Dhysics 2410 Quiz 2

Please	write the lette	er of the correct		/	ovided.	Name:		
	1. How m A) 10!	nany ways ca B) 10!/3!		_			nedalist out o	of 10 athletes?
	I .	a large numk B) N 2 ^N					$3(N+2)2^{N}$.	
	3. How m A) 5	nany energy B) 16		tes does	a paramag	net with N	=4 dipoles ir	n a B field have?
	4. What is A) 1	s the normal B) 2				agnet? F) 32	↑↓↓↑↑	lacksquare B
	5. For the A) 1	Einstein sol B) 3	id picture C) 4	ed, what D) 6	is <i>q</i> ? E) 16			
		s the multipl $\mathbf{B} \cdot \binom{N+q}{q} 0$				h N oscillat	tors and q qu	ıanta of energy?

- 1. How many ways can I choose a gold, silver, and bronze medalist out of 10 athletes?

 A) 10!
 B) 10!/3!
 C) 10!/7!
 D) 10!/(3!7!)

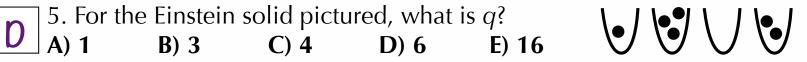
2. If N is a large number, find the simplest approximation of $3(N+2)2^N$. A) 2^N B) $N 2^N$ C) $3N 2^N$ D) $(N+2) 2^N$

3. How many energy macrostates does a paramagnet with N=4 dipoles in a B field have?

A) 5 B) 16 C) 4!=24

4. What is the normalized energy U of this paramagnet? A) 1 B) 2 C) 3 D) 4 E) 5 F) 32 $\uparrow \downarrow \uparrow \uparrow \uparrow B$





6. What is the multiplicity of an Einstein solid with N oscillators and q quanta of energy?

A) $\binom{N}{q}$ B) $\binom{N+q}{q}$ C) $\binom{N+q-1}{q-1}$ D) $\binom{N+q-1}{q}$