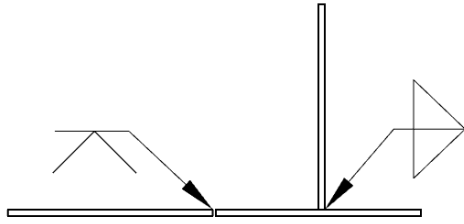


**Structures**

Reference the image below for Questions 1–6.



1. What type of joint is shown in the first weld (left side)?
  - a. Butt joint
  - b. Corner joint
  - c. T-joint
  - d. Lap joint
2. What type of weld is shown in the first weld (left side)?
  - a. Groove weld
  - b. Plug weld
  - c. Edge weld
  - d. Fillet weld
3. Which best describes the placement of welds in the first weld (left side)?
  - a. Top only
  - b. Bottom only
  - c. Both sides
  - d. All of the above
4. What type of joint is shown in the second weld (right side)?
  - a. Butt joint
  - b. Corner joint
  - c. T-joint
  - d. Lap joint
5. What type of weld is shown in the second weld (right side)?
  - a. Groove weld
  - b. Plug weld
  - c. Edge weld
  - d. Fillet weld
6. Which best describes the placement of welds in the second weld (right-side)?
  - a. Top only
  - b. Bottom only
  - c. Both sides
  - d. All of the above

7. Excessive spatter during welding is most often caused by:
  - a. Too low amperage
  - b. Too high amperage
  - c. Improper shielding gas
  - d. Moving too slowly
8. Which gas is commonly used as a shielding gas in GMAW welding?
  - a. Oxygen
  - b. Carbon dioxide
  - c. Argon
  - d. Nitrogen

**Compact Equipment**

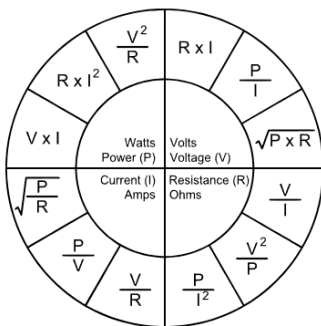
9. What is the purpose of the choke in a small gas engine during startup?
  - a. Increase airflow for better combustion
  - b. Increase the fuel-to-air ratio
  - c. Reduce engine compression
  - d. Advance ignition timing
10. An engine is backfiring through the carburetor. What is the most likely cause?
  - a. Low oil level in the crankcase
  - b. The fuel mixture is too lean
  - c. Spark plug gap is too wide
  - d. Intake valve gap or timing
11. What is the function of the *crankshaft* in a small gas engine?
  - a. To open and close the valves in time with engine stages
  - b. Push out the exhaust to ensure the engine does not overheat
  - c. Convert reciprocating motion into rotational motion
  - d. To regulate fuel delivery
12. What is the function of the *camshaft* in a small gas engine?
  - a. To open and close the valves in time with engine stages
  - b. Push out the exhaust to ensure the engine does not overheat
  - c. Convert reciprocating motion into rotational motion
  - d. To regulate fuel delivery
13. Which stroke of a 4-stroke engine cycle occurs after the spark plug ignites?
  - a. Intake stroke
  - b. Compression stroke
  - c. Power stroke
  - d. Exhaust stroke

**Machinery and Equipment**

14. In a round baler, what is the purpose of the belts or rollers inside the bale chamber?
  - a. Lift crop from the ground into baler
  - b. Rotate crop into a dense bale
  - c. Secure crop and fasten with a wrap
  - d. Eject the bale
15. A farm employee is performing routine preventative maintenance on a round baler and notices several Zerk fittings around moving joints. What is the best preventative maintenance practice?
  - a. Apply grease only if the joint is squeaking
  - b. Remove the Zerk fittings and clean them before reinstallation
  - c. Grease each fitting according to the OEM's recommended schedule
  - d. Fill the fittings until grease leaks out
16. What is the main purpose of proper chain tension in a sprocket and chain system?
  - a. Prevent slipping and wear
  - b. Reduce lubrication needs
  - c. Eliminate the need for sprockets
  - d. All of the above

**Electrical**

Reference the image below for Questions 17–18.



17. What is the power output of a 12V system that draws 5 amps of current?
  - a. 0.42 watts
  - b. 2.4 watts
  - c. 12 watts
  - d. 60 watts
18. In a 12V electrical system, a circuit draws 3 amps of current. What is the resistance of the circuit?
  - a. 0.25Ω
  - b. 4Ω
  - c. 36Ω
  - d. 64Ω

19. What unit is used to measure electrical force?
  - a. Ampere
  - b. Ohm
  - c. Volt
  - d. Watt
20. Which type of electrical circuit has one path for current to flow?
  - a. Series circuit
  - b. Parallel circuit
  - c. Complex circuit
  - d. Combination circuit
21. A tractor runs on a 12V system. When the tractor is running, you measure 14V at the battery terminal. What does this describe?
  - a. The alternator is overcharging the battery, and the battery will fail
  - b. The battery is overloaded
  - c. The alternator is charging the battery as designed
  - d. The diode in the alternator is not stabilizing the charge

**Natural Resources**

22. A best management practice (BMP) for reducing nutrient runoff includes:
  - a. Overapplying fertilizer
  - b. Planting cover crops
  - c. Burning crop residues
  - d. Diluting herbicides with water
23. How many acres are in one section of land?
  - a. 160 acres
  - b. 320 acres
  - c. 640 acres
  - d. 1,280 acres
24. A field is described as the S 1/2 of the NE 1/4 of a section. How many acres does this area contain?
  - a. 40 acres
  - b. 80 acres
  - c. 120 acres
  - d. 160 acres
25. Which statement describing the difference between GNSS and RTK in precision agriculture is *incorrect*?
  - a. GNSS uses multiple satellites
  - b. RTK replaces satellites with ground signals
  - c. RTK improves positional accuracy
  - d. RTK is more accurate than GNSS alone