

Make up quiz
Wednesday, May 2nd.

NAME _____

1.(a) A restaurant offers a choice of 4 meats, 5 vegetables, 3 salads and 4 desserts. A complete dinner is made up of one meat, one vegetable, one salad and one dessert. How many different complete dinners can you choose from?

(b) You are in the same restaurant, but this time you want to eat a dinner with one meat, two vegetables and 1 dessert. How many different possibilities do you have?

2. We want to create a binary linear code for strings of length 4 using the parity-check sums $a_1 + a_2$, $a_1 + a_3$ and $a_2 + a_3 + a_4$.

(a) Without making a list, say how many code words you will have to compute.

(b) Compute all the code words.

(c) What is the weight of this code?

(d) How many single-digit errors could the code detect? How many can it correct?

(e) Using nearest-neighbor decoding, decode (or explain why you cannot decode) the words 1010110 and 0000001.

Please turn the page.

3. For the code $C=\{00000,11111\}$, how many errors would have to occur during transmission for a received word to be decoded incorrectly (using nearest-neighbor decoding)?

4. The table below gives numerical values for letters of the alphabet.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

(a) Using the keyword ANDREW, encode DARKMATTER .

(b) Knowing that the keyword ANTONY was used, decrypt the message FEXS NR LNLH .