

Table 1 shows a set of torque-speed measurements for a d.c. electric motor intended for use in an electric wheelchair. Data of this type is used by manufacturers to help specify motor performance.

<b>Table 1</b>						
Speed /rpm	600	1200	1850	2400	3050	3700
Torque /Nm	5.51	4.53	3.75	2.94	2.09	1.08

(a) Use the data in Table 1 to plot a suitable graph and obtain the five missing pieces of information, labelled (i)-(v), in the motor specification chart shown in Table 2.

<b>Table 2</b>									
Operating Voltage /V	Stall		No Load		Maximum Efficiency				
	Torque /Nm	Current /A	Speed /rpm	Current /A	Torque /Nm	Speed /rpm	Current /A	Output Power /W	Efficiency /%
24	(i)	140	(ii)	5.2	(iii)	4000	18	(iv)	(v)

(b) One of the design requirements for the wheelchair states that the motor must be able to supply 40 Nm of torque at 100 rpm. Determine whether this particular motor has the power to meet that requirement.