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# Equipment Management Applicant Screening Tool





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## **Level 1: Equipment Management Applicant Screening Tool Equipment Technician**

Sample questions in this document were compiled from the Equipment Management Certificate Program Level 1 study guide

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Please note the Equipment Management Applicant Screening Tool (Level 2) questions were selected from the Level 2 EMCP study guide and may be better suited in identifying technicians with more advanced experience.

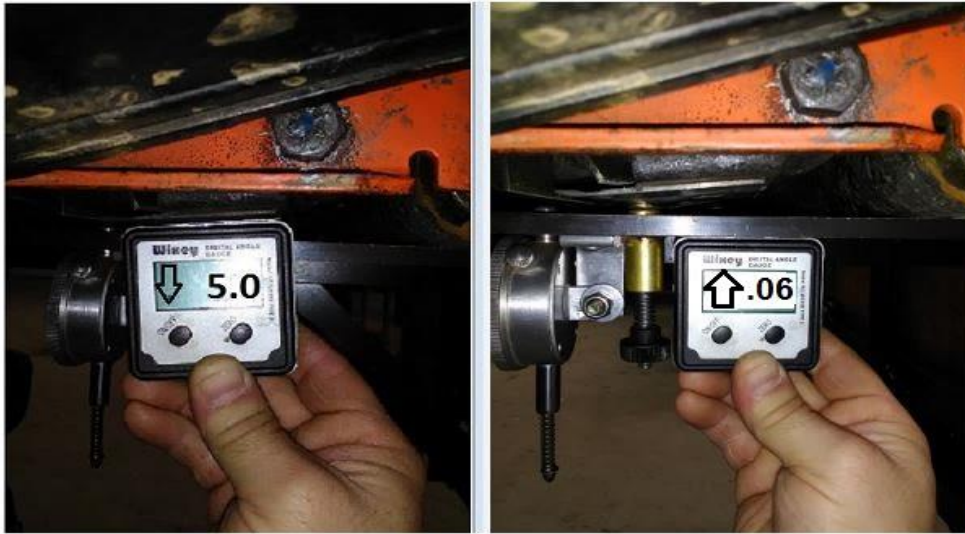
It is solely up to the interviewer to examine and select the usefulness of the interview questions. Ideally the Equipment Management Applicant Screening Tool will assist the interviewer in determining the interview questions they see most valuable in gathering data to determine hiring decisions.



## **Cutting Units Questions (1- 9)**

1. Which three factors will affect the effective height of cut? (Choose three.)
  - a. Heavy rain
  - b. Reel speed
  - c. Backlapping
  - d. Reel diameter
  - e. Ambient temperature
  - f. Down pressure setting

2. Given the pictures:



What is the attitude of the bedknife?

- a. 4.4
  - b. 5.0
  - c. 5.4
  - d. 5.6
3. What is the correct method to check the cut on a cutting unit?
- a. Make sure it cuts on the leading end of the reel blade
  - b. Make sure it cuts on the trailing end of the reel blade
  - c. Make sure it cuts on the left side and the right side of the cutting unit
  - d. Make sure it cuts on the left side, the right side, and the center of the cutting unit



4. The turfgrass has just been mowed with a reel mower. The technician notices the leaf blade tips have a white appearance with strings coming from the tip.

What is the issue with the cut?

- a. Dull blades are causing a quality of cut issue.
- b. Bobbing is causing an after-cut appearance issue.
- c. Roller bearings are causing a quality of cut issue.
- d. Scalping is causing an after-cut appearance issue.

5. A technician is troubleshooting an after-cut appearance issue on a reel mower and determines the issue is bobbing.

Which two corrective actions can be taken to resolve this issue? (Choose two.)

- a. Sharpen the reels
- b. Parallel the reels
- c. Slow the ground speed
- d. Increase the ground speed
- e. Change the mowing direction

6. Match each quality of cut issue with its corresponding after-cut appearance image.

a. Dull



b. Scalping



c. Stragglers



d. Tire track





7. Which two components should be inspected every three months on a rotary cutting unit? (Choose two.)

- a. The spindle
- b. The lift arms
- c. The down pressure
- d. The relief pressure
- e. The deck drive system

8. A technician is using a bedknife grinder.

Which safety protection should be worn?

- a. Eye and ear
- b. Gloves and coat
- c. Eye and face shield
- d. Gloves and face shield

9. Which safety precaution should be taken before checking the quality of cut and height of cut on an electric walk behind reel mower?

- a. Turn off the gas to the carburetor
- b. Disconnect the power source to the reel drive
- c. Spin the reel with the hand first to check for obstructions
- d. Chock the reel to prevent it from spinning during the checking process



**Cutting Units – Answers (1-9):**

1. A, D, F
2. A
3. D
4. A
5. C, E

6. (a) Dull



(b) Scalping



(c) Stragglers



(d) Tire Track



7. A, E
8. A
9. B

### Drivetrain Systems: Questions (1-7)

1. What is the gear ratio if the drive gear has 15 teeth and the driven Gear has 32teeth?

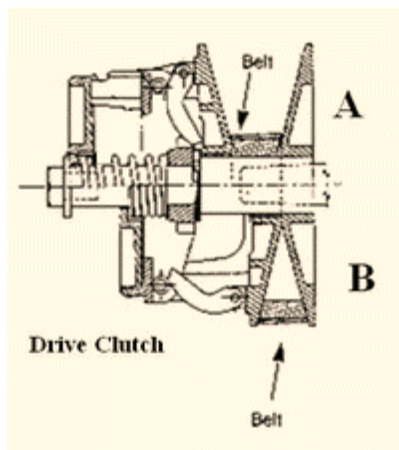
- a. 0.468:1
- b. 2.13:1
- c. 15:32
- d. 32:15:00

2. There is an oil leak from the front of the transmission and a technician is troubleshooting why it is leaking.

What is the probable cause of this leak?

- a. Input shaft bearing wear
- b. Output shaft bearing wear
- c. Bearing preload incorrect
- d. Input shaft endplay incorrect

3. Given the illustration below:



Which position is the unit in when the belt is in position A?

- a. Reverse
- b. Mid-speed
- c. Low speed
- d. High Speed

4. A member of the hand watering crew tells the golf course technician that the engine in a cart is running much faster than normal during acceleration. The cart uses a CVT system.

What is a possible cause for this overspeeding?

- a. The pulleys are misaligned.
- b. The secondary gearing is incomplete.
- c. The belt sidewalls are excessively glazed.
- d. The driven spring is calibrated improperly.

5. A crew member comments that a manual transmission will not shift out of high gear. The technician has verified that the shift linkage is functioning correctly. The equipment technician decides to remove and disassemble the transmission.

What should be looked at to troubleshoot the problem?

- a. Shift fork
- b. Synchronizer dogs
- c. Input shaft high gear
- d. Output shaft high gear

6. The assistant superintendent who has a utility vehicle with hydraulic brakes is concerned that the brake pedal has a spongy feel when depressed.

What causes this problem?

- a. Worn shoes
- b. A stuck adjuster
- c. Air in the system
- d. A frozen caliper piston

7. A technician has lifted a vehicle using a floor jack.

What is needed before working under the vehicle safely?

- a. Creeper
- b. 4X4 Blocks
- c. Jack stands
- d. Engine stand



## Drive Train System – Answers (1-7)

1. B
2. A
3. C
4. C
5. A
6. C
7. C



## **Electrical Systems: Questions (1-5)**

1. The headlights on a 12-volt tractor lighting system have a resistance of 1.2 ohms when operating.

What is the amperage in the circuit?

- a. 0.1 amps
- b. 10 amps
- c. 12 amps
- d. 14.4 amps

2. A technician is having a problem with a utility cart that has a starter generator. The engine will start but it does not charge.

What is the first logical step to troubleshoot and solve the problem?

- a. Check the battery resistance
- b. Disassemble the rectifier regulator
- c. Disassemble the starter generator and check the armature
- d. Check if the voltage at the rectifier regulator is higher than the battery voltage

3. The manager reports that the horn on a cart is not sounding when the button is pushed. The cart utilizes a 12-volt negative frame ground system. The circuit consists of the battery, a circuit breaker, a push button switch, and a 12-volt horn. The circuit is grounded to the frame after the horn.

The technician has access to a multimeter and a jumper wire with an intermittent switch inline. The first test was to disconnect the positive connector from the horn and attach the jumper wire to the positive horn terminal and the positive terminal of the battery. When the technician closes the intermittent switch, the horn sounds. The technician then disconnects the jumper wire and reattaches the positive wire to the horn. Using a multimeter, the technician finds the resistance across the circuit breaker to be infinite and the resistance across the switch with the button pushed to be 0.

Which component is faulty?

- a. The battery
- b. The 12-volt horn
- c. The circuit breaker
- d. The push button switch

4. An equipment technician needs to check the output at the B+ terminal of an alternator with a built-in regulator/rectifier and diode pack.

Which multimeter setting should be used?

- a. Ohms
- b. DC volts
- c. AC volts
- d. Diode test

5. A technician is charging a battery on a utility cart and a gas is released.

What is the primary safety concern?

- a. Fire
- b. Heat
- c. Explosion
- d. Electrocutation

### **Electrical System – Answers (1-5):**

- 1. B
- 2. D
- 3. C
- 4. B
- 5. C

## **Engine Technology: Questions (1-5)**

1. Given the picture of the turbine shaft:



What is the likely cause of the excessive heat that produces the discoloration?

- a. Oil starvation due to hot shut down of the engine
- b. Severe oil contamination caused the journal bearings of the turbocharger to fail
- c. The oil filtration system went into bypass mode and starved the turbocharger's oil supply
- d. Extreme exhaust temperatures transferring from the compressor end of the turbocharger to the turbine end

2. A technician is troubleshooting a water-cooled gasoline engine that had a complaint of low oil pressure. A faulty oil pressure relief valve is suspected.

How should the technician verify the relief valve setting?

- a. Remove the oil filter and inspect for obstructions
- b. Perform a cylinder leak-down test to determine compression
- c. Inspect the oil pan area to check for missing splash lubrication components
- d. Install a suitable gauge and note operating pressure at normal operating temperature

3. A string trimmer with a two-stroke engine is hard to start, has no throttle control, and will not idle.

What is the cause of the problem?

- a. Air leak
- b. Dirty spark plug
- c. Plugged air filter
- d. Plugged exhaust port

4. A four-stroke engine malfunction is suspected, beginning with a loss of power. The symptom is high crank case pressure.

What will cause this?

- a. Worn piston rings
- b. Worn camshaft lobes
- c. Worn crankshaft gears
- d. Worn crankshaft bearings

5. A pre-tier four diesel engine in a mower has lost power and the technician suspects a faulty fuel injector.

How can a faulty injector be located?

- a. By switching injectors
- b. By shutting off return line
- c. By performing a cylinder cancel test
- d. By removing the fuel supply line to the pump

6. Given the picture of a spark plug:



What does the condition of the insulator and electrode indicate?

- a. Weak spark
- b. Lean running engine
- c. Cool running engine
- d. Rich running engine





7. Two measurements are taken near the top of a cylinder bore, one perpendicular to and the other in line with the crankshaft.

What are these two measurements taken to determine?

- a. Cylinder ridge
- b. Cylinder taper
- c. Cylinder warpage
- d. Cylinder out-of-round

8. Black smoke is coming out of the exhaust on a diesel engine when it is at full throttle.

What will cause this issue?

- a. The air filter is clogged.
- b. There is low compression.
- c. There is an antifreeze leak.
- d. The crankcase is overfilled with oil.

9. Match each situation with the type of protection that should be used.

*Answer options may be used more than once or not at all.*

- |  |  |
|--|--|
| a. Cleaning a carburetor                 | 1. Eye protection, gloves, and dust mask |
| b. Adjusting engine RPMs                 | 2. Eye and hearing protection only       |
| c. Install valve spring on exhaust valve | 3. Eye protection only                   |

### Engine Technology – Answers (1- 9)

- 1. B
- 2. D
- 3. A
- 4. A
- 5. C
- 6. B
- 7. D
- 8. A
- 9. 1=C, 2=B, 3=A

## Fundamentals of Turfgrass Operations: Questions (1-6)

1. What is the process of spreading sand over a green?

- a. Leveling
- b. Fertilizing
- c. Topdressing
- d. Ball mark repair

2. Match each symbol from a safety data sheet (SDS) with its meaning.

Answer options may be used more than once or not at all.



1) A) Fire



2) B) Bomb



3) C) Gases



4) D) Death



5) E) Oxidizing

3. An equipment operator is operating a tractor with a pull-behind mowing unit and sees a large obstacle in front of him.

What should be done before dismounting the tractor?

- a. Set the parking brake and stay a safe distance from the mowing unit
- b. Set the parking brake, idle the tractor down, and disengage the PTO
- c. Idle the tractor down, set the parking brake, and assure no one is close by
- d. Idle the tractor down, disengage the PTO, and stay a safe distance from the mowing unit

4. A technician needs to run a grinder for a short duration of time.

Above which noise level is hearing protection advised?

- a. 65 decibels
- b. 75 decibels
- c. 85 decibels
- d. 95 decibels

5. Which three chemicals or compounds are components of air pollution? (Choose three.)

- a. Nitrogen (N)
- b. Ozone (O<sub>3</sub>)
- c. Oxygen (O<sub>2</sub>)
- d. Particulate matter
- e. Hydrogen dioxide (H<sub>2</sub>O)
- f. Oxides of nitrogen (NO<sub>x</sub>)

6. Which meteorological term refers to the amount of water vapor in the atmosphere?

- a. Fog
- b. Humidity
- c. Dew Point
- d. Barometric pressure

## **Fundamentals of Turfgrass Operations – Answers (1-6)**

1. C
2. 1 = E; 2 = A; 3 = B; 4 = C; 5 = D
3. B
4. C
5. B, D, F
6. B

## **Hydraulics Systems: Questions (1-5)**

1. A hydraulic motor is not operating correctly on a machine with considerably low hours for the problem. Upon disassembly corrosion and excessive wear is present on the internal parts.

What is the likely cause?

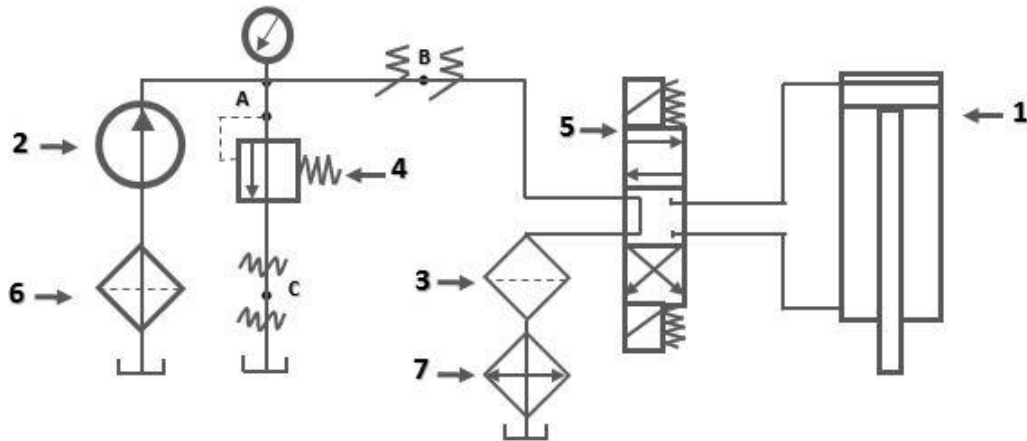
- a. Water contamination
- b. Factory defected parts
- c. Particulate contamination
- d. Improper fluid type and viscosity

2. An operator drives a five-reel machine back to the shop complaining that all reels lift really slowly. The technician knows from reading the schematic the steering and lift circuits share the same pump output. The technician checks the steering and there isn't a problem there. The technician decides to do a pressure check on the output of the lift manifold block and finds it extremely low but gradually increasing as the reels slowly start to raise.

What is the next logical step in the troubleshooting process?

- a. Check the pump flow and pressure from the hydrostat
- b. Remove the lift valve and coil and inspect for damage
- c. Remove the front lift cylinder and inspect internally for damage
- d. Check the lift pressure at the first lift cylinder to receive pressure

3. Given the schematic of a 3,000 psi (207 bar) hydraulic system:



The pump relief is set at 2,500 psi (172 bar) and is running but the valve is not shifted.

What should the pressure be at point A?

- 0–500 psi (0–34 bar)
- 1,250–1,750 psi (86–121 bar)
- 2,500–3,000 psi (172–207 bar)
- 3,000–3,500 psi (172–241 bar)

4. An equipment technician is testing a 10 gpm (0.02 ft<sup>3</sup>/sec) and 2,000 psi (138 bar) system.

Which flow meter and pressure gauge should be used to accurately obtain the correct readings?

- 10 gpm (0.02 ft<sup>3</sup>/sec) and 2,000 psi gauge (138 bar)
- 20 gpm (0.04 ft<sup>3</sup>/sec) and 2,000 psi gauge (138 bar)
- 20 gpm (0.04 ft<sup>3</sup>/sec) and 4,000 psi gauge (276 bar)
- 40 gpm (0.09 ft<sup>3</sup>/sec) and 10,000 psi gauge (689 bar)

5. A technician is moving a hydrostatically driven sprayer into the shop for preventive maintenance servicing and notices that the steering is a bit sluggish, even though the engine is at full RPMs and the cylinder is not binding.

What is the next easiest step to check?

- a. Reversed steering hoses
- b. Incorrect hydraulic oil level
- c. Internal leaking at steering control valve
- d. Internal leaking of steering control cylinder

### **Hydraulics Systems - Answers (1-5)**

- 1. A
- 2. B
- 3. A
- 4. C
- 5. B



## **Metalworking and Fabrication: Questions (1-5)**

1. An equipment manager fabricated a shaft for jackshaft assembly. The shaft is mounted with pillow block bearings. Which tool should be used to measure runout?
  - a. A protractor
  - b. A straight edge
  - c. A dial indicator
  - d. A digital caliper
  
2. With the aid of which item can a common highspeed drill bit be sharpened with a bench grinder?
  - a. A lathe file
  - b. A drill index
  - c. A drill point gauge
  - d. Cutting/tapping fluid
  
3. Where will the correct hole size to be drilled in mild steel for a given tap be found?
  - a. On a tap chart
  - b. On a drill index
  - c. On the drill bit
  - d. On a pitch gauge
  
4. An equipment technician must repair a crack in a cast iron engine block. The technician has access to an AC/DC stick welder and nickel welding rods. What is the correct welder setting for this weld?
  - a. AC electrode positive
  - b. DC electrode negative
  - c. AC electrode negative
  - d. DC electrode positive
  
5. An equipment technician is preparing to weld galvanized steel. What is the primary safety concern?
  - a. Poisonous fumes
  - b. Explosive metal material
  - c. Building pressure within steel
  - d. Higher melting point in the steel





## **Metalworking and Fabrication - Answers (1-5)**

1. C
2. C
3. A
4. D
5. A



## **Spray Systems: Questions (1-5)**

1. Given: Miles per hour (mph) = (Distance in feet X 60) / (Time in Seconds x 88)

It takes an individual 22 seconds to travel 200 feet.

What is the individual's speed in mph?

- a. 3.24 mph
- b. 6.19 mph
- c. 9.09 mph
- d. 13.33 mph

2. A spray technician needs to calibrate prior to a chemical application.

What is the proper procedure?

- a. Set spray pressure, measure results, set timer, catch spray
- b. Set timer, catch spray, set spray pressure, measure results
- c. Set spray pressure, set timer, catch spray, measure results
- d. Set timer, catch spray, measure results, set spray pressure

3. What is a characteristic of a centrifugal pump compared to a diaphragm pump?

- a. It has pulsating input pressure.
- b. It has pulsating output pressure.
- c. It has a potential for higher flow and lower pressure.
- d. It has a potential for lower flow and higher pressure.

4. What is a characteristic of a diaphragm pump compared to a centrifugal pump?

- a. It has an impeller.
- b. It has internal valves.
- c. It has external valves.
- d. It has ceramic radial seals.

5. The operator fills a tank with clean water to check the system before spraying. The operator complains that the pressure will increase using the pressure switch but will not decrease. The voltage from the switch was checked with a multimeter and eliminated as a cause.

What should the technician do next to troubleshoot the problem?

- a. Disassemble the regulator valve and inspect it for damage
- b. Disassemble the boom bypass valves and inspect it for damage
- c. Inspect the agitation nozzles in the tank to determine if there is a clog
- d. Disassemble the pump valve section and inspect it for debris or a clog

### **Spray System - Answers (1-5)**

- 1. B
- 2. C
- 3. C
- 4. B
- 5. A



## **Level 2: Advanced Equipment Management Applicant Screening Tool**

Sample questions in this document were compiled from the Equipment Management Certificate Program Level 2 study guide

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### **EMCP Level 2: Questions (1-13)**

1. A technician is using a welding rod with the numbers 7018 at the end. What is the correct welding position?

- a. All positions
- b. Flat and overhead position only
- c. Flat and horizontal position only
- d. Vertical and overhead position only

2. A utility cart veers hard to the right when the four-wheel hydraulic brakes are applied. What is the problem with this cart?

- a. The front brake pads are worn
- b. The left front caliper piston has seized
- c. The master cylinder is internally leaking
- d. The right rear brake shoes are sticking open

3. What is a disadvantage of using a lower than recommended heat-range spark plug?
- Engine will run hot or overheat.
  - Engine will fail to reach operating temperature.
  - Pre-ignition or detonation and damage can occur.
  - Excessive fouling from insufficient burn temperature.
4. A cutting unit utilizes a fixed reel position, adjustable bedknife, and rear roller height-of cut adjustments. The cutting unit has developed reel and bedknife wear, and the reel has become smaller in diameter.

What is likely to happen to the attitude of the cutting unit under these conditions?

- The attitude will increase causing the cutting unit to be less aggressive.
  - The attitude will increase causing the cutting unit to be more aggressive.
  - The attitude will decrease causing cutting unit to be less aggressive.
  - The attitude will decrease causing the cutting unit to be more aggressive.
5. Which nozzle material will be the least durable on a sprayer?
- Nylon
  - Brass
  - Stainless Steel
  - Hardened stainless steel
6. A local Golf Club is considering replacing their 30-year old constant speed pump station to a new Variable Speed Drive (VFD) station. The new pump station would cost \$175,000. The current station's yearly electrical expense is \$375,000 and yearly repair and maintenance (R/M) cost is \$30,000. The new VFD system would reduce the electrical cost by 30% and the R/M cost to \$2,500.

How long would it take to achieve the ROI for replacing the pump station?

- 0.16 years
- 1.25 years
- 2.14 years
- 4 years

7. An individual in a new administrative position is concerned that the staff is unmotivated and underperforming.

Which practice should be implemented?

- a. Provide praise and positive feedback
- b. Immediately terminate all underperforming employees
- c. Reprimand underperforming employees in front of other employees
- d. Ensure that all employees know the administrator is the decision maker

8. Which organism causes fairy ring?

- a. Worm
- b. Fungi
- c. Insect
- d. Bacteria

9. Given this picture of turf:



Which type of abiotic damage is present?

- a. Tire Scuff
- b. Mower Scalp
- c. Brown Patch
- d. Pythium Blight



**10.** Which organization manage the Energy Star ® program, according to GCSAA's Best Management Practices Guide?

- a. International Energy Agency
- b. U.S. Department of Commerce
- c. Canadian Conservation Institute
- d. U.S. Environmental Protection Agency

**11.** According to GCSAA's Best Management Practices, which type of mower is recommended for the best quality of cut for turfgrass over 1" in height?

- a. Reel
- b. Flail
- c. Sickle
- d. Rotary

**12.** According to GCSAA's Best Management Practices, which topdressing schedule is best for playing surfaces, thatch, and underlying soils?

- a. Light and frequent
- b. Heavy and frequent
- c. Light and infrequent
- d. Heavy and infrequent

**13.** According to GCSAA's Best Management Practices, which item will be reduced by using verticutting?

- a. Grain
- b. Germination
- c. Soil Compaction
- d. Fertilizer rates



**EMCP Level 2 - Answers:**

1. A
2. B
3. D
4. C
5. B
6. B
7. A
8. B
9. A
10. D
11. D
12. A
13. A





## Equipment Manager – Sample Interview Questions

### Budgeting Questions:

- Please describe how you would make the most of your equipment repair budget?
  - **Answers to look for:**
    - Keeping inventory of key parts/components from retired equipment
    - Proper diagnosis of problem before replacing parts
    - Source parts from local or aftermarket vendors
    - Forecast large repairs into the budget to avoid surprises. (example: reel replacement)
  
- If you were given total control over your equipment repair budget what parts would you keep on hand and what parts would you order as needed?
  - **Answers to look for:**
    - Electrical parts, parts that can't be repaired and must be replaced only, wearable parts such as belts, cables, filters
  
- What financial recordkeeping tools are you comfortable with?
- Please describe your experience in managing a repair budget.
- What tools or shop equipment would you invest in to make your job more efficient and to help reduce repair costs?
- Give an example of some line items in an Equipment Manager's budget that you believe could be easily overlooked.
  - **Answers to look for:**
    - Small equipment replacement
    - Bulk oils and grease
    - Shop supplies (i.e. rags, soap, parts cleaner)
    - Large scheduled repairs (reel replacements, electric utility cart battery replacements)

### Communication Questions:

- Give an example of effective communication skills you have used to help resolve stressful situations on the course.
- How would you explain a complicated technical problem to a coworker with less technical understanding?
- What would you do if you misunderstood important instructions on the job?
- How would you handle working for someone with poor communication skills?

**Problem-Solving Questions:**

- Give an example of when you took effective action to solve a practical problem.
- How does your past experiences and knowledge provide you with a better foundation to solve complex problems?
- Describe a specific problem you solved for your employer. How did you approach the problem? What role did others play? What was the outcome?
- We can sometimes identify a small problem and fix it before it becomes a major problem. Give an example of how you have done this.
- Describe a time when you were successful at troubleshooting.