1 Hebrew

23. Consider these data from Hebrew. (Note: *ts* is an alveolar affricate and is a single [+sibilant] sound. The word *lehit* is a reflexive pronoun.)

Nonsibilant-Initial Verbs		**Sibilant-Initial Verbs**	
kabel	"to accept"	*tsadek*	"to justify"
lehit-kabel	"to be accepted"	*lehits-tadek* (not **lehit-tsadek*)	"to apologize"
pater	"to fire"	*shamesh*	"to use for"
lehit-pater	"to resign"	*lehish-tamesh* (not **lehit-shamesh*)	"to use"
bayesh	"to shame"	*sader*	"to arrange"
lehit-bayesh	"to be ashamed"	*lehis-tader* (not **lehit-sader*)	"to arrange oneself"

a. Describe the phonological change taking place in the second column of Hebrew data.

b. Describe in words as specifically as possible a phonological rule that accounts for the change. Make sure your rule doesn't affect the data in the first column of Hebrew.

2 Japanese

24. Here are some Japanese data, many of them from Exercise 10, in a fine enough phonetic transcription to show voiceless vowels (the ones with the little rings under them).

Word	Gloss	Word	Gloss	Word	Gloss
tatami	mat	tomodatʃi	friend	utʃi	house
tegami	letter	totemo	very	otoko	male
sɯ̥kiyaki	sukiyaki	kɨ̥setsu	a season	busata	silence
tʃɨ̥tʃi	father	tsɯ̥kue	desk	tetsudau	help
ʃɨ̥ta	under	kɨ̥ta	north	matsu	wait
degutʃi	exit	tsuri	fishing	kɨ̥setsu	existing
natsu	summer	tsɯ̥tsumu	wrap	tʃizu	map
kata	person	fɯ̥ton	futon	fugi	discuss
matsɯ̥ʃɨ̥ta	(a proper name)	etsɯ̥ko	(a girl's name)	fɯ̥kuan	a plan

a. Which vowels may occur voiceless?
b. Are they in complementary distribution with their voiced counterparts? If so, state the distribution.
c. Are the voiced/voiceless pairs allophones of the same phonemes?
d. State in words, or write in formal notation if you can, the rule for determining the allophones of those vowels that have voiceless allophones.

3 English Plural Example

tip	/tɪp/	tips	/tɪps/
can	/kæn/	cans	/kænz/
wish	/wɪʃ/	wishes	/wɪʃɪz/
cake	/keɪk/	cakes	/keɪks/
toe	/təʊ/	toes	/təʊz/
dog	/dɔg/	dogs	/dɔgz/
judge	/dʒʌdʒ/	judges	/dʒʌdʒɪz/
space	/speɪs/	spaces	/speɪsɪz/
path	/pæθ/	paths	/pæθs/
hive	/haɪv/	hives	/haɪvz/

1. Formulate two phonological rules to account for the pronunciation variations for the English plural morpheme. Are these rules crucially ordered?

2. Show the derivation for cakes, dogs and wishes.

4 Votic Example[1]

nominative	partitive	gloss
vərkko	vərkkoa	'net'
lintu	lintua	'bird'
bočka	bočkaa	'barrel'
einæ	einææ	'hay'
siili	siiliæ	'hedgehog'
łusti	łustia	'pretty'
yarvi	yarvəa	'lake'
mæči	mæčeæ	'hill'
čivi	čiveæ	'stone'
kurči	kurkəa	'stork'
əłči	əłkəa	'straw'
kahči	kahkəa	'birch'

1. Formulate two phonological rules to account for data. Are these two rules crucially ordered? (For this problem, ignore the word final alternation of æ/a.)

2. Show the derivation for lintu, kurči and yarvi.

[1] nominative ending is null and the partitive ending is -a in Votic