Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_/\_\_\_/\_\_

**Answer Key – Electrical Power Exam #2**

1. List two circuit safety precautions and one worker safety precaution. (2pts each)
2. Circuit safety precautions
   * 1. **Never install a fuse or circuit breaker whose current rating is higher or whose voltage rating is lower than specified for a particular circuit.**
     2. **Never bypass or defeat a fuse or circuit breaker.**
3. Worker safety precaution with live circuits
4. **Work with well-insulated tools whenever possible.**
   * 1. **Avoid completing a circuit through the body.**
5. List three uses of Watt’s Law in any order. (2pts each)
   1. **When current and voltage are known, P=VI**
   2. **When current and resistance are known, P=I2R**
   3. **When voltage and resistance are known, P=V2/R**

Calculate the power and show the formula used (1 pt. - state formula; 1 pt. - fill in values w/ labels; 1 pt. - for the numeric answer; and 1 pt. - for the proper tag).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Given** |  |  |  | **Answer for Power** | | | | | | | |  |
| 3. | 37 KΩ | 10 | µA | 3. | **3.7**\_\_\_ | | |  | **mW**\_\_ | | | |  |
| **P=I2R= (.00001)2 x 37000 = .00037 W** | | | |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 4. | 2 mA | 57 V | | 4. | **114**\_\_ | | |  | **mW**\_\_ | | | |  |
| **P= VI= (.002)(57) = .114 W** | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 5. | 24 volts | 250 KΩ | | 5. | **2.304**\_ | | | | **mW**\_\_ | | | |  |
| **P=V2/R = 242/ 250000 = .0002304 W** | | | |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 6. | 100 µA | 35 MΩ | | 6. | **0.3**5\_\_ | | |  | **W** \_\_\_ | | | |  |
| **P=I2R= (.00001)2 x 35000000 = .35 W** | | | |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 7. | 12.5 volts | 13 | µamps | 7. | **162.5**\_ | | | | **µW**\_\_ | | | |  |
| **P= VI=** | **(12.5)(.000013) = 162.5** | | **µW** |  |  |  |  |  | \_ |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |