Q 18

$117 \times 10^{-3}\ m\,s^{-1} \longrightarrow 2875\ tr\,mn^{-1}$

117	23,41
2875	?

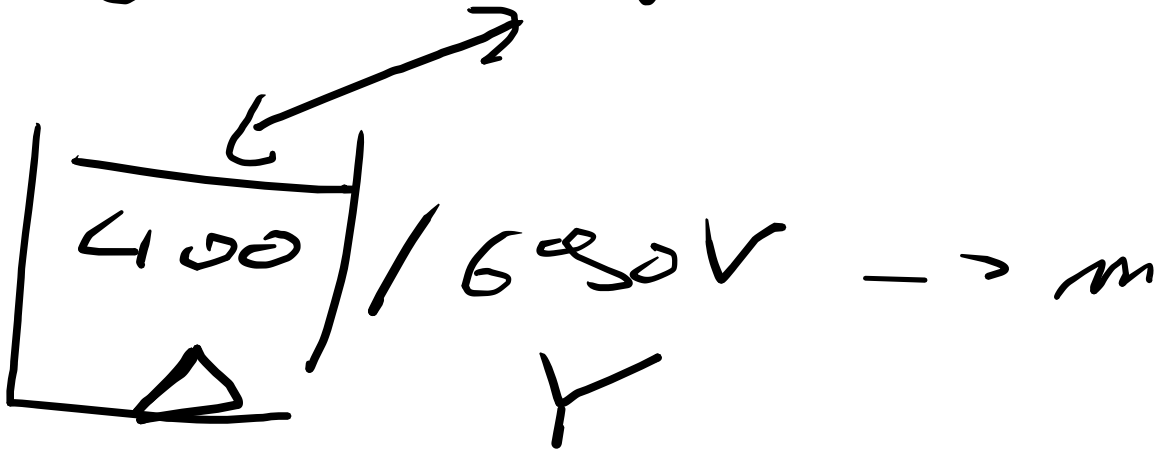
$$n' = \frac{2875 \times 23,41}{117}$$

$$= 575\ tr\,mn^{-1}$$

Q 19 : $\pm 14\ 15\ tr\,mn^{-1}$

MAS + Variateur

Q10 400V → réseau.



Q21

n_s = ? 2875 tr.mn^{-1} → 3000 : 1 p
1100 : 2 p

$= 3000$ tr.mn^{-1}

$C_{um} = \frac{P}{\Omega} = \frac{5{,}5\,10^3 \times 60}{2\pi \times 2875} = 18{,}1$ N.m

Q22 I_D -> aigle.

-> magnétisation de la machine

I_R -> transmission rotor produit le couple moteur

Q23

$$P_{em} = \frac{R}{g} \times I_R^2$$

Q24

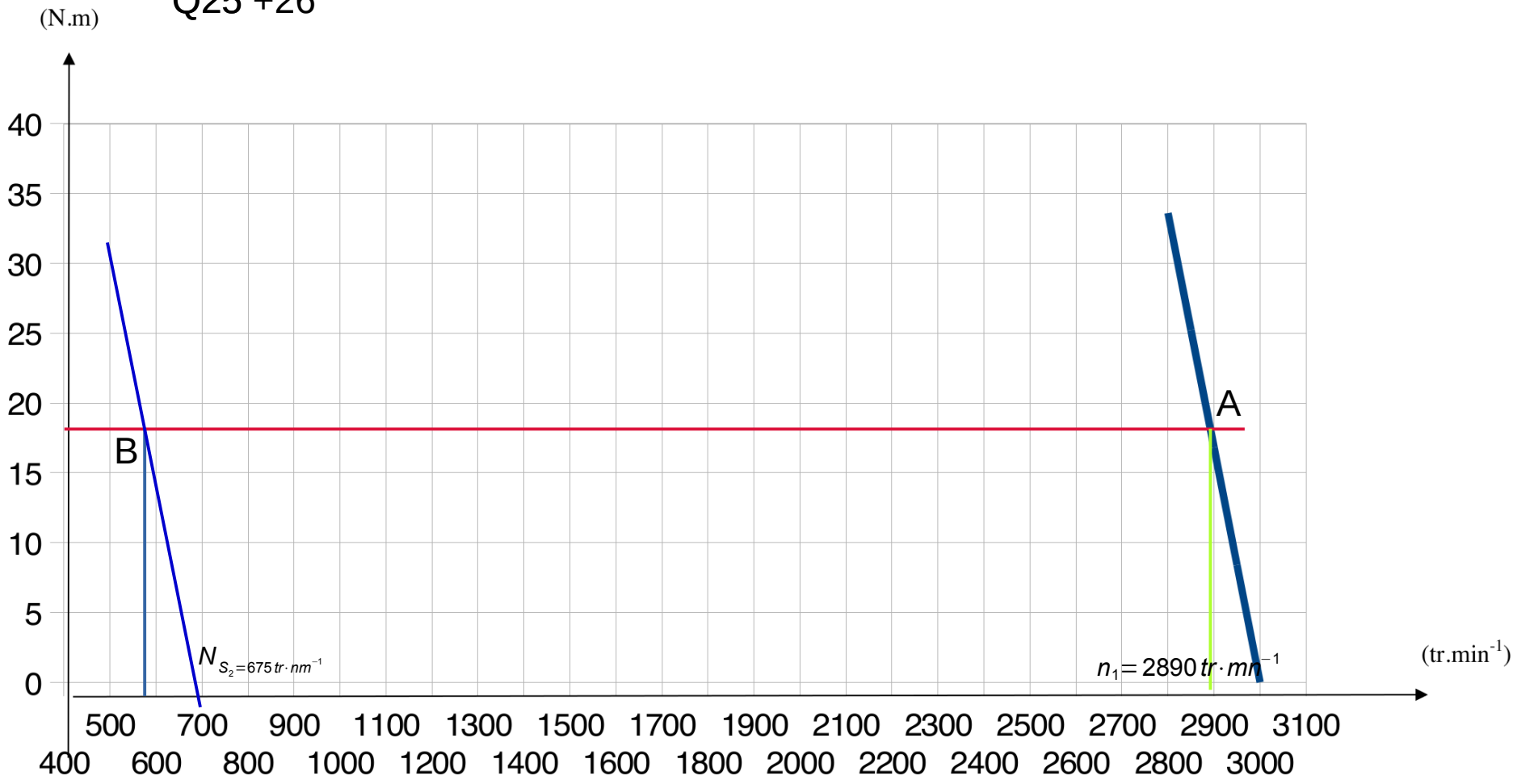
$$K = \frac{3p^2}{2\pi R \times 60} \times \frac{U^2}{f^2}$$

$$\frac{U}{f} = cte.$$

$$= \frac{3 \times 1^2}{2\pi \times 2,81 \times 60} \times \frac{4\omega^2}{50^2}$$

$$= 0,181 \text{ N m / 50 m}^{-2}$$

Q25 +26


(N.m)
40
35
30
25
20
15
10
5
0
B
A
$N_{S_2=675\,tr\cdot nm^{-1}}$
$n_1=2890\,tr\cdot mn^{-1}$
(tr.min^{-1})
500 700 900 1100 1300 1500 1700 1900 2100 2300 2500 2700 2900 3100
400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000

Q26 $n_{s2} = 675 \text{ rev min}^{-1}$

$$f_2 = \frac{50 \times 675}{3005} = 11.25 \text{ Hz}$$

$$V_2 = \frac{230 \times 11.25}{50} = 51.8 \text{ V}$$

(0.90 V)

Q27

étage 1 → redresseur (n → ---)

2 → Filtre

3 → Onduleur

Q28

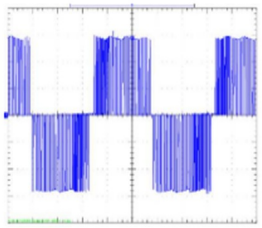
→ Voie 1 sur voie 2 si nécessaire

DOCUMENT RÉPONSE N°4

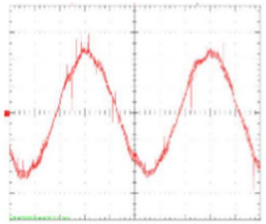
Q 28

Pour les deux relevés, cocher les bonnes réponses

Relevé 1 : Grandeurs d'entrée ☐ ou **grandeurs de sortie** ☒ du variateur

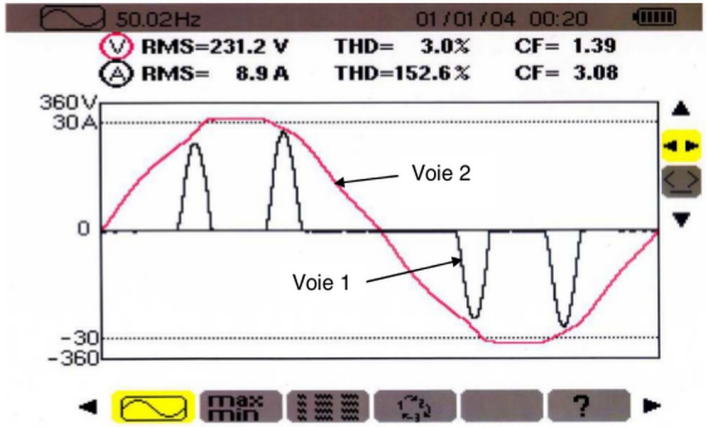


Voie 1: $v_E(t)$ ☐ $i_E(t)$ ☐ $u_{12}(t)$ ☒ $i_S(t)$ ☐



Voie 2 : $v_E(t)$ ☐ $i_E(t)$ ☐ $u_{12}(t)$ ☐ $i_S(t)$ ☒

Relevé 2 : Grandeurs d'entrée ☒ ou **grandeurs de sortie** ☐ du variateur



Voie 1: $v_E(t)$ ☐ $i_E(t)$ ☒ $u_{12}(t)$ ☐ $i_S(t)$ ☐

Voie 2 : $v_E(t)$ ☒ $i_E(t)$ ☐ $u_{12}(t)$ ☐ $i_S(t)$ ☐

Q_{30} → autonomie

Q_{31} → continuité d'exercice

Q_{32}

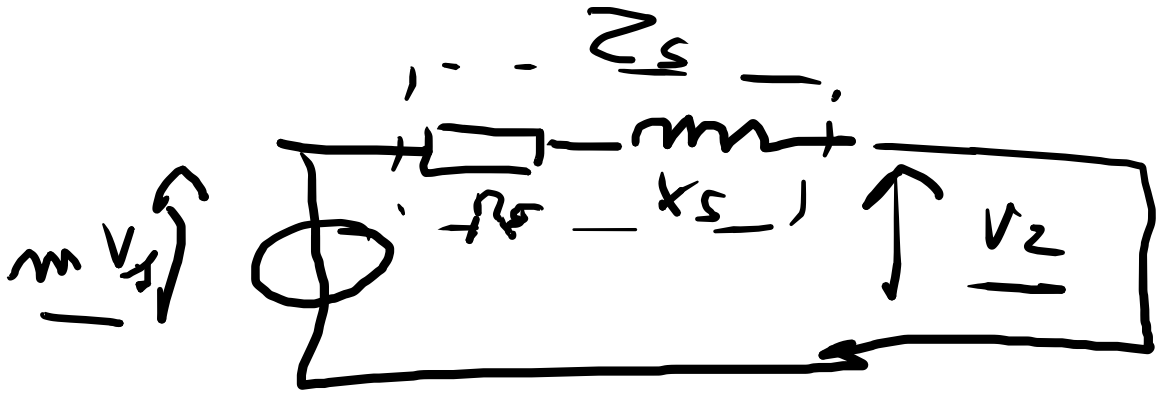
$$I_{1N} = \frac{S_n}{\sqrt{3}\, U_{1N}} = \frac{630\,10^3}{\sqrt{3} \times 5500} = 66{,}1\,A.$$

$$I_{2N} = \frac{S_n}{\sqrt{3}\, U_{2N}} = \frac{630\,10^3}{\sqrt{3} \times 400} = 909\,A.$$

Q33 $m = \frac{U_{2N}}{U_{1N}} = \frac{400}{5500} = 0,0727$

Q34 $U_{1CC} = 0,34\ U_{1N} =$ 220V

$V_{1CC} = 127V$

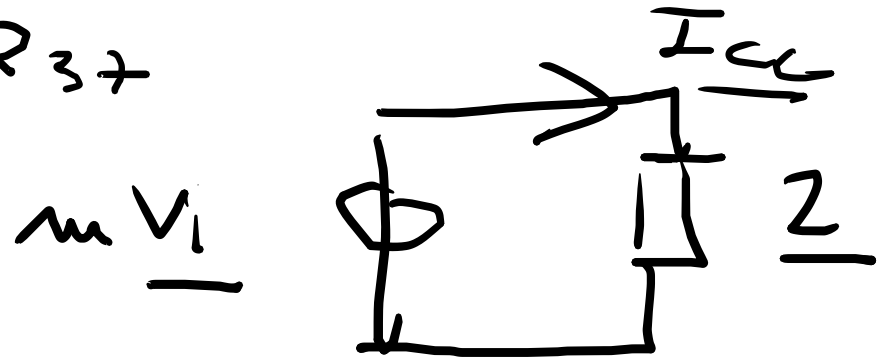


$$m V_1 = Z_s \, I_{2cc}$$

$$\varphi_{sc} \quad Z_s = \frac{m V_1}{I_{2cc}}$$

$$Z_s = |Z_s| = \frac{m V_1}{I_{2cc}} = \frac{0{,}0727 \times 127}{9{,}25} = 10{,}2 \, m\Omega$$

Q37



$$I_{ccc} = \frac{m V_1}{Z} =$$

$$I_{2cc} = \frac{m \times V_1}{Z} = \frac{0,0727 \times \frac{5500}{\sqrt{3}}}{10,4\ 10^{-3}}$$

$$= 22,17\ kA$$

Q38 $I_{cc} < 50kA \rightarrow$ OK