feed in China. /4
b. Electronic equipment, machinery are produced cheaply in Chinese industries. /4

4.3.4 Germany, US, UK. /4

4.3.5 The trade and transfer of goods and culture across international borders. /2

4.3.6 Generally a negative impact on Africa. Multinational companies are in Africa to exploit her resources, and not for the benefit of Africans. There is much mineral wealth in Africa and much money is generated, but Africa is still mostly underdeveloped. /6

[/28]

4.4.1 Irrigation, agriculture. /2

4.4.2 Domestic. /2

4.4.3 Demand for water will exceed supply. Population increase in urban areas will put great stress on the water management programme. /4

4.4.4 Supply of water in a sustainable way. Being able to provide water today without compromising the needs of water users in future generations. Build water supply systems that are sustainable, i.e. well-managed and properly maintained so that they will supply water for a long time. /4

[/12]

4.5.1 Planned according to the apartheid city model. Black people lived far away from the CBD, while white people had preference and best locations in city. Forced removals of people, e.g. coloured people to Mitchell's Plain. /6

4.5.2 Table Mountain and Table Bay, relief and the sea. /4

4.5.3 It is the most accessible part of the city, transport routes converge here, there is a great demand for land, and it is a beautiful part of the peninsula. /6

4.5.4 High crime levels, poor living conditions, lack of proper sanitation, unemployment, and great transport costs due to distance from work. /6

4.5.5 Electricity supplied for cooking/heating, drinking water supply, improved sanitation, tarred roads, building low cost housing, municipal services. /8

[/30]

4.6.1 The movement of people from rural to urban areas is not as permanent as previously thought. /2

4.6.2 Migrants want to stay in touch with their homes and support them as much as possible. Many will retire back to the rural areas where they have kept a home. /4

4.6.3 The migrants send money and goods back to the rural areas. This money is spent in the rural areas. /2

4.6.4 Urban planners will need to take the temporary nature of this migration into account when planning new urban areas and services for people. /2

[/10]

Total = /100

AGRICULURAL SCIENCES

QUESTION 1

1.1 Multiple choice

1.1.1 C✓✓ (2)

1.1.2 D✓✓ (2)

1.1.3 A✓✓ (2)

1.1.4 C✓✓ (2)

1.1.5 C✓✓ (2)

1.1.6 B✓✓ (2)

1.1.7 C✓✓ (2)

1.1.8 A✓✓ (2)

1.1.9 B✓✓ (2)

1.1.10 D✓✓ (2)

[20]

1.2 Correct terms

1.2.1 Field/veld water capacity ✓✓ (2)

1.2.2 Azotification ✓✓ (2)

1.2.3 Green manure ✓✓ (2)

1.2.4 Tissue culture ✓✓ (2)

1.2.5 Precision farming ✓✓ (2)

[10]

1.3 Replacement of word (s)

1.3.1 Sodium ✓✓ (1)

1.3.2 Sulphur ✓✓ (1)

1.3.3 Nitrogen ✓✓ (1)

1.3.4 Division ✓✓ (1)

1.3.5 Permaculture ✓✓ (1)

[5]

1.4 Matching the columns

1.4.1 F✓✓ (2)

1.4.2 G✓✓ (2)

1.4.3 A✓✓ (2)

1.4.4 B✓✓ (2)

1.4.5 C✓✓ (2)

[10]

TOTAL SECTION A: [45]

SECTION B

QUESTION 2

2.1 **Capillary rise of water in soils of different texture classes:**

2.1.1 **Identifying the soil types in test tube:**
- A - sand✓
- B - loam✓
- C - clay✓ (3)

2.1.2 **Capillarity movement of water:**
- The upward movement of water✓ from the soil water table through the micro-pores✓ until the water reaches the root zones of plants due to the force of capillarity. ✓ (2)

2.1.3 **Conclusion/observation that can be reached in the above experiment:**
- After a short period of time has passed, the water rises most rapidly in the sandy soil and the slowest in the clay soil. ✓
- The water rises to the greatest height in the clay soil and to the lowest height in the sandy soil. ✓
- The rapid rise of the water in sandy soil is due to the dominance of macro pores through which water motion takes place rapidly. ✓
- Clay soil is dominated by micro-pores which retard the motion of water. ✓
- The fact that water rises highest in clay soil is the result of the large number of micro pores in which there is very strong capillary movement. ✓ (Any 4)

(4)

2.2.4 Crumb/granular structure✓ (1)

2.2.5 Spheroid structure✓ (1)

2.3 **Multi-nutrient fertilizer application:**

2.3.1 **3:2:1 (25) stand for**:
- 3 – Nitrogen✓
- 2 – Phosphorus✓
- 1 – Potassium✓
- (25) – Total plant nutrients✓ (4)

2.3.2 **Calculation of the percentage quantity of each nutrient in multi-nutrient fertilizer mixture: 3:2:1(25)**

$$\frac{3 \times 25}{6}\checkmark$$

= 12.5kg (%) nitrogen✓

$$\frac{2 \times 25}{6}\checkmark$$

= 8.34kg (%) phosphorus✓

$$\frac{1 \times 25}{6}\checkmark$$

= 4.16kg (%) potassium✓

Total plant nutrients: 25kg (%) (6)

2.3.3 **Calculation of price per ton if the multi-nutrient fertilizer bag (20kg) costs R15.50**

1ton = 1000kg

$$\frac{1000kg}{2kg}\checkmark$$

= 500 bags multi-nutrient fertilizer✓

500 bags x R15.50
= R7 750.00/ton✓✓ (4)

2.4 **LAND-USE PLANNING AND SOIL SURVEY:**

2.4.1 **TWO guiding questions which farmers need to ask themselves prior to choosing the land–use of a piece of land:**

What land-use will give the best result? ✓
- The best result can be in terms of the produce or the most money e.g. an area of land that is suitable for growing crops; will probably give a better return from crops than from grazing animals. ✓
- This land may give 5 000 pockets of potatoes but only be large enough to graze three cows✓

How can the land be used so that it is not damaged? ✓
- If farmer has land on a steep slope, he/she may lose a lot of soil if he/she decides to plant it with potatoes. ✓

To protect the soil on a steep slope will take a lot of work and may cost a lot of money, so it may be better to use this land to graze cows than to grow crops.

(4)

2.4.2 **THREE steps to follow in order to find out the land use classes of a piece of land:**
- Carryout a soil survey to find information about the soil✓
- Find information about the steepness of the slopes✓
- Bring together the slope and soil information to find the land use classes✓ (3)

[35]

QUESTION 3

3.1 **Organic farming:**

3.1.1 **FIVE ways in which organic matter in the soil influences physical properties of the soil:**
- Organic matter improves any soil structure. ✓
- Organic matter improves drainage and aeration of soil. ✓
- It improves soil cultivation. ✓
- Organic matter binds sandy soil / it reduces soil erosion. ✓
- It improves water infiltration rate.✓
- It absorbs more heat and improves soil temperature / soil is warmer / it gives soil dark colour. ✓
- It reduces compaction / plasticity of clay soil. ✓
- it improves the ratio between micro and macro pores / it improves porosity of soil. ✓ (Any 5) (5)

3.1.2 **Calculation for the organic material content of a sampled soil:**

Mass decrease due to heating = 20g – 15g ✓
= 5g✓

$$\%\text{organic matter} = \frac{\text{loss in mass due to heating}}{\text{original mass of soil (before heating)}} \times \frac{100}{1}\checkmark$$

$$= \frac{5 \times 100}{20}\checkmark$$

= 25%✓ (5)

3.2 **FOUR factors that play a significant role in the formation of soil:**
- climate ✓
- vegetation✓
- topography✓
- man and his activities✓

(4)

3.3 **Farm weeds:**

3.3.1 **Adaptation features/modes of weeds which let them grow more easily than planted crops:**
- Produce a large number of seeds. ✓
- Spread their seeds over a long distance. ✓
- Able to grow on hard compact soil. ✓
- Having a root system from which they can grow again. ✓
- Able to grow in a large number of different climate conditions. ✓
- Produce seeds in a short space of time after germination (reproduce quickly). ✓
- Able to grow from small pieces of stem which break off the plant when pulled out of the soil. ✓
- They are early colonizers of disturbed ground✓ (Any 5)

(5)

3.3.2 **FOUR agents of weeds dissemination/transmission:**
- Animals/birds: ✓
- Wind: ✓
- Running water: ✓
- Contaminated grains/farm seeds: ✓
- Irrigation systems/canals/dams: ✓
- Farm machinery: ✓
- Farm manure: ✓ (Any 4)

(4)

3.4 **Features that assist the plant to adapt to scarcity of water in its surroundings by reducing water lost though transpiration**:

3.4.1 **Stomata on the underside of the leaves:**
- They are out of direct sunlight and therefore much cooler. ✓

(1)

3.4.2 **Hairs on the leaf surface:**
- To trap a moist layer of air around the leaf reducing transpiration rate. ✓

(1)

3.4.3 **Waterproof waxy layer on the outside of the leaf:**
- They reduce the movement of water out of the leaf. ✓

(1)

3.4.4 **Small leaves**:
- They reduce the amount of leaf area through which water can escape. ✓

(1)

3.4.5 **Light grey coloured leaves:**
- They keep the leaf temperature lower. ✓

(1)

3.5 **Hydroponics system:**

3.5.1 **Hydroponics:**
- A production system where plants/crops are grown in a growing medium/substrate other than natural soil and attempts are made to maximise growth by stimulating nutrient-up take ✓✓

or
- It is cultivation of plants in nutrient-rich solution rather than in soil. ✓✓ (Any 1)

(2)

3.5.2
- Crops can be grown where there is no suitable soil✓
- Soil preparation and weeding is reduced or eliminated. ✓
- The system provides maximum yields per unit area. ✓
- Hydroponics conserve water and nutrients as the plant is given exactly what it needs. ✓
- There are less soil-borne diseases than with growing in soil✓
- Uniform production and yields as there is little variation in the growing conditions. ✓
- Hydroponics gives better and faster plant growth. ✓
- Plants can be grown much more closely together than with conventional methods. ✓
- Hydroponics produced vegetables can be of high quality and need little washing. ✓
- Pollution of soil with unused nutrients is greatly reduced. ✓ (Any 5)

(5)

[35]

QUESTION 4

4.1 **The carbon cycle:**

4.1.1 **Carbon cycle:**
- The process whereby carbon, in carbon dioxide and other carbon compounds is recycled through various processes from the atmosphere to living organisms and back again✓✓

(2)

4.1.2 **Distinguishing between the processes:**

A - photosynthesis:
- is a chemical process by which carbon dioxide from the atmosphere and water from the soil are utilized in the presence of chlorophyll and solar energy to manufacture carbohydrates, such as sugar and starch with the release of oxygen to the atmosphere✓✓

B - respiration :
- Is the process by which all plants and animals break down energy rich organic compounds such as carbohydrates and fats, into simple inorganic compounds, such as carbon dioxide and water and energy for cellular work✓✓

B - combustion:
- The chemical name for burning of carbon compounds into carbon dioxide and water✓
- a substance reacting rapidly with oxygen✓

(6)

4.1.3 **THREE factors which contribute significantly to increased decay of carbohydrates in the soil by micro-organisms:**

Maturity of living plant: ✓
- The older plants contain more lignin and cellulose than young plants ✓
- Young plants decay more quickly than older plants✓

Composition of plant material: ✓
- Plants material which has a high nitrogen content decays more rapidly because the micro-organisms have more nitrogen available to stimulate their activity. ✓

Soil type: ✓
- Soils with high percentage of clay absorb some organic compounds making them unavailable to micro-organisms. ✓

Soil reaction: ✓
- In acid soils fungi will dominate, in neutral to slightly sweeter soils the bacteria will be dominant group. ✓
- The type of micro-organism which dominates in a soil will exert an influence on the decay of carbohydrates✓

Soil moisture and aeration: ✓
- In well drained and aerated soils the decay of organic matter takes place at a faster rate because there is enough oxygen available for micro-organisms. ✓

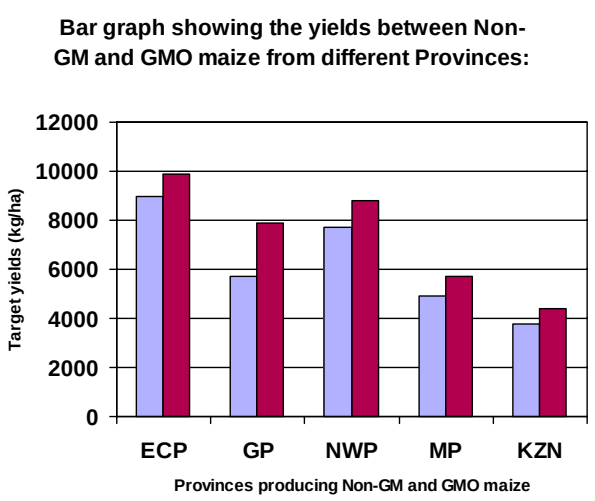
Soil temperature: ✓
- The optimal temperature for microbial action is between 30 and 35 degrees Celsius. ✓
- Higher temperatures accelerate the metabolic processes of soil micro-organisms and therefore speed up the decay processes. ✓

Presence of easily digestible carbohydrates: ✓
- The decay of carbohydrates which are hard to digest accelerates if there are other carbohydrates present which are easily digested. ✓ (Any 3 with an explanation)

(6)

4.2 **Bt maize outperforms conventional:**

4.2.1 **Bar graph to compare the yields of non-GM maize and GM maize:**



(5)

4.2.2 **Preventing cross pollination between non-GM maize and GM maize:**
- A "time isolation" differential of not less than three weeks between the flowering period of GM maize and non-GM maize. ✓
- This will ensure that pollination of separate areas will occur at different times✓
- A separation of at least 400m between land planted with GM maize and any areas planted with non-GM maize. ✓
- This is to discourage/minimize cross pollination by wind, even though it is not 100 % since it is common with white and yellow maize. ✓

(4)

4.2.3 Maize stalkborer✓ (1)

4.3 **Crops have several ways to avoid self pollination and encourage cross pollination**:
- Having short filament so that the stigma is out of reach of the anthers and their pollen. ✓
- Dioecious crops have male and female parts on different plants (there are male plants and female plants) ✓
- Some crops produce chemicals/enzymes that prevent pollen from growing from the stigma down the style of the same flower✓
- In certain crops pollen is produced before the ovules are fully matured so the pollen cannot fertilize ovules on the same plant✓

(4)

4.4 **Crop rotation:**

4.4.1 **Crop rotation**:
- A system in which a farmer grows different kinds of crops in recurrent succession on the same piece of land. ✓✓

(2)

4.4.2 **FIVE advantages of practising crop rotation by crop farmers**:
- Control and prevention of certain plant pests and diseases✓
- Most effective practical method for control of farm weeds. ✓
- Reduce the degree of soil erosion in the cropping land. ✓
- Maintenance of soil productivity – high organic fraction in the soil. ✓
- Prevent one-sided utilization of plant nutrients by just one crop. ✓
- Prevent the leaching out of plant nutrients. ✓
- More economical way of maintaining soil fertility. ✓
- Two or more crops can be produced in a single season. ✓
- Different root depths will lead to the utilization of the soil in totality. ✓
- The risk of crop failure is spread. ✓ (Any 5)

(5)

[35]

TOTAL SECTION B: **105**

GRAND TOTAL : **150**

Department of Education

Public FET College Bursary Scheme

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From 2007 the Department of Education introduced the FET Colleges Bursary Scheme . R 600 million has been made available over a three-year period. Through the bursary scheme the Department of Education provides access to vocational education & training at public FET Colleges.

What is the Department of Education FET College bursary Scheme?

The Department of Education FET College Bursary Scheme are funds made available by government to assist students enrolled or intending to enrol at FET Colleges for NC(V) programmes but are unable to fund their studies.

How much money has been set aside for bursaries?

Year	Amount	NC (V) Level
2007	R 100 million	2
2008	R 200 million	2, 3
2009	R 300 million	2, 3, 4

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