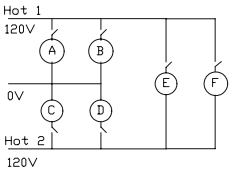
ASM 354 Test 1

1. The voltage that is commonly discussed is called:
   A. peak B. total C. rpm D. rms
2. What does a capacitor do to energy?
A. consumes it B. multiplies itC.stores it D.generates it
3. GFCI protection cuts the power to equipment at what level?
A.When "fibrillation" occurs at 100 mA. B.Just before"perception" occurs at .5 mA.C.At or around "let-go" occurs at 5 mA. D. At about 120 V and 6 amps, well below the pain threshold.
4. When polarized properly, a switch is in the:
A. black wire. B. white wire.C. green wire.D. bare wire.
5. Ohm's Law gives the relationship between____, __, and _.
6. _____ is a unit of electrical resistance.
7. _____ is the common unit used to measure electrical "pressure".
8. Ammeters must be placed in (parallel, series) with the line being measured.
9. What is one method of correcting a low power factor?
10. What is the purpose of equipment grounding?
11. If light bulbs are in a parallel circuit and one burns out, what will happen to the others?
12. If the current is lagging behind the voltage the result is called a _____ _____
13. What is one method of correcting a low power factor?
14. The term used to describe the relationship between true and apparent voltage is _____.
15. Why is power transmitted at a high voltage (thousands of volts) rather than low voltage (2-300 volts) which would be safer?
16. What are two forms of circuit networks?
17. Give two examples of devices that cause inductance or inductive reactance in a circuit.
18. What are three methods of producing electrical energy?
19. What are two NEC accepted methods of System Grounding?
20. What is the purpose of tying distribution systems together?
21. What are three types of circuit protection?
20. Show how "Delta" connected transformers are connected to produce 120 volts. (Draw the transformers).
1. Draw a schematic of an electric circuit that has an AC power supply, a fuse, and a single pole-single throw switch to control the circuit. The load consists of a resistor and a capacitor which are in parallel with respect to each other.
22. Draw a schematic of a light fixture that is to be controlled from 4 separate switches so any switch can turn the light on and off. (Show hot and neutral wires, label switches appropriately S_1, S_2, S_3, S_4).
23. A single phase load (device) requires 15,000 W of actual power. The line to neutral voltage is 240 V and the power factor is 1.00. What is the resistance of the load?
24. A step-down transformer has a primary voltage of 2300 V (another common power distribution voltage in some areas). the primary winding has 2000 turns of wire. The secondary current is 20 amps. How many turns of wire must the secondary have to produce a secondary voltage of 240 V?

25. If a farmstead consumes 1350 watts every hour for 3 days, how many kilowatt hours has it used? How much did it cost at 2.5 cents per KWH?
26. Using the following diagram and the given data, what is the amperage flow in the hot and neutral lines? (Complete the table).



Neutral

120 V load

A & B is 25 amps
C & D is 10 amps

240 V load

E is 30 amps
F is 50 amps

Loads connected	Current in Line A Hot_1	Neutral	Hot_2
A & D	_____	_____	_____
A & D & F	_____	_____	_____
C & D & E & F	_____	_____	_____

Test 4

1. Which of the following would you choose for a job with high starting torque?A.universalB.capacitor startc.split phaseD.permanent split capacitor
2. Universal motors are commonly used for what application? A. power tools B.light duty fansC. grain elevatorsD. clocks
3. Branch circuit conductor to electric motors should be selected to carry what percent of full load of the motor at 2% or less voltage drop? A. 200% B. 150% C. 125% D. 100%
4. When polarized properly, a switch is in the:
A. black wire. B. white wire. C. green wire. D. bare wire.

5. Stray voltage is considered to be: A. a current in the phase line.
B. a voltage in the phase line. C. a resistance in the neutral line. D. a voltage in the neutral line.

6. Load without diversity: (select the most correct statement)
A.should not be considered because it is politically incorrect
B.requires a knowledge of the farm operation and judgment
C.requires no thoughtD.is never considered in a load calculation problem

7. A proper wire for taking power overhead from the main service of the farm to a building's service entrance would be:
A. Underground Feeder B. Triplex C. Underground Service Entrance D. power cannot be brought from the main service to a building

8.The control that is most likely used to automatically turn on most furnaces is a:A.manual switchB.thermocoupleC.time clockd.photocellwithrelay

9. If several controls are wired together in parallel, which of the following statements is true about the controls?
A.all the controls must be in the on position before the device will be on
B.none of the controls must be in the on position before devicewill be on
C.if any one of the controls is in the on position, the device will be on
D. without a wiring diagram, this problem cannot be answered

10. A normally closed switch is one that will:
A.close (turn on) when some action is taken B.open when some action is takenC. remain closed when action is takenD.not change as action is taken

11. What are three advantages of an electric motor?

12. List three squirrel cage rotor type motors.

13. What are two of the three basic properties that are used in electric motors?

14. What are the two types of bearings used in motors?

5. _____ is the common unit used to measure electrical "pressure".

6. What are three methods of producing electrical energy?

17. What are two NEC accepted methods of System Grounding?

18. What is the purpose of tying distribution systems together?

19. What is one method of eliminating stray voltages?

20. Why does stray voltage show up more in dairy barns?

21. What are three types of circuit protection?

22. Ammeters must be placed in (parallel, series) with the line being measured.

23. A system that operates independently of a variable that it controls such as temperature to turn the process on and off is a(n) (open, closed) loop system.

24. Why is power transmitted at a high voltage (thousands of volts) rather than low voltage (2-300 volts) which would be safer?
25. What are two forms of circuit networks?
6. What is an advantage of a wound rotor?
27. Why do three phase motors require less maintenance?
28. Why can one replace a gasoline engine with an electric motor that has 1/2 the horsepower?
29. An electric control is placed in (series, parallel) with the device it controls.
30. Make a schematic of a capacitor start induction run motor.
31. Make a schematic of how a dual voltage split phase induction run motor would be connected on high voltage.
32. Develop the wiring diagram for the following circuit. A light will be controlled by two three-way switches and a four-way switch. See the diagram in Figure 2 attached to this exam. The power cable from the circuit breaker will enter the first light box.

    Be sure to label the wire colors and specify if two or three conductor cables will be used and how many cables are needed between points if more than one cable is needed. Indicate which white wires, if any, need to be marked as carrying power.
33. A 120 volt ,20 amp circuit has a fault in it that goes directly to the ground rod. How many ohms resistance is needed to make the breaker trip? _____Ohms
34. A motor is to be located 150 feet from the service entrance. The motor is rated at 25 amps at full load current and 240 V ac. three phase. Copper wire will be used (THW). Recall, since the motor is the only item on the circuit, you must size the wire for 125% of the full load current. Assume that you want a 3% voltage drop limit on the wire. What size wire is the minimum size for this job? List the Table you found the information in as part of your answer.
35. A farm shop has the following items:
    20 lighting outlets and 20 convenience outlets @ 120V
    1 - 5hp air compressor (240V) @ 125% = 35A
    1 - 3hp motor on a 100 ton hyd. press (240V) 17A
    1 welder (240V) 40A
    1 lathe, 1hp (120V) 8A
    1 heater 3kW (240V)

    There are two people who work on the farm.
    Determine: Minimum size service entrance for this building assuming the power supply is 120/240 V single phase. List all your assumptions.
36. Draw a schematic of a light fixture that is to be controlled from 4 separate switches so any switch can turn the light on and off. (Show hot and neutral wires, label switches appropriately S_1, S_2, S_3, S_4).
37. Connect the start stop station so it will control the magnetic starter.