parsing

S	Sentence or clause.	-ADV	Constituent is used adverbially
SBAR	Clause introduced by a (possibly empty) subordinating conjunction.	-LOC	Constituent indicates event location
		-PRD	Constituent serves as a sentence's predicate but is not a VP
SBARQ	Direct question introduced by a wh-word or wh-phrase.	-NOM	Constituent is used as a noun, e.g., *what I really like* is chocolate
SINV	Inverted declarative sentence.	-TMP	Constituent indicates when, how often, how long
SQ	Inverted yes/no question, or main clause of a wh-question.	CC	Coordinating conjunction
		CD	Cardinal number
		DT	Determiner
ADJP	Adjective Phrase.	EX	Existential *there*
ADVP	Adverb Phrase.	FW	Foreign word
CONJP	Conjunction Phrase.	IN	Preposition or subordinating conjunction
FRAG	Fragment.	JJ	Adjective
INTJ	Interjection.	JJR	Adjective, comparative
LST	List marker. Includes surrounding punctuation.	JJS	Adjective, superlative
		LS	List item marker
NAC	Not A Constituent; used within an NP.	MD	Modal
		NN	Noun, singular or mass
NP	Noun Phrase.	NNS	Noun, plural
NX	Used within certain complex NPs to mark the head.	NNP	Proper noun, singular
		NNPS	Proper noun, plural
PP	Prepositional Phrase.	PDT	Predeterminer
PRN	Parenthetical.	POS	Possessive ending
PRT	Particle.	PRP	Personal pronoun
QP	Quantity Phrase (i.e., complex measure/amount) within NP.	PP$	Possessive pronoun
		RB	Adverb
		RBR	Adverb, comparative
RRC	Reduced Relative Clause.	RBS	Adverb, superlative
UCP	Unlike Coordinated Phrase.	RP	Particle
VP	Verb Phrase.	SYM	Symbol (mathematical)
WHADJP	*Wh*-adjective Phrase, as in *how hot*.	TO	The word *to*
		UH	Interjection
WHADVP	*Wh*-adverb Phrase.	VB	Verb, stem
WHNP	*Wh*-noun Phrase, e.g. *who, which book, whose daughter, none of which, or how many leopards*.	VBD	Verb, past tense
		VBG	Verb, present participle
		VBN	Verb, past participle
		VBP	Verb, present but not VBZ
WHPP	*Wh*-prepositional Phrase, e.g., *of which or by whose authority*.	VBZ	Verb, present, 3rd-person sing.
		WDT	*wh*-determiner
		WP	*wh*-pronoun
X	Unknown, uncertain, or unbracketable.	WP$	Possessive *wh*-pronoun
		WRB	*wh*-adverb

cross entropy

$$H(X) = - \sum p(x)\log_2 p(x)$$

$$perplexity = 2^{(cross\ entropy)}$$