

数学作业纸

科目 _____

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5-5

1. $U_{om} \approx U_{im} \approx 14.14V$

$$P_o = \frac{U_{om}^2}{2R_L}$$

$$= 29W$$

$$\eta = \frac{\pi U_{om}}{4V_{cc}}$$

$$= 74\%$$

$$P_{V1} = \frac{1}{R_L} \left(\frac{V_{cc} U_{om}}{\pi} - \frac{U_{om}^2}{4} \right)$$

$$\approx 4.93W$$

2. $U_{CE0} > 2V_{cc} = 30V$

$$I_{cm} > \frac{V_{cc}}{R_L} = 3.75A$$

$$P_{cm} > 0.2 \frac{V_{cc}^2}{2R_L} = 5.625W$$

5-10

1. $U_{c2} = \frac{V_{cc}}{2}$

$$= 5V$$

∴ 用 R_1

$$U_{CE2} = U_{CE1} = U_{CE2} = 5V$$

2. $P_{o\max} = \frac{(5V - 1V)^2}{2 \times 16\Omega}$

$$= 0.5W$$

$$\eta = \frac{\pi}{4} \times \frac{4V}{5V}$$

$$= 62.8\%$$

3. U_{B1} 电位升高 U_{B2} 降低

$$I_{C2} = I_{C1} = \frac{\rho(5V - 0.7V)}{1.2k\Omega} \approx 179mA$$

$$U_{CE\max} = 5V$$

$$P_c = 5V \times 179mA$$

$$= 895mW > P_{cm}$$

∴ V_{T1}, V_{T2} 不全



扫描全能王 创建

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思考:

10-5

$$1. U_0(\Delta V) = 0.9 U_2$$

$$= 1.8 V$$

$$I_0(\Delta V) = \frac{U_0(\Delta V)}{R_L}$$

$$= 18 mA$$

$$I_D(\Delta V) = \frac{1}{2} I_0(\Delta V)$$

$$= 9 mA$$

$$U_{RM} = \sqrt{2} U_2$$

$$= 18.2 V$$

2. 变压器次级被短路

10-17

1) a: 输出电流恒定

b: 输出电压恒定且可调

$$2) I_0 = \frac{U_{xx}}{R_1} + I_3$$

$$= \frac{5V}{R} + I_3$$

$$3) U_0 = \frac{R_1 + R_2}{R_1} U_{xx} + I_3 R_2$$

$$= \frac{R_1 + R_2}{R_1} \times 5V + I_3 R_2$$

10-10

1. 不能稳定

R在稳压电路中的作用是在电压波动和负载变化时使稳压管工作在稳压区内

$$2. \frac{U_{Imax} - U_0}{R} < I_{Zmax}$$

电压上升10%: $U_2 = 15V$

$$U_{Emax} = 1.2 \times (1.1 U_2)$$

$$= 19.8 V$$

$$R > \frac{U_{Imax} - U_0}{I_{Zmax}} = 363 \Omega$$

下降10%:

$$\frac{U_{Imin} - U_0}{R} - I_{Omax} > I_Z$$

$$U_{Imin} = 1.2 \times (0.9 U_2)$$

$$= 16.2 V$$

$$R < \frac{U_{Imin} - U_0}{I_{Omax} + I_Z} = 670 \Omega$$

$$\therefore R = 510 \Omega$$



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10-11

$$1. U_1 = 24V$$

$$U_2 = \frac{U_1}{1.2}$$

$$= 20V$$

电位器最下端

$$2. \frac{U_0 R_4}{R_3 + R_{RP} + R_4} = U_{BE} + U_2$$

$$U_{01}' = \frac{R_3 + R_{RP} + R_4}{R_4} (U_{BE} + U_2)$$

$$= 18V$$

电位器最上端

$$\frac{U_0 (R_4 + R_{RP})}{R_3 + R_{RP} + R_4} = U_{BE} + U_2$$

$$U_{01}'' = \frac{R_3 + R_{RP} + R_4}{R_4 + R_{RP}} (U_{BE} + U_2)$$

$$= 9V$$

范围 (9~18)V

$$3. R_3 = 600\Omega$$

$$U_{02} = \frac{R_3 + R_{RP} + R_4}{R_4} (U_{BE} + U_2)$$

$$= 24V$$

$$\therefore U_1 = 24V$$

$$\therefore U_{CES1} \approx 0V$$

$$U_{0max} = 22V$$

10-14

$$\text{设 } U_{ES} = 0.2V$$

$$U_{0max} = (U_{XX} + U_{ES}) \times \frac{R_1 + R_{RP} + R_3}{R_1}$$

$$= 53.2V$$

$$U_{0min} = (U_{XX} + U_{ES}) \times \frac{R_1 + R_{RP} + R_3}{R_1 + R_{RP}}$$

$$= 17.7V$$

$$U_0 \text{ 调节范围 } 17.7 \sim 53.2V$$



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