BOARD OF STUDIES
NEW SOUTH WALES

2012 HSC Primary Industries
'Sample Answers'

When examination committees develop questions for the examination, they may write 'sample answers' or, in the case of some questions, 'answers could include'. The committees do this to ensure that the questions will effectively assess students' knowledge and skills.

This material is also provided to the Supervisor of Marking, to give some guidance about the nature and scope of the responses the committee expected students would produce. How sample answers are used at marking centres varies. Sample answers may be used extensively and even modified at the marking centre OR they may be considered only briefly at the beginning of marking. In a few cases, the sample answers may not be used at all at marking.

The Board publishes this information to assist in understanding how the marking guidelines were implemented.

The 'sample answers' or similar advice contained in this document are not intended to be exemplary or even complete answers or responses. As they are part of the examination committee's 'working document', they may contain typographical errors, omissions, or only some of the possible correct answers.

Section II

Question 16 (a)

Sample answer:

One reason for fencing the gully is to allow the vegetation to regrow and thus reduce the rate of erosion in the gully.

Answers could include:

- Keeping rabbits out to reduce their impact on erosion from their burrows
- Keeping cattle out to stop them eating emerging vegetation and so allow regrowth

Question 16 (b)

Sample answer:

Materials	*Cost of Items*	*Number required*	*Cost* ($)
Steel line posts	$7 each	68	476
Plain wire	$100 per 1200 metre roll	1116 metres (perimeter is 372 metres and need 3 strands) - need one roll	100
Wire netting	$260 per 400 metre roll	Perimeter 372 metres - need 1 roll	260
Prefabricated corner end assemblies	$100 per unit	Need 4 assemblies	400
Total cost of materials			1236

Question 17 (a)

Sample answer:

Keep accurate minutes or records of each team meeting held.

Team members move and second motions or recommendations at meetings which allows all team members to be part of the decision making process.

A copy of minutes should be distributed to all team members to read to confirm accuracy.

Circulate meeting agenda prior to meeting.

Question 17 (b)

Sample answer:

The supervisor could assist Kerry to swap shifts with someone by asking for volunteers that are not working that weekend.

The supervisor could have offered to contact other employees about working that weekend or contact other businesses to seek outside help for the weekend.

The supervisor could re-do the roster to remove Kerry for that weekend.

Answers could include:

The supervisor could have apologised to Kerry for the error and agree to better meeting procedures in the future.

The supervisor could offer to do the shift for Kerry.

Question 18 (a)

Sample answer:

Two hazards associated with this activity are:

1. Solar radiation
2. Operating the tractor

Answers could include:

1. Attaching the equipment
2. Cutting underground power cables
3. Cutting underground water and telephone services
4. Noise

Question 18 (b)

Sample answer:

There are several risks associated with the hazard of operating the tractor. One risk is exposure to noise from the tractor engine. If exposure to noise is prolonged then loss of hearing could occur. Another risk is possible injury to the driver/operator of the tractor from an accident either from poor driving or the tractor being poorly maintained. There is also the risk of damage to property from the driver not being able to drive the tractor correctly or safely. If the tractor is not correctly maintained it may break down or something may break off and cause injury to the operator.

Question 18 (c)

Sample answer:

Control strategies should be based around the hierarchy of control. All measures should seek to eliminate any risk. However reduction or engineering to reduce the risk may be a more reasonable way to control the risk.

One control strategy for the operation of the tractor is to ensure that there is a set of Standard Operating Procedures (SOPs) available for operation of the tractor. These would include checks prior to the operation, how to operate/drive the tractor, what to do when the operator has finished operating the tractor. With a set of SOPs it is less likely that the risks identified will occur. SOPs will reduce but not necessarily eliminate the risks mentioned.

Having a scheduled maintenance program for the tractor will help reduce the risk of breakdowns or injury. Maintenance will reduce the risk and ensure it is safe to operate. Regular maintenance will only occur if the owner ensures the workers are aware of the schedule and program for it to happen.

If the operator wears hearing protection when they operate the tractor the risk of hearing loss will be reduced. Another option would be to build a cabin on the tractor if there is not one, or for the owner to buy a tractor with a noise proof cabin. These are possible options but the cost may be too great so as a minimum, use of hearing protection is essential.

Answers could include:

The operator should be correctly trained to drive and operate the tractor. This will help to reduce and possibly eliminate the risks of injury to the driver through lack of knowledge of safe operation of the tractor. If the driver is correctly trained there is less likelihood of damage to property from operator error.

The operator should also use the ‘Dial Before You Dig’ contact to ensure that they do not accidently dig up power, water or telephone cables. This will not eliminate the possibility of this occurring as some people put in cables that are not listed with the authorities that maintain ‘Dial Before You Dig’.

Question 19 (a)

Sample answer:

X is 200 km from cold front using scale. Front is travelling at 25 km per hour. This means the front will reach X in 8 hours (200 ÷ 25 = 8)

Question 19 (b)

Sample answer:

- Loss of lambs due to cold and wet conditions, eg wind chill impact on sheep
- Damage to buildings due to strong winds such as sheets of iron blowing off buildings

Question 19 (c)

Sample answer:

There are several strategies that could be used to reduce the impact of the cold front at X. The first strategy is to move the stock to one or more paddocks that offer wind protection to the stock on the farm. This will reduce the impact on the stock of wind chill from the cold winds. If there are sufficient trees in these paddocks there would also be shelter from the cold rain that would fall. If it were possible, any ewes that were near lambing could be moved to farm sheds to protect them from the cold and wet.

The farm owner should move loose items from around the farm buildings. This would reduce the risk of damage to property from flying objects that were whipped up by the possible strong winds.

If it were possible high-energy stock feed should be given to the stock to provide additional energy to those ewes that are near lambing. This would help reduce possible stock losses from the cold and wet conditions.

If there is a possibility of severe frosts then the owner should turn off and drain the irrigation system. This will reduce the risk of broken or damaged fittings from frost damage.

Thus there is a wide range of strategies the owner could take to reduce the risks of damage from the approaching cold front.

Question 20 (a)

Sample answer:

One risk that is associated with the spraying of the ryegrass is the potential of damage to non-target species in, for example, the turf paddock, the vineyard, the national park etc.

Answers could include:

1. Sun burn to operator
2. Contamination from possible spillage of the chemical into the farm dam
3. Damage to the oat crop

Question 20 (b)

Sample answer:

Some strategies that could be used to reduce non-target damage are:

- Avoid spraying on very windy or very still days
- Read the MSDS and chemical label to determine what are potential non-target species that could be damaged

Answers could include:

- Ensure that the operator has been trained in correct spray techniques
- Ensure that the operator has been trained to recognise target and non-target species
- Check the wind direction before spraying
- Increase the droplet size

Question 20 (c)

Sample answer:

One reason for some of the ryegrass not being killed by the herbicide is that there is some herbicide resistance in the ryegrass. Another reason could be that there were blockages in some of the spray nozzles.

Answers could include:

- Poor spraying technique
- Spraying at the incorrect stage of plant growth
- The plants were under stress when they were sprayed

Question 20 (d)

Sample answer:

If the ryegrass has herbicide resistance then there are several strategies that could be used to reduce or overcome this problem. One strategy is to ensure that there is a rotation of herbicides used from different groups. This will help reduce the likelihood of resistance occurring. The second strategy is to optimise the chemical application conditions such as having low winds, correct temperatures etc. The third strategy is to use alternate control methods such as mechanical controls.

If the nozzles were blocked then this can be overcome by checking they are clear before spraying commences. It is necessary to check them regularly during spraying as well to see that they are clear. One further check is to do a pre-spray test of the nozzles before actual spraying commences.

If the ryegrass remained due to poor spraying technique then this may be reduced or eliminated by using a GPS to track the spray pattern. This would allow the operator to see if they have missed any parts of the paddock in their initial spray. A second option is to ensure that the operators have been correctly trained in spray pattern analysis.

Section III

Question 21

Answers could include:

There is a range of communication strategies that could be used in a primary industry. Some are:

- Written methods such as notes, forms to complete, various work record documents (appropriate to the industry) etc
- Verbal communication methods such as telephones (fixed line and mobile), two way radios, face to face meetings/giving of instructions
- Technology such as computers for emails, twitter, Facebook, pagers etc.

Each of these has benefits and is better suited to certain situations. The table below gives some ideas that could be used to evaluate each method and the situation it could be used for.

Primary industry that the student is familiar with is identified and answer related to that industry.

Situation	Communication Method	Evaluation
Routine Work Scheduling	• Face to face • Workers talk together face to face with supervisor • Explanation of daily etc work schedule given and discussed/clarified	• Effective as workers can seek clarification of instructions and tasks immediately from supervisor
	1. Written work schedule – able to see what tasks given from eg white board, printed document	• Worker can tick off each task as they are completed • Supervisor is able to see what tasks have been completed • Other workers can see what you have completed and offer assistance if necessary
	2. Emails from supervisor	• If supervisor off-site, work schedules can still be given • Most workers have access to smart phones to receive emails • Workers able to refer to list in email to determine next task/s • Could include daily/weekly schedule for worker • Saves time in not having to meet regularly with supervisor to receive daily/weekly tasks
	3. Mobile phones	• Majority of workers have mobile phone • Workers know how to use and access messages on mobile phone

		• Quick and efficient method to communicate • Work task/schedules easily modified/changed by supervisor • Worker able to let supervisor know when completed tasks, even if not on site with supervisor • SMS gives record of tasks for worker to refer to • Flexible as able to receive messages from supervisor wherever there is mobile reception
	4. Fixed line phone	• Useful if no mobile phone reception • Limited to fixed location • Only effective if worker makes notes of task/s given
Emergency Management Plan – may involve both planning for emergencies in the future and how to implement that plan when an emergency occurs	1. Written communication – either handwritten or computer generated plans/documents printed off and located at the work station	• A hard copy is always available for workers to refer to as they require • Plans always visible at work station • Printed plans could be out of date if not regularly reviewed and updates printed off
	2. Emails to workers	• Updates/changes to plans quickly transmitted to workers • Only effective if worker keeps a copy of email in smart phone/computer for reference
	3.Two-way radio	• Effective in actual emergency as immediate contact between workers/supervisor occurs • Regular updates can be communicated to workers by supervisor • Useful for workers in situations where no mobile phone reception
	4. Mobile phones	• Useful in actual emergency as can have immediate contact • Information can be passed on quickly • Information can usually only be passed on verbally to one worker at a time • SMS can be sent to many workers at one time

		• Only useful/effective if mobile reception available
	5. Face to face	• Useful for discussion/clarification of emergency plans • Effective if workers are located at one site – to discuss plans or implement a part of the plan for an actual emergency
	6. Pagers	• Effective to notify workers of an actual emergency occurring • Effective if service available • Limited use to indicate/view actual plans
Production recording	1. Face to face	• Useful when team members need to share and record data that individuals have gathered in a central location • Clarification able to be sought if any issues arise • Effective only if all workers listen as information given • Slow and possibility of inaccurate data entry if person recording data does not listen or instructions not given clearly
	2. Written documentation	• Effective to have record of data recorded • Able to see record immediately • Limited possibility of data entry error as data only recorded once • Could be transcription errors if handwriting not clear or data entry person not accurate in their task • Data must be analysed manually which takes time
	3. Computer	• Range of computer aided technologies that automatically record data – accurate, quick and no data entry errors • Data can be analysed quickly and in a variety of ways to suit purposes • May be errors if data must be transposed from handwritten documents to computer based system

Section IV

Question 22 (a)

Sample answer:

The most appropriate days for carrying out the fencing task are Thursday and Friday.

Thursday and Friday are the best two days in terms of personal safety because they offer the workers two of the coolest days in the week on which to work. This means that working conditions would be more appropriate than the other days and the risk to the worker from heat stroke would be greatly reduced on these days, especially compared to Monday to Wednesday. The UV index is only very high so the risk of exposure to the sun is lower (but still high). This would make working outdoors a little less risky in terms of needing protection from the sun, although sun protection would still be essential. Winds are predicted, though they may be warm, and would help make working outdoors more tolerable. The lower minimum temperatures would help make working in the early part of the morning more tolerable and provide for greater personal safety for a large part of the morning.

In terms of climatic conditions the days chosen have a lower risk of fire hazard due to the higher relative humidity and the slight chance of rain on both days. Both of these factors would reduce the risk of fire occurring from sparks from using machinery on those days whilst working outdoors.

Even though weather conditions are better for working outdoors on Friday and Sunday these days are not consecutive and so cannot be considered for this fencing project.

Question 22 (b)

Answers could include:

An emergency plan is developed which includes:

- A site safety plan which identifies:
  - The location and activity being carried out
  - Risk assessment documented with identified control strategies/methods for hazards identified and who is in control of site
  - Safe work method statements for tasks to be undertaken
- An emergency evacuation plan which includes:
  - Location of activity – details
  - Emergency communication strategy
  - Emergency transport options
  - Location of first aid kits
  - Name of first aid officer

- Risks that could lead to an emergency include:
  - Fire: risk of smoke inhalation, isolation due to road closure, burn injuries if caught in fire
  - Machinery and equipment accidents – chainsaws, tractors etc: trauma, blood loss etc from associated injuries
  - Heat stress/exhaustion: dehydration, disorientation
  - Misadventure eg snake bite, hit by falling tree, rockfall: risk that help won't arrive in time, envenomation, traumatic injury preventing access to emergency signaling equipment.

Each of these risks requires a control strategy, which should be included in the emergency plan developed.

Hazards, with their associated risks, may be included.