Title: **Power Triangle** Test: 14

Course: Electrical Applications Unit: Electrical Theory CLO: 3

Name ANSWER KEY Grade 34pts. Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall identify specific characteristics of power as it relates to a resistive-inductive (RL) series circuit.
2. Student shall calculate various active power, reactive power and apparent power quantities based on given information.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Test. Grading shall be based on an answer key.

**Instructions**

Select the best answer to each multiple-choice question below.

1. The power triangle exists in any circuit that contains a reactive component?
2. True
3. False
4. The phase angle that exists in the impedance triangle can be a different value from that of the power triangle.
5. True
6. False
7. Power Factor can be calculated by;
8. All the above
9. Increasing the amount of inductance in a RL circuit will:
10. Increase the need for apparent power
11. Decrease the active power
12. Have no effect on the power
13. Reactive power is represented by the letter(s) \_\_\_ in mathematical formulas.
14. S
15. VA
16. VAr
17. Q
18. The active power in a resistive only circuit can be represented in?
19. S
20. VA
21. VAr
22. Q
23. Apparent power is represented by the letter(s) \_\_\_ in mathematical formulas.
24. S
25. VA
26. W
27. Q
28. Active power is measured in?
29. S
30. VA
31. W
32. Q
33. Increasing the amount of resistance in an RL circuit will \_\_\_\_\_\_\_ the PF.
34. increase
35. decrease
36. have no effect on
37. Decreasing the phase angle means that the circuits reactance has?
38. Increased
39. Decreased
40. Remained the same

**Instructions**

Given the figure below, match the component with it’s appropriate quantity.



|  |  |
| --- | --- |
| 1. Apparent Power C | 1. Phase Angle D |
| 1. Active Power A | 1. Reactive Power B |

**Instructions**

Determine the unknown quantities from the given values from within the power triangle.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | P | Q | S | θ |
|  | 550W | 823.165VAR | 990VA | 56.251˚ |
|  | 1275W | 480VAR | 1.362kVA | 20.63˚ |
|  | 4kW | 4.2kVAR | 5.8kVA | 46.397˚ |
|  | 528.11W | 330VAR | 622.736VA | 32˚ |
|  | 330W | 128.927VAR | 354.291VA | 21.34˚ |
|  | 1.2kW | 397.21VAR | 1.264kVA | 18.315˚ |
|  | 1.171kW | 330.547VAR | 1217VA | 15.76˚ |
|  | 141.138kW | 23VAR | 143VA | 9.256˚ |
|  | 2.414kW | 1kVAR | 2.613kVA | 22.5˚ |
|  | 1514W | 316.2VAR | 1.547kVA | 11.797˚ |