**Homework 7**

**Page 138-139, Chinese textbook**

**Question 2**

Considering a buck chopper circuit shown in the Fig. 5-1a, with , , is large enough and . Use the pulse width modulation method, calculate the average output voltage and the average output current when and.

**Question 5**

Considering a boost chopper circuit shown in the Fig. 5-2a, with , and are large enough and. Use the pulse width modulation method, calculate the average output voltage and the average output current when and.

**Question 11**

Try to analyze the maximum voltage, maximum current and average current of the switch and the rectifier diode in forward circuit and flyback circuit during operation.

**Question 12**

Try to analyze the maximum voltage, maximum current and average current of the switch and the rectifier diode in full-bridge, half-bridge and push-pull circuit during operation.

**Answer 5.2**

Because is large enough**,** the load current is continuous.

The average value of output voltage is



The average value of output current is



**Answer 5.5**

The average value of output voltage is



The average value of output current is



**Answer 5.11**

The maximum voltage

|  |  |  |
| --- | --- | --- |
|  | switch | rectifier diode |
| Forward circuit |  |  |
| Flyback circuit |  |  |

The maximum current

|  |  |  |
| --- | --- | --- |
|  | switch | rectifier diode |
| Forward circuit |  |  |
| Flyback circuit |  |  |

The average current

|  |  |  |
| --- | --- | --- |
|  | switch | rectifier diode |
| Forward circuit |  |  |
| Flyback circuit |  |  |

**Answer 5.12**

The full-bridge circuit

|  |  |  |  |
| --- | --- | --- | --- |
|  | maximum voltage | maximum current | average current |
| switch |  |  |  |
| rectifier diode |  |  |  |

The half-bridge circuit

|  |  |  |  |
| --- | --- | --- | --- |
|  | maximum voltage | maximum current | average current |
| switch |  |  |  |
| rectifier diode |  |  |  |

The push-pull circuit

|  |  |  |  |
| --- | --- | --- | --- |
|  | maximum voltage | maximum current | average current |
| switch |  |  |  |
| rectifier diode |  |  |  |