Assignment -2

Name VI Apartagita Biswasot = 3V. World str Now IE = NE RE ID : 2023200000174 Problem: 1 - Design an amplifier using your = Ve = Ve Ic TCD bengissa Solve: Herre, The last 3 digit of my ID is: 174 Sum of the 3 digit is: (1+7+4) = 12 (even) so, the BJT-0150 3805470 084 From datosheet, Ic = 2 mA, VCE = 505.0 VOAV $V_{\text{CC}} = 2V_{\text{CE}} = (2\times5) = 10\text{ V}$ $\pi 19 = \pi 000\beta = 420_{\text{E}} = \frac{99}{2} = 99.$ 9 Vcc = 10V Circuit: = JV+ 38V = 8V C2=10MF

(WORN SWAC

OUTPUT

VCE = 5V

B-R1=1025282 YF I=2mA & Rc = 2KA imput 1R2=21K2 RE = 100 UF

Assignment -2

We know,
$$V_E = \frac{1}{10} \sqrt{c} = \frac{1}{10} \times 1009 = 10$$

: 202320000174

$$I_{B} = \frac{I_{C}}{\beta} = \frac{2}{420} + 4076 \times 10^{-3} \text{ m/A}$$
 off 02

$$\frac{VOE = (\sqrt{2} \times 2)}{\sqrt{Re}} = \frac{30V^{2}}{4} = \frac{30V^{2}}{2 \times 10^{-3}} = \frac{20000}{2 \times 10^{-3}} = 20000 = 2 \text{ kg}$$

$$V_B = V_{BE} + V_E = 0.7 + 1$$

$$= 1.7 \vee$$

Cincuit:

Now, PRE > 10R2,7711 St = to 5, somobsquiri tugtuo > R2 (1 BRE $\Rightarrow R_2 \leq \frac{1}{10} \times 420 \times 0.5$ $\Rightarrow R_2 \leq 21 \text{ kg} \quad \text{i. } R_2 = 21 \text{ kg}$ We know, $V_B = \frac{R_2 \text{ Vec}}{R_1 + R_2}$ $\Rightarrow \sqrt{167} = \frac{221(\cancel{x}\cancel{1}\cancel{5} + \cancel{5})}{\cancel{R}\cancel{1}} = \sqrt{2}\cancel{A} \quad \text{tugn} I$ + 2:081 = 102.52 KN HOOF , MADER MOUTH Here, re = 26mV F2.38A = wise gration $= \frac{26mV}{I_0} \quad [:: I_0 \cong I_{\underline{E}}]$ $= \frac{26mV}{2.0 \text{ mA}}$ = 135 = 0.013 KN Here, imput impedance, Zin = R1 11R2 11 Bre $= \left(\frac{1}{102.52} + \frac{1}{202.21} + \frac{1}{42000.018}\right)^{-1}$

= 4.1575 KR

Output impedence, Zout = Rellier : 5 moldon = (1 + 1)-1 : svlos (novo) 21 = (AF(1+1)-1 21 (even) so. 1- (1)= 1- (1)=esign 9.4 relay module. Firomassect of SRD-09VDC-SI-C nelay Input AC V = (1+7+4)=3 = AvmV Herce, 02000 No 084 -486.27 [8 04/200 50]

Peak value: 486.27 Vd = iV 0000 1001 = 121.56

Problem 2: Design a relay module mi Solve: sum is: (1+7+4) = 12 (even) so, I have to degi design 9v relay module. From datasheet of SRD-09VDC-SL-C relay, Togat = 50 mA-+1) = V DA Jugar FOR BC547C BJT B = 430 (400+600)

$$I_{g}' = \frac{I_{csat}}{\beta} = \frac{50 \times 10^{-3}}{430}$$

= 116.27 MA

$$I_{g} > I_{g}'$$

:.
$$R_B = \frac{V_i - 0.7}{I_B} = \frac{5 - 0.7}{232.54 \times 10^{-6}} = 18.491 \text{ kg}$$

