1. List the members of the following natural classes of English sounds.

      a. Labiodental fricatives

      b. Voiced obstruents

      c. Low vowels

      d. Glottal sounds

2. Describe the following natural classes of English sounds.

      a. [f, θ, s, ʃ, h]

      b. [ɪ, ɛ, æ]

      c. [dʒ, tʃ]

      d. [u, ʊ, o, ɔ, ɑ]

3. Consider [ç] and [x]: among these two sounds, how many phonemes are there? If necessary, write the phonological rule(s); if not, write "no rule."

[xiçə]   'ever'   [xun] 'towards'
[lox]   'lake '   [çi]   'see'
[ʃixantə]   'peaceful' [braxi] 'bleary'
[xan] 'not'   [çol] 'music'
[çub]   'cube'   [içə] 'nocturnal'
[ixtərəx]   'lower'

4. Consider the sounds [b] and [β] (a voiced bilabial fricative). Among these two sounds, how many phonemes are there? If necessary, write the phonological rule(s); if not, write "no rule"

Now consider [g] and [ɣ] (a voiced velar fricative.) Among these two sounds, how many phonemes are there? If necessary, write the phonological rule(s); if not, write "no rule"

[bino]	'wine'	[bɾotar]	'to sprout'
[diβino]	'divine'	[gato]	'cat'
[kaβo]	'cape'	[golpe]	'dent'
[suβteraneo]	'subterranean'	[aɣo]	'I make'
[teŋgo]	'I have'	[uβas]	'grapes'
[imbjerno]	'winter'	[leɣal]	'legal'
[maɣijo]	'wild apple tree'	[diɣno]	'worthy'

5. Consider [b], [p], and [pʰ]: among these three sounds, how many phonemes are there? If necessary, write the phonological rule(s); if not, write "no rule"

a. [pənʊ]   'leaf'
b. [ḍakʰə]   'grape'
c. [ḍəpʊ]   'fear'
d. [pʰənu]   'hood of snake'
e. [kənʊ]   'ear'
f. [perʊ]   'foot'

g. [barʊ]   'weight'
h. [kʰirʊ]   'milk'
i. [putʰi]   'back'
j. [bənʊ]   'forest'
k. [pʰərʊ]   'arrow head'
l. [abʊ]   'water'

6. Consider the three following sounds:

    [r] voiced trill   [r̥] voiceless trill   [ɾ] voiced flap

a. [ærteʃ] 'army'   g. [ahaɾ̥] 'starch'   m. [ahaɾi] 'starched'
b. [farsi] 'Persian'   h. [behtæɾ̥] 'better'   n. [bæɾadæɾ̥] 'brother'
c. [qædri] 'a little bit'   i. [hærntowɾ̥] 'however'   o. [beɾid] 'go'
d. [rah] 'road'   j. [tʃaɾ̥] 'four'   p. [biɾæŋg] 'pale'
e. [ris] 'beard'   k. [tʃedʒuɾ̥] 'what kind'   q. [tʃeɾa] 'why'
f. [ruz] 'day'   l. [ʃiɾ̥] 'lion'   r. [daɾid] 'you have'

Among these three sounds, how many phonemes are there? If necessary, write the phonological
If necessary, write the phonological rule(s); if not, write "no rule"