

Natural Language Processing

Exam answers 29 October 2020

Multiple Choice Answers

1 d	5 c	9 d	13 b	17 a
2 b	6 a	10 c	14 c	18 d
3 b	7 a	11 b	15 d	
4 a	8 c	12 b	16 b	

Open Question

Original grammar:

Grammar rules

S	→	NP VP
NP	→	Det Noun
NP	→	Det Num Noun
NP	→	Det Adj Noun
NP	→	Det Num Adj Noun
VP	→	believe S
VP	→	want INF-VP
INF-VP	→	to VP
VP	→	Verb
VP	→	Verb NP

Lexicon

Verb	→	sleep swim greet
Noun	→	men women
Adj	→	happy sad
Num	→	two three four
Det	→	the

CNF version:

Variations of the CNF version are possible. Dummy non-terminals can have different names, and rules with righthand sides longer than two can be split up in different ways. But here are two obvious CNF versions:

Grammar rules

S → NP VP
NP → Det Noun
NP → X1 Noun
X1 → Det Num
NP → X2 Noun
X2 → Det Adj
NP → X1 X3
X3 → Adj Noun
VP → VERB1 S
VP → VERB2 INF-VP
INF-VP → TO VP
VP → sleep | swim | greet
VP → Verb NP

Grammar rules

S → NP VP
NP → Det Noun
NP → X1 Noun
X1 → Det Num
NP → Det X2
X2 → Adj Noun
NP → X1 X2
VP → VERB1 S
VP → VERB2 INF-VP
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