There are five modulation modes for users to choose, and the corresponding indicators and scores for each modulation mode are shown in the table below：

|  |  |  |  |
| --- | --- | --- | --- |
| modulation | Soft switching Range | Current Stress | Easiness to implement |
| SPS | 1 | 1 | 5 |
| DPS | 2 | 2 | 4 |
| EPS | 3 | 3 | 3 |
| TPS | 4 | 4 | 2 |
| Five-Degree | 5 | 5 | 1 |

The following evaluation indicators are transformed by the above indicators, the corresponding value represents the score of the indicator

* Conduction loss = 100% current stress
* Copper loss = 100% current stress  
  Core Loss = 100% current stress
* Switch loss = 80% soft switching range +20% current stress
* efficiency = 40%soft switching range +60% current stress
* Implementation cost = 1/ easiness to implement
* Circulating current = 100% current stress
* Reactive power = 100% current stress
* Thermal performance: thermal performance of switches + thermal of transformer  
  thermal performance of switches = 60% soft switching range +40% current stress  
  thermal of transformer = 100% current stress

The metrics used to calculate the final score must include the three in the table and the conversion metrics below the table selected by the user.

The user's score for the positive indicator(for the positive description of these indicators, please understand according to the knowledge of the circuit, such as low loss and current stress, wide soft switch range is a positive description of the indicators) of the description accounted for 90% of the final total proportion, and then the 90% was evenly allocated to the positive indicator score, and the remaining indicators were equally allocated 10%.

Please calculate the final score of each modulation according to the above rules, and finally select the modulation with the highest score.

Examples1: high efficiency and wide soft switching range

efficiency (SPS)=0.4\*1+0.6\*1=1

Final score (SPS)= 0.45\*efficiency+0.45\*soft switching range+0.05\*current stress+0.05\*easiness to implement

=0.45\*1+0.45\*1+0.05\*1+0.05\*5

=1.2

[In](javascript:;) [a](javascript:;) [similar](javascript:;) [way](javascript:;):

efficiency (DPS)=0.4\*2+0.6\*2=2

Final score (DPS)= 0.45\*efficiency+0.45\*soft switching range+0.05\*current stress+0.05\*easiness to implement

=0.45\*2+0.45\*2+0.05\*2+0.05\*4

=2.1

Examples2: Low current stress, low switch loss and easy to implement.

Switch loss (SPS)=0.8\*1+0.2\*1=1

Final score (SPS)=0.3\*switching loss +0.3\*current stress+0.3\* easiness to implement+0.1\*soft switching range

=0.3\*1+0.3\*1+0.3\*5+0.1\*1

=2.2

[In](javascript:;) [a](javascript:;) [similar](javascript:;) [way](javascript:;):

Switch loss (Five-Degree) =0.8\*5+0.2\*5=5

Final score (Five-Degree) =0.3\*switching loss +0.3\*current stress+0.3\* easiness to implement+0.1\*soft switching range

=0.3\*5+0.3\*5+0.3\*1+0.1\*5

=3.8