Distinctive features and segment classes

- These data sets are from Gussenhoven & Jacobs (1998), "Distinctive features." *Understanding Phonology*, 1ed. London: Arnold.

Q32

- In Dutch, there is a rule that places a [ə] between the noun stem and the diminutive ending [tjə], as when [bɑl] 'ball' is affixed with [tjə] and becomes ['bɑlətjə]. On the basis of the following data, characterize the group of segments after which this [ə] is inserted.

bɑl	bɑlətjə	'ball'	dɪŋki tɔj	dɪŋki tɔjtjə	'Dinky Toy'
kɔm	kɔmətjə	'bowl'	kɑp	kɑpjə	'hood'
lɑχ	lɑχjə	'laugh'	bɛs	bɛʃə	'berry'
kɑn	kɑnətjə	'jug'	rɔk	rɔkjə	'skirt'
kɑr	kɑrətjə	'cart'	dɪŋ	dɪŋətjə	'thing'
pɛt	pɛtjə	'cap'	sɔk	sɔkjə	'sock'

Q33

- In the variety of Spanish as spoken in the state of Cordoba in Colombia there has been a process which assimilates the first of two adjacent consonants to the second, creating a geminate consonant (Charette 1989). For example, the word for 'door', which is [pwerta] in Peninsular Spanish, is [pwetta] in the Cordoba variety. The process did not always apply. Study the following data and characterize the class of consonants that underwent the process.

Earlier form	Later form	Gloss
serdo	seddo	'pork'
awto	awto	'car'
talko	takko	'talc'
doktor	dottor	'doctor'
algo	aggo	'something'
neptuno	nettuno	'Neptune'
fohforo	fohforo	'match'
magdalena	maddalena	'Madeleine'
ojgo	ojgo	'onion'
arma	amma	'weapon'
ahno	ahno	'donkey'

Q34

- In Dutch, sequences of identical consonants are degeminated. These sequences will arise when the last consonant of one morpheme is the same as the first consonant of the next. However, not all such sequences are degeminated. Characterize the class of sounds that is subject to the rule in terms of distinctive features.

Input	Output	Gloss
χeːl lɑmpjə	χeː lɑmpjə	'yellow lamp'
fis sɑpjə	fi sɑpjə	'nasty drink'
leːχχaːtjə	leː χaːtjə	'empty hole'
fraːj jɑχt	*fraː jɑχt	'beautiful yacht'
lØ:k kɪnt	lØ: kɪnt	'nice child'
dɔm mɛns	dɔ mɛns	'unwise woman'
ryʊ ʊeːr	*ry ʊeːr	'stormy weather'
doːf fɛntjə	doː fɛntjə	'deaf fellow'
χutkoːp pɑk	χutkoː pɑk	'cheap suit'
fɛin naːχəltjə	fɛi naːχəltjə	'fine nail'
niʊ ʊɔntjə	*ni ʊɔntjə	'new wound'
kɑr rɑdɛiʃəs	kɑ rɑdɛiʃəs	'cartload of radishes'

Q35

- In Dutch, certain consonants must be voiceless at the end of a syllable. Characterize that class of consonants with the help of distinctive features.

SG	PL	Gloss	SG	PL	Gloss
lir	lirən	'pulley'	kaːrt	kaːrtən	'card'
mɛp	mɛpən	'slap'	rɑnt	rɑndən	'edge'
spɛlt	spɛldən	'pin'	bɑl	bɑlən	'ball'
kɑnt	kɑntən	'side'	ʒiˈrɑf	ʒiˈrɑfən	'giraffe'
rɛis	rɛizən	'journey'	ʊɛp	ʊɛbən	'web'
dœyf	dœyvən	'pigeon'	paːrt	paːrdən	'horse'
ʊɑŋ	ʊɑŋən	'cheek'	sxun	sxunən	'shoe'
kʌus	kʌusən	'sock'	leːʊ	leːʊən	'lion'

Q36

- Copy the following hypothetical segment inventory and draw lines that separate (a) [−son] from [+son], (b) [−approx] from [+approx] and (c) [+cons] from [-cons].

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p  t  k  ʔ
b  d  g
f  s  x  h
v  z  ɣ
m  n  ŋ
   lr
w  j
i  a  u
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Q37 • In English, certain segments may appear after [sp,st,sk] in the same syllable. Characterize them with the help of a single distinctive feature, on the basis of the following data.

skɪp	spreɪ	stjuː	əˈspaɪə
stɔp	skjuːd	sklə'rəʊsɪs	skræp
skwɒd	spreɪn	spjuː	streɪt
stæk	strɔː	ˈsplɛndɪd	skʌl

Q38 • American English [p,t,k] are accompanied by a glottal closure when appearing in the syllable coda, as in *sit, atlas, popcorn, duckpond*. What feature specification do these plosives acquire in this context?

Q39 • In Southern Oromo, a rule of i-EPENTHESIS inserts [i] between the ejectives [t', tʃ'] and a following [t,n], as shown in (1a). However, [ʔ], [ɗ] and [t] do not trigger the rule, but undergo other changes that are not relevant here, as shown in (1b,c,d) (Lloret 1995). What combination of features distinguishes the [t'] from the three consonants that do not trigger i-EPENTHESIS?

(1) a. fit'-na   fit'ina   'we finish'
    b. aʔ-na   aːna   'we push'
    c. feːɗ-ta   feːtːa   'you want'
    d. bit-ta   bitːa   'you buy'

Q40 • In Scottish English, [i, e, a, o, u, ʌ, ʌi] are pronounced as long [iː, eː, aː, oː, uː, ʌː, ae] in open syllables. The long vowels (including [ae]) also appear before certain consonants. Characterize the class of segments before which the long vowels appear. This regularity, described in Aitken (1981; 1984), has become known as Aitken's Law.

raeð	*writhe*	mʌil	*mile*
nʌin	*nine*	beːʒ	*beige*
tiːz	*tease*	rod	*road*
lʌːv	*love*	kaːr	*car*
liθ	*Leith*	hom	*home*
tiː	*tea*	lʌif	*life*
pis	*peace*	fud	*food*
mel	*mail*	raʃ	*rash*
fae.ər	*fire*	boːr	*boar*

Q41 [not in 1998 edition]

Q42

- In Corsican, some vowels are nasalized before a nasal consonant in the same syllable (Agostini 1995). How would you characterize the class of vowels that undergo this nasalization?

'printʃipe	'prince'
'ãŋku	'also'
'põnte	'bridge'
'fuŋgu	'mushroom'
'kõntu	'account'
funda'mẽntu	'foundation'

Q43

- In Bengali, there is an optional rule which deletes [r] before certain consonants, allowing the consonant to geminate. Characterize the class of consonants that trigger r-DELETION on the basis of the following data (Hayes and Lahiri 1991).

Input	Output	Gloss
barʃa	baʃʃa	'rainy season'
mitʰu-r ʃari	mitʰu-ʃʃari	'Mithu's sari'
ram-er bari	ram-er bari	'Ram's house'
ram-er ʈaka	ram-eʈ ʈaka	'Ram's money'
fon-korbo	fon-korbo	'will telephone'
ʃundor dɔrdʒa	ʃundod dɔddʒa	'beautiful door'
bɔrdi	bɔddi	'elder sister'
bʱorti	bʱotti	'full'
kor-lo	kol-lo	'do-3rd FUT.'
kor-ʈo	koʈ-ʈo	'do-3rd PAST'
matʃʰ-er naːk	matʃʰ-en naːk	'fish's nose'
matʃʰ-er matʰa	matʃʰ-er matʰa	'fish head'

Q44

- A number of nouns in the Dutch dialect of Wehl form their plurals by changing the last full vowel of the stem, a process known as UMLAUT (Haan 1996). What feature is involved in this process?

Singular	Plural	
zɔk	zœk	'sock'
ɣrɔːt	ɣrœːt	'fishbone
vʊs	vʏs	'fox'
hoːp	høːp	'heap'

Q45

- In Luganda, [r] and [l] occur in complementary distribution (Chesswas 1963).

olubiri	'palace enclosure'	akalulu	'vote'
liɲɲa	'climb'	eŋgiri	'warthog'
ssaffaali	'safari'	eŋkula	'rhinoceros'
eraŋg	'dye'	akasaale	'arrow'
akasolja	'roof'	olumuli	'reed'
kampala	'Kampala'	liiri	'silk'
omulere	'flute'	akabonero	'sign'
omulenzi	'boy'	weeraba	'goodbye'
luma	'to hurt'	lje	'my (poss. Class V)'

1. What determines their distribution? List the contexts in which each allophone occurs.
2. Which of these two contexts is statable in terms of distinctive features?
3. Which of the segments would you choose as the underlying one? Please motivate your answer.

Q46

- Use minimal numbers of distinctive features to characterize the five natural segment classes within the segment inventory of Telugu.

$$p \quad p^h \quad t \quad t^h \quad t\int \quad \underset{.}{t} \quad \underset{.}{t}^h \quad k \quad k^h$$
$$b \quad b^ɦ \quad d \quad d^ɦ \quad dʒ \quad \underset{.}{d} \quad \underset{.}{d}^ɦ \quad g \quad g^ɦ$$
$$\qquad \quad s \qquad\qquad \underset{.}{s}$$
$$m \qquad n \qquad\qquad \underset{.}{n}$$
$$\qquad \quad l \quad r \qquad\qquad \underset{.}{l}$$
$$w \qquad\qquad\qquad j$$
$$i \quad e \quad a \quad o \quad u$$

1. p^h $b^ɦ$ t^h $d^ɦ$ $\underset{.}{t}^h$ $\underset{.}{d}^ɦ$ k^h $g^ɦ$
2. t t^h d $d^ɦ$ $t\int$ $dʒ$ $\underset{.}{t}$ $\underset{.}{t}^h$ $\underset{.}{d}$ $\underset{.}{d}^ɦ$
3. b $b^ɦ$ m
4. w j i e a o u
5. a o

Q47

- Use minimal numbers of distinctive features to characterize the five natural segment classes within the segment inventory of Amharic (Hayward and Hayward 1992).

		t	t'	t$^{w'}$	c	c'	k	k^w	k$^{w'}$		
b	b^w	d			ɟ		g	g^w			
f	f^w	s	s'		ʃ					h	h^w
		z			ʒ						
m	m^w	n			ɲ		ŋ				
		l	r								
w					j						

i ɯ u
e ɤ o
   a

1. f f^w s s' z ʃ ʒ
2. t' t$^{w'}$ c' k$^{w'}$ s'
3. c c' ɟ ʃ ʒ
4. n ɲ
5. u o