STUDY Mate
GRADE 12
ISSUE 15 2008
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BUSINESS STUDIES

SECTION B

Answer all THREE questions.

QUESTION 4

Study the following advertisement and answer the questions below.

Legal advisor: Gauteng

Career enrichment and job fulfillment for a qualified Employment Equity legal professional

You will be required to: manage and develop a team of legal advisers to provide legal advice to professional sportsmen and women; investment planning; professional sports contracts; sponsorship contracts; assist with marketing to professional sports people; conduct marketing presentations to clients.

To qualify, the essential requirements will be:

- An undergraduate Law degree
- Experience in the financial services industry
- Certified financial planner essential
- Minimum 1 year suitable management experience

In addition the successful candidate should demonstrate the following competencies:

Computer literacy; highly articulate verbal and written communications skills; excellent analytical and logical skills; sound judgement and problem-solving capabilities; strong client service orientation; confidentiality essential.

You can anticipate the personal growth opportunities, salary and rewards associated with South Africa's leading financial services organisation.

4.1 How do you know that this is an affirmative action placement? (2)

4.2 List TWO qualifications that are required for this position. (2)

4.3 As the human resources manager, explain the selection process that you would follow when appointing the new legal advisor. (16)

4.4 Identify a possible career path for this applicant. (6)

4.5 Briefly explain the Employment Equity Act and how it affects this legal business. (8)

4.6 Mary Moolman was appointed to this position. After two years she was called to a disciplinary hearing for the following complaints:

- She had disclosed confidential information to a client.
- She had sent an e-mail containing sexist comments to a colleague.

4.6.1 What is a profession? (2)
4.6.2 Why do you think Mary's behaviour is unethical or unprofessional? (6)
4.6.3 How did Mary's unprofessional behaviour affect the business? (4)
[12]

4.7 One of the requirements for running a successful business is inclusivity. What does this mean? (6)

4.8 What kind of compulsory insurance must a company take out for the new employee? Why is it necessary and how does it work? (8)
Total: 60 marks

QUESTION 5

5.1 Study the cartoon about mining below.

5.1.1 What kind of training is being conducted in the cartoon? (2)
5.1.2 Do you think this method is suitable for this situation? Motivate your answer. (4)
5.1.3 Identify the Act that will help these workers promote themselves in the workplace. (2)
5.1.4 Describe the objectives of the Act mentioned in 5.1.3. (6)
[14]

5.2 Human rights and environmental issues are two requirements that must be fulfilled to become a caring business. Explain how this relates to the mining industry. (8)

5.3 A mine is experiencing high levels of absenteeism.
5.3.1 How would you calculate the rate of absenteeism? (4)
5.3.2 Give TWO possible reasons for this problem. (4)
[8]

5.4 **'While down in the mines, I noticed the miners engaged in dangerous behaviour,** such as not wearing their hard hats, leaving off their masks (which filtered out coal dust), and smoking in the mine (where an open flame can trigger an explosion). In addition to being unsafe, some of these behaviours were blatant violations of

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BUSINESS STUDIES

safety rules. I asked the miners why they didn't wear safety equipment at times. I did not expect their answer. They said they believed there was no relationship between what they did in the mine and what happened to them. They felt their lives were in the hands of luck, fate, or God, and it did not really matter how they conducted themselves.'
Extracts from: *Personnel Psychology*, Muchinsky, Kriek, Schreuder, 1998.

5.4.1 **What is responsible business practice?** **(2)**
5.4.2 What can the mine management do to ensure responsible business practice in the above situation? (6)
[8]

5.5 What is corporate social investment? (4)

5.6 General Mines has a strategic plan for the following corporate social investment programme:
Provide training for 20 unemployed people to become electricians, machine repairers and plumbers. Provide entrepreneurship training and assist them in establishing their own businesses in these fields. Use them as contractors for work in the mine once they have qualified.
5.6.1 Identify TWO factors that make the above CSI programme a good one. Explain your answer. (10)
5.6.2 How will the above CSI programme benefit the community? (4)
5.6.3 What are the benefits of the above CSI programme for the mine? (4)
[18]
Total: 60 marks

QUESTION 6

Daybreak Farm
Paul Osman is the owner of Daybreak Farm. The farm has 40 staff. The farm sells milk and cheese. Different types of cheeses are made on the farm. They also have a few sheep that are used to provide wool which is spun, dyed and sold to overseas markets. There are three managers: Tommy (dairy), Cosmos (cheese) and Petronella (wool). The dairy has a further three supervisors: Petrus (animals), David (crops) and Fazel (equipment). The dairy has 20 staff: ten in the cheese department and five in the wool department.

Paul has changed the ownership to a close corporation and given each of the managers 15% ownership in the new cc.

One Wednesday morning, a tragic incident occurred. It was still dark as everyone started their day on the farm. The mist was so thick that you could not see your hand before your eyes. Simon was on his way to plough the northern fields of the farm when he crashed the tractor into the dairy. There was a major explosion. Part of the south wall of the dairy disintegrated. The flying bricks and mortar damaged the tractor and most of the milking equipment. The electrical panel was pulled down and cables broken. Fortunately the milking had not begun and staff and animals were outside. Simon was rushed to hospital with broken bones and concussion. Unfortunately, he died as a result of his injuries.

6.1 What type of industry is farming? (1)

6.2 This problem is part of the micro environment. How much control do the owners of the farm have over this environment? (1)

6.3 Explain the BBBEE policy and how Paul Osman has addressed this labour law. (8)

6.5 Briefly explain the difference between management and leadership. (4)

6.6 Select ONE management theory and explain how Tommy, the dairy manager, could implement this. (8)

6.7 Name FOUR kinds of insurance and explain how each is relevant in this situation. (8)

6.8 What is the difference between insurance and assurance? (8)

6.9 How will this accident influence the quality of the milk production on this farm? (14)

Total: 60 marks

SECTION C

Answer TWO questions only. Indicate your choice clearly.

QUESTION 7 Challenging business environments

Bonjour Bank has drawn up a strategic plan to address the Broad-Based Black Economic Empowerment Act. However, the person responsible for the strategic plan has resigned and management are not sure whether the strategic plan will succeed. You have been asked to comment on the following:
Does the strategic plan comply with the principles of planning?
Does the strategic plan cover the basic requirements of the BBBEE Act?
How can the strategic plan be improved?

BONJOUR BANK
VISION STATEMENT: Be completely BBBEE compliant
OBJECTIVE: To address labour changes to make the company BBBEE compliant within two years

SWOT analysis:

Strengths	**Weaknesses**
Strong brand 120 branches Good management structure Experienced managers	No organigram of staff or structure Weak knowledge of BBBEE Act High absenteeism
Opportunities	**Threats**
Skills training through bank SETA Career path structures for current staff Government banking contracts	Staff unhappiness with affirmative action positions

Business strategies	Action plan	Evaluation
BBBEE Act	Human resources department to analyse the requirements of the BBBEE Act	Report to senior management meeting in two weeks
Identify how the business complies with the Act	Draw up an organigram of the employees and management structure of the business	
Identify the changes that need to be made to comply with the BBBEE Act	Draw up a plan for implementation of BBBEE requirements based on the above research	Plan to be implemented over a two year period and presented to management within three months.

40 marks

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SECTION B

QUESTION 4

		LO	AS
4.1	The advert states they require an employment equity person which means it is an affirmative action position. ✓✓	1	3
4.2	A law degree ✓; Certified financial planner ✓ Note to learner: Experience is not a qualification so it would be incorrect to write experience in financial services industry or management experience as a qualification.	3	6
4.3	The CVs that are received need to be studied together with any accompanying letters and application forms to ensure that the applicant fulfils all the necessary requirements, i.e. a law degree and financial experience. ✓✓ Invite suitable candidates for an interview. ✓✓ Draw up a shortlist of two or three of the best candidates after interviewing them. ✓✓ Interview the people on the shortlist and, after they have completed any tests that are required such as computer literacy, analyse the test results. ✓✓ Select the best candidate and inform the others that they were not successful. ✓✓ Complete a background and reference check on the best candidate. ✓✓ If the results of the background check are not good, reject the candidate and restart the process. ✓✓ If the references checks are positive, offer the candidate the job. ✓✓ Note to learner: Remember to write in full sentences. The question asked you to 'explain' the process. Therefore, you need to justify or explain why each fact is important to get full marks. Use information from the advertisement, e.g. computer literacy, problem solving, etc. to show that you have read the advertisement.	4	2
4.4	Legal advisor ✓✓, junior partner ✓✓, senior partner ✓✓ Note to learner: You may have other ideas; remember they must refer to a career in the legal profession.	3	6
4.5	The Employment Equity Act was passed to prevent unfair discrimination on the basis of race, religion, gender, colour, disability, etc. ✓✓ Every employer is required to promote equal opportunity in the workplace. ✓✓ This legal business must ensure that their workforce is representative of the race groups in their area. ✓✓ If it is not, they need to put a plan in place to appoint people to new positions giving preference to previously disadvantaged people in order to comply with the Employment Equity Act. ✓✓	1	3
4.6.1	A profession is a job that requires tertiary education or training such as a degree or diploma. ✓✓ Professions are backed by a professional organisation such as Institute of Chartered Accountants.	3	2
4.6.2	Mary disclosed confidential information when she is in a position that requires confidentiality. ✓✓ This is unprofessional behaviour as she has access to information about celebrities, e.g. professional sportsmen. ✓✓ Her sexist comments in the e-mail could lead to a case of sexual harassment and dismissal. ✓✓ Note to the learner: It is important that you recognise the sexual harassment situation and apply your knowledge to this question.	3	2
4.6.3	Mary's unprofessional behaviour would have affected the credibility of the business ✓✓ and they may even have lost clients as a result of her behaviour. The business may also lose excellent employees who were affected by the sexual harassment incident. ✓✓	3	2
4.7	Inclusivity means that there nobody may be discriminated against. ✓✓ All employees must be treated fairly ✓✓, and the business must be accessible to all, e.g. for people with disabilities. ✓✓	2	2
4.8	Unemployment insurance ✓✓ This is to ensure that employees have a limited income if they lose their job for some reason. ✓✓ A total of 2% of an employee's salary must be paid to the Unemployment Insurance Fund. ✓✓ This can be paid entirely by the employer, or each party can pay 1% of the employee's monthly salary. ✓✓	2	4

Total: 60 marks

Note to the learner:
In question 4, the advertisement is used as a basis for a number of the questions. This is done to ensure that you are able to apply your learning to a given situation. You must refer to the advertisement in your answers wherever applicable.

QUESTION 5

		LO	AS
5.1	5.1.1 Formal/classroom training ✓✓	4	1
	5.1.2 No, the workers do not see the relation between the training received in the classroom and the actual work on the mine. ✓✓ On-the-job training would be a more successful method. ✓✓	4	2
	5.1.3 Skills Development Act ✓✓	4	1
	5.1.4 The objectives of the Skills Development Act are to develop the skills of South Africa's workforces ✓✓ and to increase the levels of investment in education and training. ✓✓ This process is intended to improve the employment prospects of previously disadvantaged people and those who find it difficult to be employed. ✓✓	4	1
5.2	Environmental issues: The mine must not overexploit the natural resources. ✓✓ This may have an influence on the economy, as scarcity leads to price increases. ✓✓ Human rights: These are the basic rights all South Africans are entitled to. ✓✓ Working underground is not safe or pleasant, and mine companies must ensure that conditions are made as safe and as 'pleasant' as possible. ✓✓	2	2
5.3	5.3.1 Number of lost working days per period / Total potential working days in same period × 100 ✓✓ 1 ✓✓ 5.3.2 Lack of job satisfaction ✓✓ Low morale/motivation ✓✓	4	1
5.4	5.4.1 Responsible business practice means that a company is behaving in a way that is accountable, ethical, honest, law-abiding and trustworthy. ✓✓ 5.4.2 Explain to the workers the consequences of not wearing the protection gear. Train the shift leaders/line manager in how to enforce the rules. Implement disciplinary procedures to deal with workers not abiding to the rules. ✓✓ × 3 = 6 (Other RELEVANT answers may also be accepted.)	2	4
5.5	Corporate social investment is when a business puts money into projects ✓✓ that improve the living standards and conditions of the community and their workers and their families ✓✓	1	2
5.6.1	This programme meets the needs of the community ✓✓ because it is training unemployed people to be self-employed in a skilled business. ✓✓ This means that they will earn an income ✓✓ that will benefit their families and they will be able to do work for the mine. The programme is sustainable ✓✓ as the unemployed people will be trained not only in a trade, but also in entrepreneurship skills ✓✓ so that they can be self-employed. Once they have completed their training they will not be dependent on the mine ✓✓ and they will be able to charge the mine for work they may do for them. Maximum 10 marks. Note to learner: There is so much that you can write in this answer, but remember that you can only be given a maximum of 10 marks. The above answer could score 12 to 14 marks, but it will only receive 10. Be very careful that you ensure your answer meets the requirements of the question. TWO factors are required which means that five marks will be allocated for each factor. Each factor must have at least two sentences of explanation. DO NOT repeat the same information in a different way.	1	2
5.6.2	The General Mines CSI programme will benefit the community because it is not only creating jobs, but if is training people to start their own businesses and they in turn will create jobs for others. ✓✓ Because they will be able to earn an income they will reduce the poverty in the area. ✓✓	1	2

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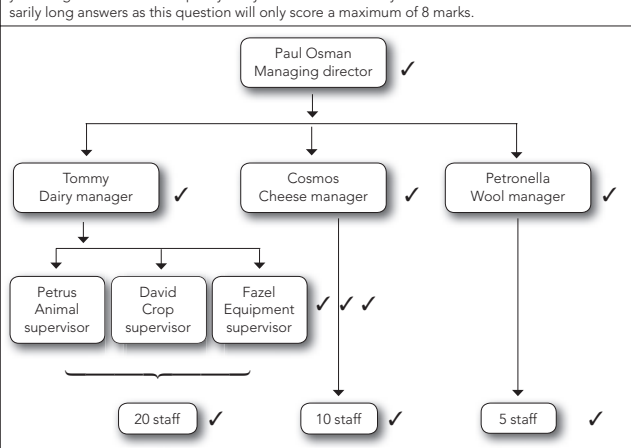
5.6.3	General Mines will benefit as they will be improving the living conditions of relatives and friends of their workers through training people, which will increase the loyalty of their own workers on the mine. ✓✓ General Mines will be able to use these new small businesses to do work at the mine in the future and increase their BBBEE rating. ✓✓ Note to the learner: The answer regarding the BBBEE rating will not be found in your textbooks. However, you can see this is a benefit from the information in the question. You will need to know your curriculum well to be able to have insight into the information.	1	2

Total: 60 marks

QUESTION 6

		LO	AS
6.1	Primary industry ✓	1	1
6.2	Complete control ✓ Note to learner: Only one mark is allocated to this answer so you do not need to write a full sentence. Just one word or a phrase is required. Remember to look at the mark allocation to assess the length of your answer.	1	1
6.3	The BBBEE policy addresses meaningful participation by black people in the ownership of new and existing businesses. ✓✓ It also addresses the skills development of black people so that they can apply for better jobs. ✓✓ Paul Osman has addressed this law by changing his business ownership to a close corporation and making his managers members of the cc. ✓✓ However, the article does not comment on any skills training that Paul may be implementing. ✓✓ Note to learner: Note how the answer refers to the article. This is very important. There is a lot of information that you can give on the BBBEE policy but you must ensure that you do not waste time on unnecessarily long answers as this question will only score a maximum of 8 marks.	1	3
6.4	 Maximum 8 marks	1	3

Note to the learner:
If you did not get full marks for question 6.4, study the answer together with the question and make sure you can identify the different management levels. Remember that staff are not management.

6.5	Management is when a person has the position and authority to make decisions and delegate work to subordinates. ✓✓ Leadership is when a person has the ability to encourage and motivate people to do their work willingly and enthusiastically. ✓✓	3	4
6.6	Note to learner: There are a number of different management theories that you could choose from. Remember to select ONE. Your explanation should contain a minimum of three facts written in full sentences. Make sure that you do not repeat information. Check your answer against your textbook. You must ensure that your answer is relevant to Tommy's situation. Tommy could use a team leader management style ✓✓with his three supervisors and 20 staff. His farm has various divisions, including animals, equipment and crops. He will benefit from regular meetings with the supervisors ✓✓ to hear their suggestions as they will have more knowledge and information ✓✓about their areas of responsibility. In this way, Tommy will be able to make informed decisions that will increase profits and productivity in the dairy section. ✓✓	3	4
6.7	Life insurance ✓ – to insure Simon's life ✓ Fire insurance ✓ – to pay for the fire damage to the dairy ✓ Funeral cover ✓ – to pay for Simon's funeral ✓ Business insurance ✓ – covers the equipment lost, and loss of business while the dairy is being rebuilt ✓ Note to the learner: Other forms of insurance may also be accepted but they must be RELEVANT to this situation.	2	4
6.8	Insurance is short term which means it runs from year to year ✓✓and it covers a wide range of risks e.g. fire, accident, household, etc. ✓✓ Assurance is long term ✓✓ and has an expiry date such as retirement from work ✓✓ or the death of the assured.	2	4
6.9	The quality of a business's product depends on the skills of the employees, the equipment and the raw materials used. ✓✓ Workers will be upset about the death of a friend and co-worker. They may not be as motivated to work ✓✓, and because they are not concentrating, they may make more mistakes. ✓✓ The farmer has already lost Simon, and other workers may also leave if they feel unhappy about continuing to work at the farm. The fewer employees the farm has, the longer it will take to complete a task. ✓✓ The equipment was destroyed by the fire, and the workers now need to milk the cows by hand, which will take much longer than the automatic methods. ✓✓ Pasteurising the milk may also not be possible due to the damage to the machinery, and the farmer may lose money as some customers may not accept unpasteurised milk. ✓✓ The quantity of milk produced may also be compromised, as the trauma experienced by the cows may cause them to produce less milk. ✓✓ (Open question, other relevant arguments may also be accepted.)	4	4

Total: 60 marks

SECTION C

QUESTION 7

Use the rubric below to assess this question.

Criteria	Level 1	Level 2	Level 3	Level 4
Does the strategic plan comply with principles of planning?	No comment **(0 marks)**	Comment provided, but the explanation contradicts the answer **(2 marks)**	Comment provided, but explanation does not clearly support the answer **(3 marks)**	Comment provided with clear, logical explanation to support the answer **(4 marks)**
Principles of planning	Principles of planning mentioned **(2 marks)**	At least one principle of planning mentioned but not applied to Bonjour Bank **(4 marks)**	Two to three principles of planning clearly identified and applied to Bonjour Bank **(6 marks)**	Four principles of planning clearly identified and appropriately applied to Bonjour Bank **(12 marks)**
Does the plan cover the requirements of the BBBEE Act?	No comment **(0 marks)**	Comment provided, but the explanation contradicts the answer **(2 marks)**	Comment provided, but explanation does not clearly support the answer **(3 marks)**	Comment provided with clear, logical explanation to support the answer **(4 marks)**
BBBEE Act	BBBEE Act mentioned **(2 marks)**	Explanation incomplete and lacks clarity and application to the banking industry **(4 marks)**	Explanation good with some application to the banking industry **(8 marks)**	BBBEE Act clearly explained and applied to the banking industry **(10 marks)**
Comment on improvement of strategic plan	Indication that plan should be improved but no suggestions given **(2 marks)**	Comment provided but suggestions not practical or relevant to BBBEE policy or the banking industry **(6 marks)**	Comment relevant but suggestions do not refer to the BBBEE policy and are not practical **(8 marks)**	Comment relevant with excellent suggestions relating to BBBEE policy displaying creative thinking **(10 marks)**

Total: 40 marks

Example of a possible answer
The Bonjour Bank strategic plan complies with most of the principles of planning. It is flexible as it has been designed to be implemented over a two-year period. There are clear timeframes, the human resources department has been given two weeks to report back to management, and in another instance three months to put together presentations for management. The plan has been written down and seems to be clear and uncomplicated. The plan is also realistic in that the bank has given itself two years to implement it.

The strategic plan does not address the BBBEE Act and there seems to be confusion between the BBBEE Act and the Employment Equity Act. Skills training is only part of BBBEE. In order to be BBBEE compliant, the bank must ensure that black people participate in the ownership and management of the bank's assets. Ownership of the existing business has not been addressed at all. There is no indication in the strategic plan that skills development training for black people will be put in place to enable them to advance into management positions.

The strategic plan needs to be more specific. This strategic plan has been put together before the human resources department and management understand the basic requirements of the BBBEE Act. Only once management knows what needs to be done to comply with the Act can a good strategic plan be drawn up. The strategy should be drawn up according to the specific steps they need to take to implement the Act. A copy of the BBBEE scorecard could be used to assist with identifying the various issues that need to be addressed in the strategic plan.

The strategic plan needs to address two separate issues: the ownership and management of the bank, and the skills training required. Decisions regarding any change of ownership will need to be made by top management. Therefore, this many need to be a separate strategic plan drawn up by top level management. However, the skills training required in order to prepare black people for management positions can be drawn up by middle management, in particular by the human resources department. In each strategic plan, the timeframe will be important in order for them to meet their objective of becoming BBBEE compliant within two years.

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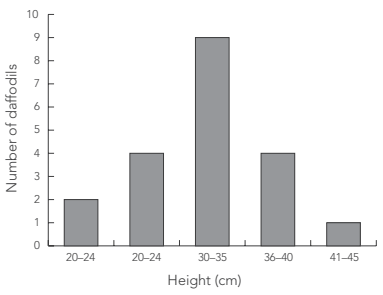
LIFE SCIENCES

QUESTION 5

This bar chart shows the range of heights in a sample of daffodils (flowering plants).



5.1 What is the range of heights in this sample? (1)

5.2 Calculate the percentage of daffodils between 25 and 40 cm in height. Show your workings. (3)

5.3 The daffodils in this sample are from the same species. Why did they grow to different heights? Give any TWO possible reasons. (2)

5.4 Daffodils from different species show variation in colour. What causes this difference? (1)

TOTAL QUESTION 5: 7

QUESTION 6

Give the correct biological term/s for each of the following descriptions. Write only the correct term/s next to the relevant question number.

6.1 Time 0 (zero) during reproduction

6.2 The monomere (building blocks) of a nucleic acid

6.3 The threadlike structures composed mainly of DNA and proteins that carry the genes with hereditary characteristics

6.4 The release of a ripe ovum from the ovary of a female mammal

6.5 The innermost membrane which protects the embryo in the uterus

6.6 A trait that will not appear in the phenotype when present in the homozygous condition

6.7 A fertilized egg (1 × 7) (7)

TOTAL QUESTION 6: 7

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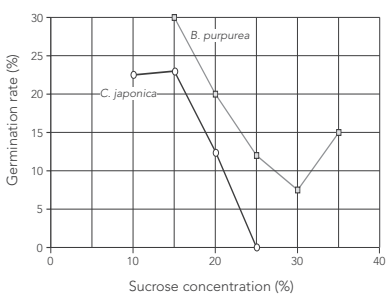
LIFE SCIENCES

SECTION B

QUESTION 7

An investigation was carried out into the effect of sucrose concentration on the germination of pollen grains from two species of plants, *B. purpurea* and *C. japonica*. The results are shown in this graph:



7.1 What is the optimum concentration of sucrose for the germination of pollen grains for both species? (1)

7.2 Compare the germination rate of these two species as the concentration of sucrose increases from 20% to 30%. Give evidence from the graph to prove your answer. (3)

7.3 If the pollen of *B. purpurea* of one plant lands on the receptive stigma of another *B. purpurea* plant, what is this type of pollination called? (1)

7.4 What is the advantage of the type of pollination mentioned in 7.4? (1)

TOTAL QUESTION 7: 6

QUESTION 8

Using gene technology techniques, a gene that causes herbicide resistance can be incorporated into the DNA of economically important plants such as wheat and rice. The flow diagram outlines such a technique:

Step 1 A bacterial DNA sequence (gene) for herbicide resistance is isolated. → **Step 2** The gene is inserted into a plasmid of the bacterium, which acts as a vector. → **Step 3** The vector inserts the gene for herbicide resistance into the plant cell DNA. A callus (mass of cells) is formed from which a number of plantlets can be cultured. → **Step 4** Plants that are produced are resistant to herbicide.

8.1 A marker gene (that can easily be traced by gene technology) may be inserted into the plasmid together with the herbicide gene. Explain a possible reason for this. (2)

8.2 Explain in your own words how the 'new' plant's DNA will differ from the original plant. (3)

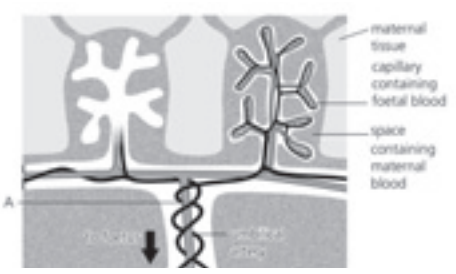
8.3 Discuss possible disadvantages that this example of gene technology may have. (3)

TOTAL QUESTION 8: 8

QUESTION 9

9.1 Explain what is meant by the term 'implantation' in relation to human reproduction. (2)

9.2 The diagram below shows the structure of part of a human placenta and umbilical cord.



9.2.1 Name the part labelled A. (1)

9.2.2 Name TWO substances that would be present in a higher concentration in the umbilical artery than in the mother's blood. (2)

9.2.3 With reference to the diagram, suggest how the structure of the placenta enhances the transfer of substances between the blood of the foetus and the blood of the mother. (3)

9.2.4 Name two viruses that can move across the placenta into the foetus. (2)

9.2.5 Shortly after the birth of the baby, the placenta leaves the uterus as the afterbirth, because of continued contraction of the uterine muscles. Name the hormone that causes this contraction. (1)

9.2.6 Normally the placenta (after birth) is discarded by the hospital. Name one example of a cultural disposal of the placenta. (2)

TOTAL QUESTION 9: 13

QUESTION 10

The diagram on the next page shows an overview of the process of protein synthesis. Each of the major steps in the process is numbered, while the structures are labelled with letters.

10.1 Write a brief description of each numbered process (1–8) in the diagram above. (8)

10.2 Identify each of the structures marked with a letter (A–J) and write down their names. (10)

10.3 Briefly explain the reason for protein synthesis. (2)

TOTAL QUESTION 10: 20

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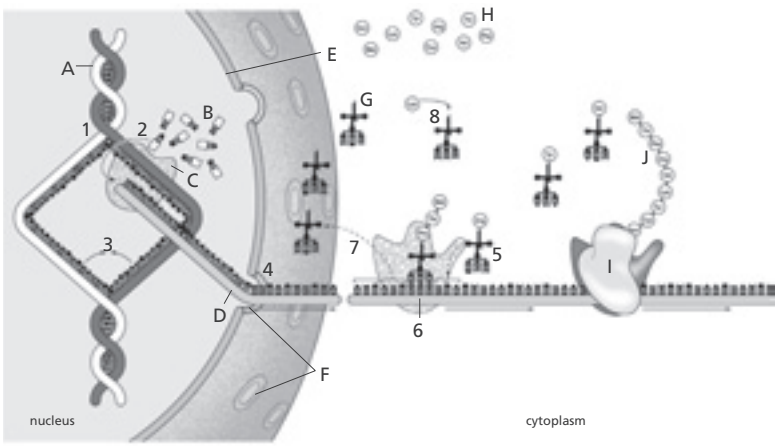

MEMORANDUM FOR PAPER 1

SECTION A

Question 5

5.1 20–45 cm ✓ (1)

5.2 $\frac{17}{20}$ ✓ × 100 ✓ = 85% ✓ (3)

5.3 Any 2 of: the external effect of the environment, e.g. different amounts of water/ different types of soil/different amounts of light/competition/disease ✓✓ (2)

5.4 The gene that codes for colour is different. ✓ (1) (7)

Question 6

6.1 Fertilization ✓
6.2 Nucleotide ✓
6.3 Chromosomes ✓
6.4 Ovulation ✓
6.5 Amnion ✓
6.6 Recessive ✓
6.7 Zygote ✓ (7)

TOTAL SECTION A = 50

SECTION B

Question 7

7.1 15% ✓ (1)

7.2 The germination rate of both species drops very fast ✓ – B. purpurea drops from 30% to about 17% ✓ and C. japonica drops from 13% to 0% germination. ✓ (3)

7.3 Cross pollination ✓ (1)

7.4 Genetic variation ✓ (1) (6)

Question 8

8.1 To show/identify the (herbicide resistant) gene ✓ and make detection of the herbicide resistant gene easy. ✓ (2)

8.2 The DNA will be the same, ✓ but the new gene will be added to the existent DNA. ✓✓ / Original DNA plus the new gene ✓– extra gene ✓✓ (3)

8.3 Any three of: Resistance may spread to other plants; plants become difficult to control; genetically modified plants can become toxic to consumers; vectors can cause diseases in plants (be a pathogen); can lead to consumer resistance to genetically modified food. ✓✓✓ (3) (8)

Question 9

9.1 Embedding/implantation of the blastocyst/embryo ✓ in the lining of the uterus/ endometrium. ✓ (2)

9.2.1 Umbilical vein. ✓ (1)

9.2.2 Any two of: carbon dioxide/urea/foetal haemoglobin ✓✓ (2)

9.2.3 Any three of: Large surface area for increased diffusion rate; very vascular/many capillaries – constant blood flow to create diffusion gradient; short distance between mother and foetal blood for increased transfer; maternal blood spaces causes slower blood flow so that there is more time for transfer of substances. ✓✓✓ (3)

9.2.4 HIV ✓ and Rubella (German measles) ✓ viruses (2)

9.2.5 Oxytocin ✓ (1)

9.2.6 Xulu and Xhosa culture – bury the afterbirth. ✓✓ (accept any reasonable answer) (2) (13)

Question 10

10.1
1. The portion of the gene in the DNA unzips – H bonds break
2. Free nucleotides align to DNA strand – uracil to adenine and guanine to cytocine.
3. If the mRNA is formed, the DNA coils up again – H bonds restored
4. mRNA leaves the nuclear pore into the cytoplasm
5. tRNA picks up an amino acid (according to the anti codon of the tRNA) – copying the genetic code (codon)
6. tRNA lines up on the mRNA according to the codon of the mRNA – uracil to adenine and guanine to cytocine
7. tRNA releases its amino acid in sequence (to build the enzyme)
8. tRNA returns to the cytoplasm to pick up another amino acid (8)

10.2
A. DNA
B. cytoplasm/free nucleotides
C. enzyme controlling the transcription of mRNA
D. mRNA
E. nuclear membrane
F. nuclear pore
G. tRNA
H. amino acids
I. ribosomes
J. protein/enzyme/ polypeptide chain (10)

10.3 Enzymes (proteins) are required for all metabolic processes ✓ – DNA provides the code that is needed for the specific enzyme. ✓ (2) (20)

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