



专题十一 电学的综合计算

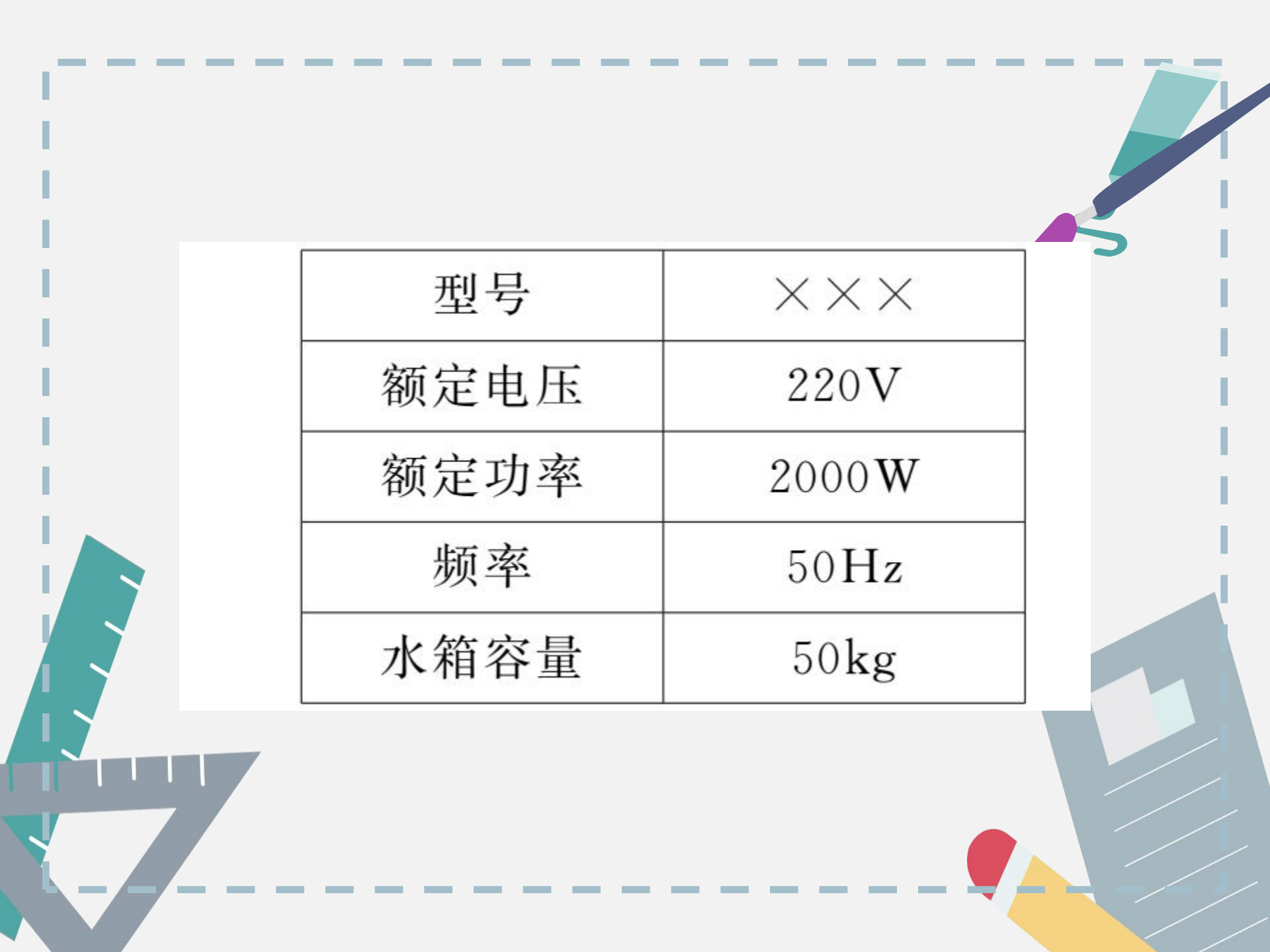




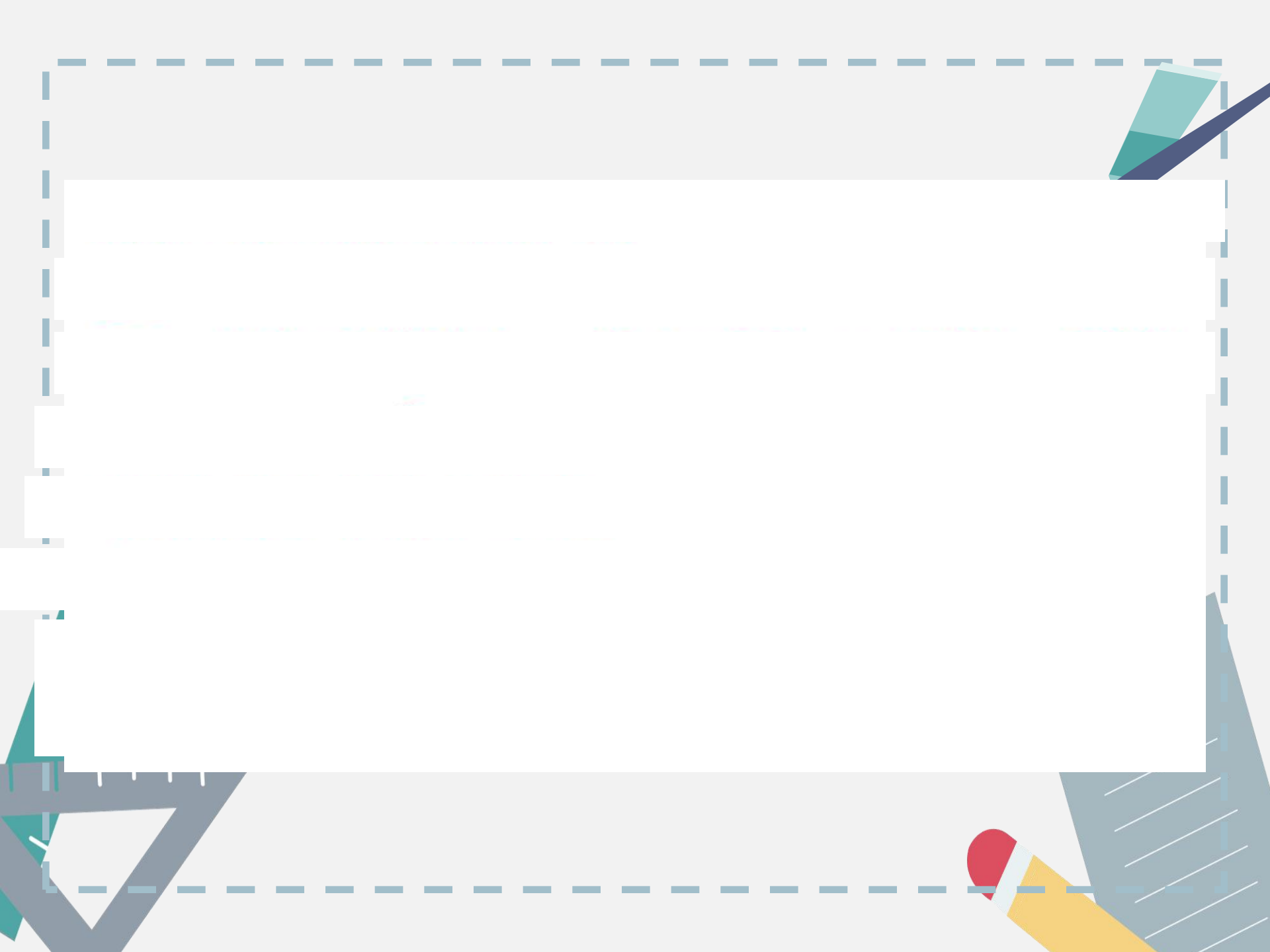
专题训练

类型 1 铭牌表格类

1. (2018 年毕节市) 一电热水器的铭牌如表所示, 现将水箱装满水, 电热水器正常工作时, 把水从 20°C 加热到 60°C 。已知 $c_{\text{水}} = 4.2 \times 10^3 \text{ J}/(\text{kg} \cdot ^{\circ}\text{C})$ 。求:
- (1) 水吸收的热量。
 - (2) 若电热水器正常工作, 且产生的热量全部被水吸收, 则需加热多长时间?



型号	×××
额定电压	220V
额定功率	2000W
频率	50Hz
水箱容量	50kg



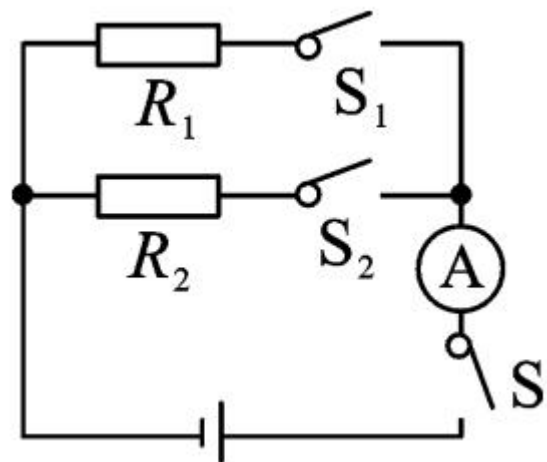
类型 2 电路变化型综合计算

2. (2019 年毕节市) 如图所示的电路中, 电源电压保持不变, $R_1 = 30\Omega$, $R_2 = 10\Omega$ 。当闭合开关 S_1 、 S , 断开 S_2 时, 电流表的示数为 0.4A 。

(1) 求电源电压;

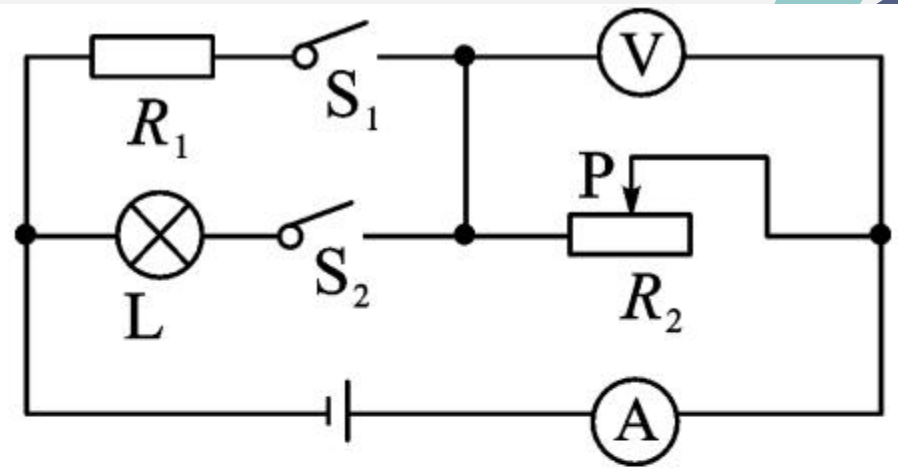
(2) 当闭合开关 S_2 、 S , 断开 S_1 时, 求电流表的示数;

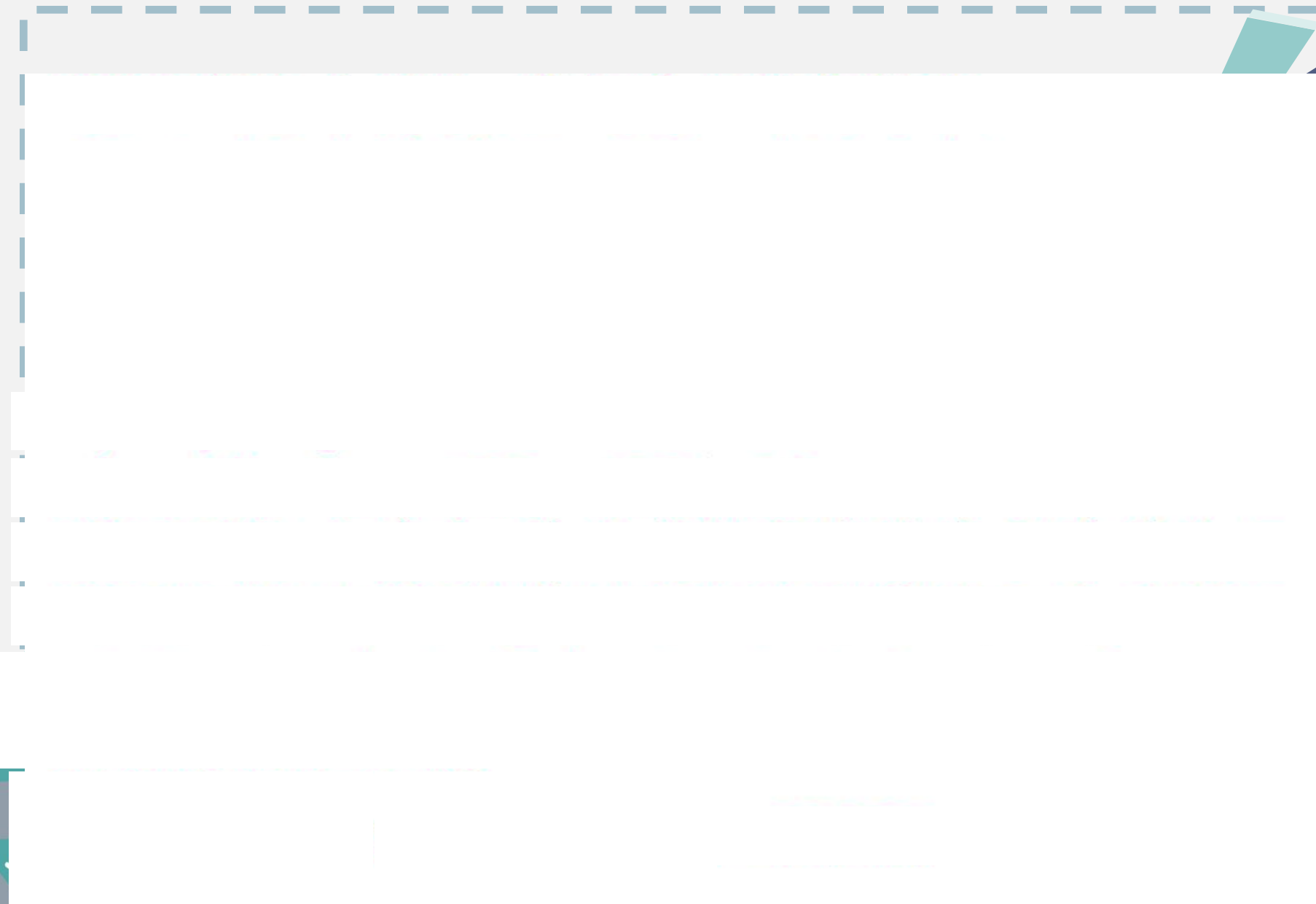
(3) 当闭合开关 S_1 、 S_2 、 S 时, 通电 100s , 求整个电路消耗的电能。





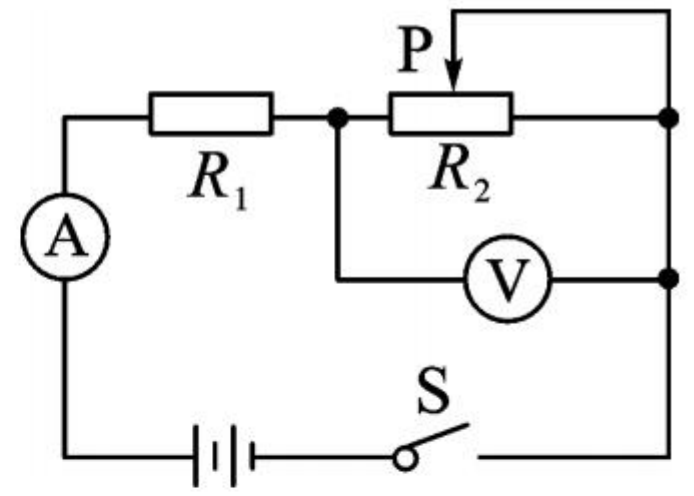
3. (2018 年铜仁市) 如图所示, 电源电压保持 9V 不变, 灯泡 L 的额定功率为 3W , 额定电压为 6V , 电阻 $R_1 = 20\Omega$ 。只闭合 S_2 , 将滑动变阻器的滑片 P 移到中点时, 电流表的示数为 0.3A 。(不考虑温度对灯丝电阻的影响, 计算结果保留两位小数) 求:
- (1) 只闭合 S_2 , 将滑动变阻器的滑片 P 移到中点时, 此时灯泡 L 的实际功率是多少?
 - (2) 只闭合 S_2 , 调节滑动变阻器的滑片, 使灯泡正常发光, 此时滑动变阻器接入电路中的阻值是多少?
 - (3) 只闭合 S_1 , 将滑动变阻器滑片 P 移到最右端时, 在 60s 内电流做的功是多少?

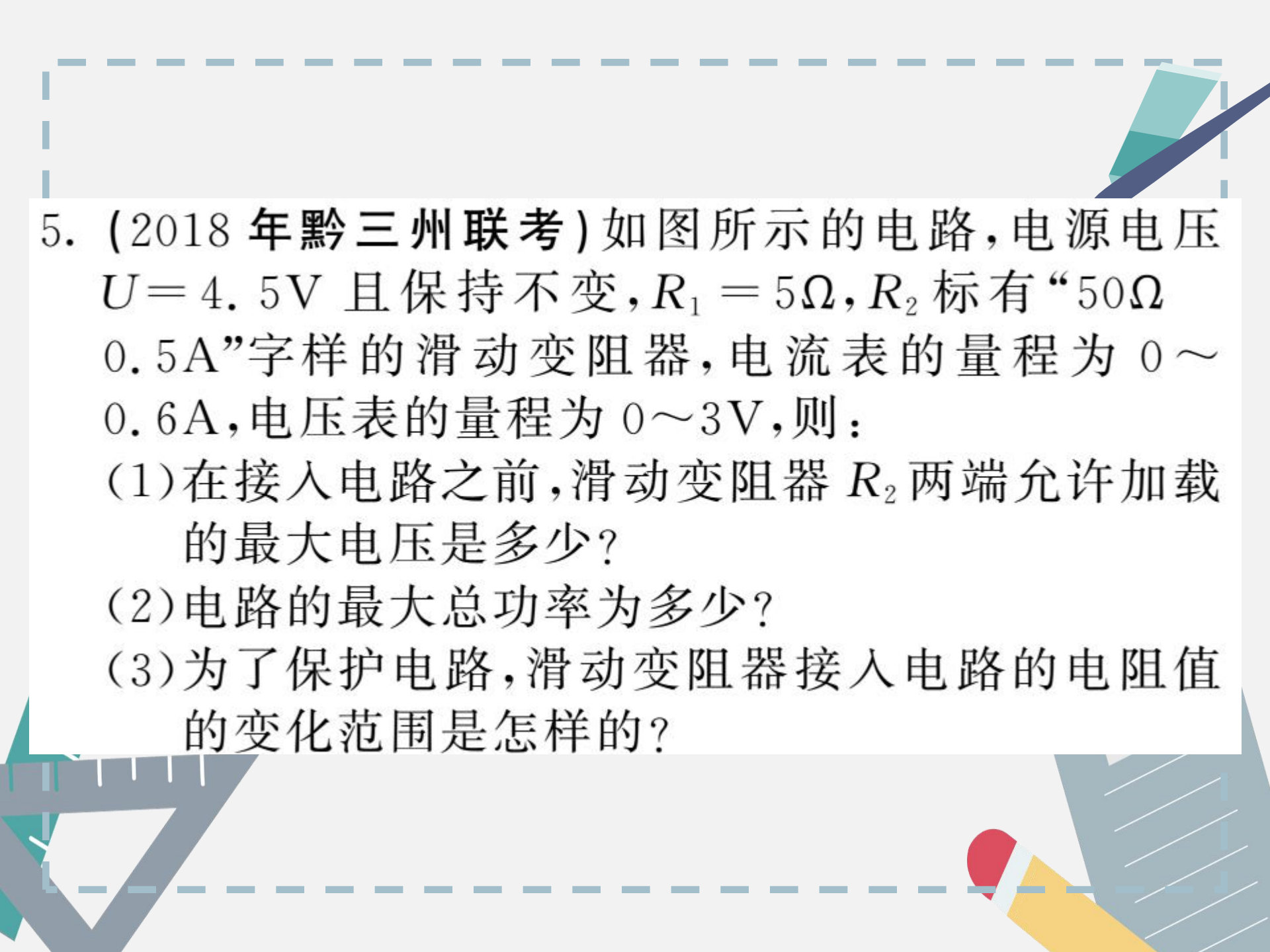




类型 3 极值类的计算

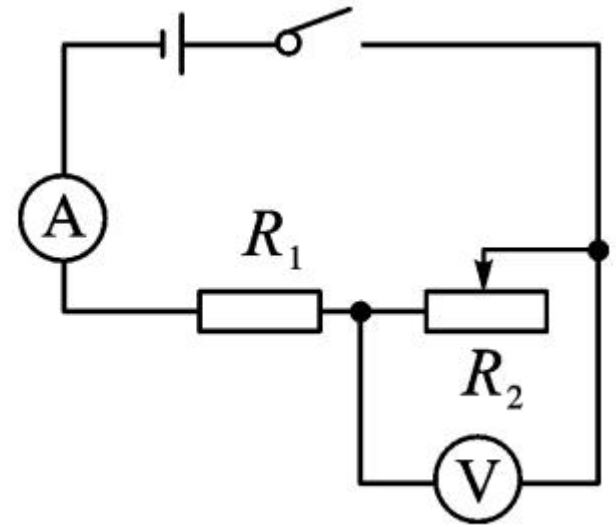
4. (2018 年毕节市) 如图所示的电路中, 电源电压恒定, 定值电阻 R_1 的阻值为 12Ω , 滑动变阻器 R_2 上标有“ $10\Omega \quad 1A$ ”字样, 电流表量程为 $0\sim 0.6A$, 电压表量程为 $0\sim 3V$ 。闭合开关 S, 电流表Ⓐ示数为 $0.5A$, 电压表Ⓥ示数为 $2V$ 。求:
- (1) 滑动变阻器连入电路中的电阻;
 - (2) 电源电压;
 - (3) 在确保电路元件安全使用前提下, 要使整个电路消耗的总功率减小, 此时滑动变阻器的滑片 P 应向哪端移动? 整个电路消耗的最小功率是多少? (计算结果保留小数点后一位)





5. (2018 年黔三州联考) 如图所示的电路, 电源电压 $U=4.5\text{V}$ 且保持不变, $R_1=5\Omega$, R_2 标有“ 50Ω 0.5A ”字样的滑动变阻器, 电流表的量程为 $0\sim 0.6\text{A}$, 电压表的量程为 $0\sim 3\text{V}$, 则:

- (1) 在接入电路之前, 滑动变阻器 R_2 两端允许加载的最大电压是多少?
- (2) 电路的最大总功率为多少?
- (3) 为了保护电路, 滑动变阻器接入电路的电阻值的变化范围是怎样的?



1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the team.

3. The third step is to develop a plan or strategy to address the problem. This involves identifying the resources needed and determining the best approach to take.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress along the way.

5. The final step is to evaluate the results of the project. This involves assessing whether the objectives were met and identifying any lessons learned for future projects.

6. The next step is to communicate the findings and results of the project to the relevant stakeholders. This ensures that everyone is aware of the progress and outcomes.

7. The final step is to document the project and its outcomes. This provides a record of what was done and the results achieved, which can be used for future reference.

8. The next step is to review the project and its outcomes. This involves reflecting on what was learned and identifying areas for improvement.

9. The final step is to share the results and lessons learned with the wider organization. This helps to ensure that the knowledge gained from the project is shared and can be used to inform future projects.

10. The next step is to implement the plan. This involves putting the strategy into action and monitoring progress along the way.

11. The final step is to evaluate the results of the project. This involves assessing whether the objectives were met and identifying any lessons learned for future projects.

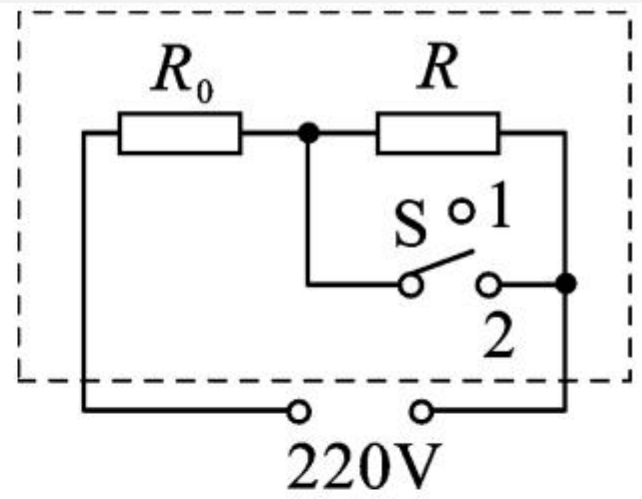
12. The next step is to communicate the findings and results of the project to the relevant stakeholders. This ensures that everyone is aware of the progress and outcomes.

13.

14.

类型 4 电热的计算

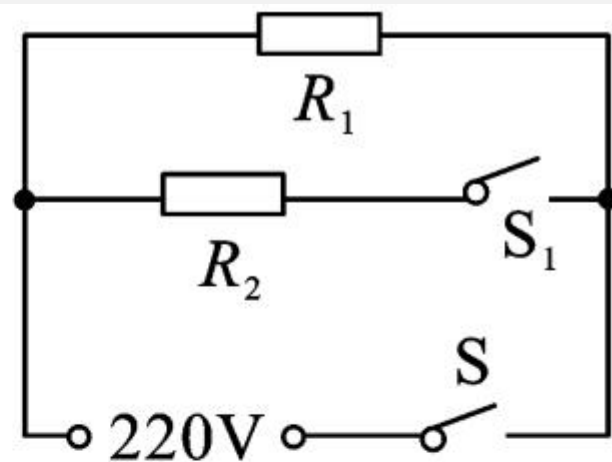
6. (2017 年黔东南州) 如图所示是 XX 型“220V 1000W”电饭煲的原理图。它有高温和保温两挡, 通过单刀双掷开关 S 进行调节, R_0 为电阻丝。当开关 S 接高温挡时, 电路的功率为 1000W; 当开关 S 接保温挡时, 电路的总功率为 22W。求:
- (1) 电饭煲在高温挡时, 开关 S 应与哪个触点连接?
 - (2) 电热丝 R_0 的阻值多大?
 - (3) 当电饭煲在保温时, 实际电流多大? 保温 5min, 电热丝 R_0 消耗的电能为多少?



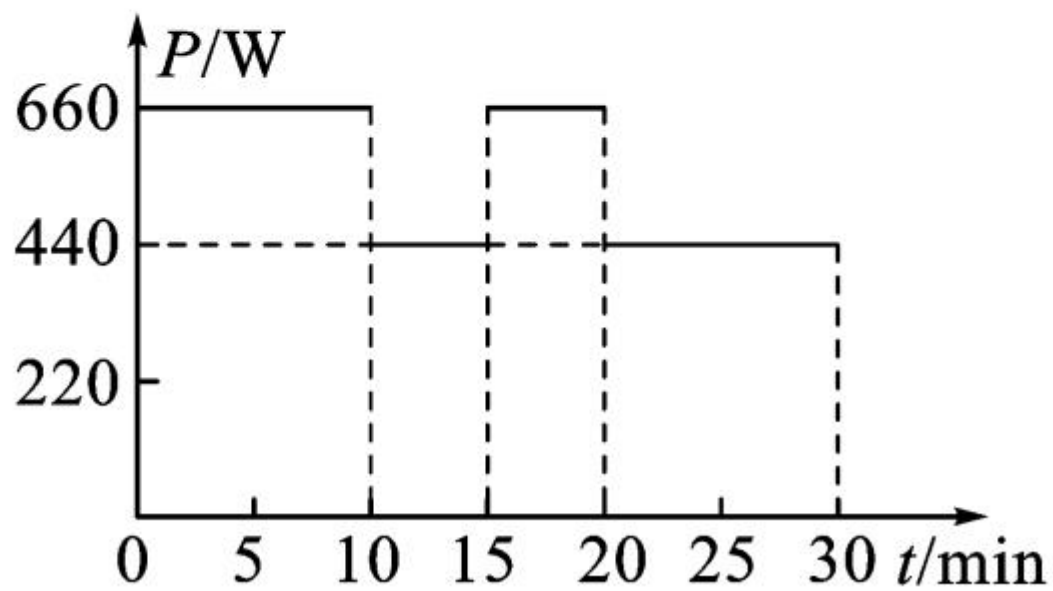
7. (2018 年黔三州联考) 下图甲为某款新型电饭煲, 额定电压为 220V , 它采用了“聪明火”技术, 智能化地控制不同时间段的烹饪温度, 以得到食物最佳的营养和口感。图乙为其电路原理图, R_1 和 R_2 为电阻不变的电热丝, S_1 是自动控制开关。将电饭煲接入 220V 电路中, 在电饭煲工作的 30min 内, 它消耗的电功率随时间的变化如图丙所示。求:
- (1) $5\sim 10\text{min}$, 电饭煲的功率;
 - (2) $20\sim 30\text{min}$, 电饭煲产生的总热量。



甲



乙



丙

