2. NUKLEOZIDI, NUKLEOTIDI, NUKLEINSKE KISELINE

ZADATAK – 1. dio, 7. slajd

$pK_1 = 2.12$

$pK_2 = 7.21$

$pK_3 = 12.30$

$pH = 7.4$

$$pH = pK_a + \log \frac{[A^-]}{[HA]}$$

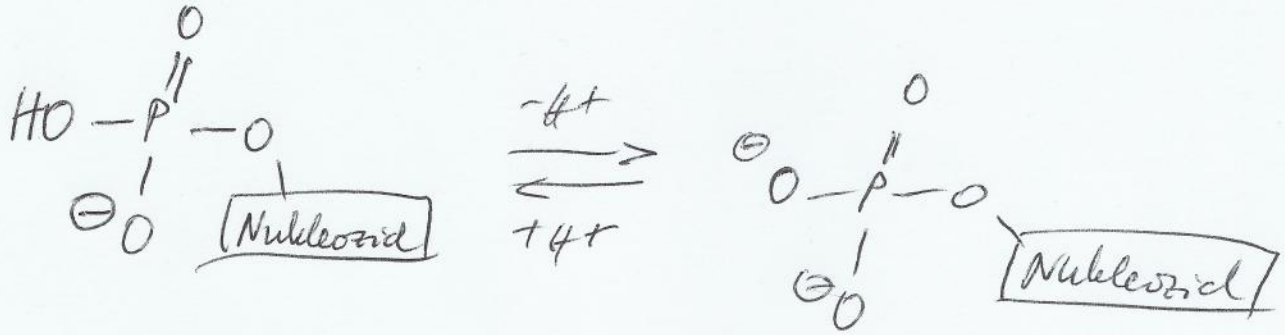
kod $[A^-] = [HA]$, tada je $\frac{[A^-]}{[HA]} = 1$, $\log 1 = 0$

$pH = pK_a$

$pH \cong pK_2$

7.4 ≅ 7.21

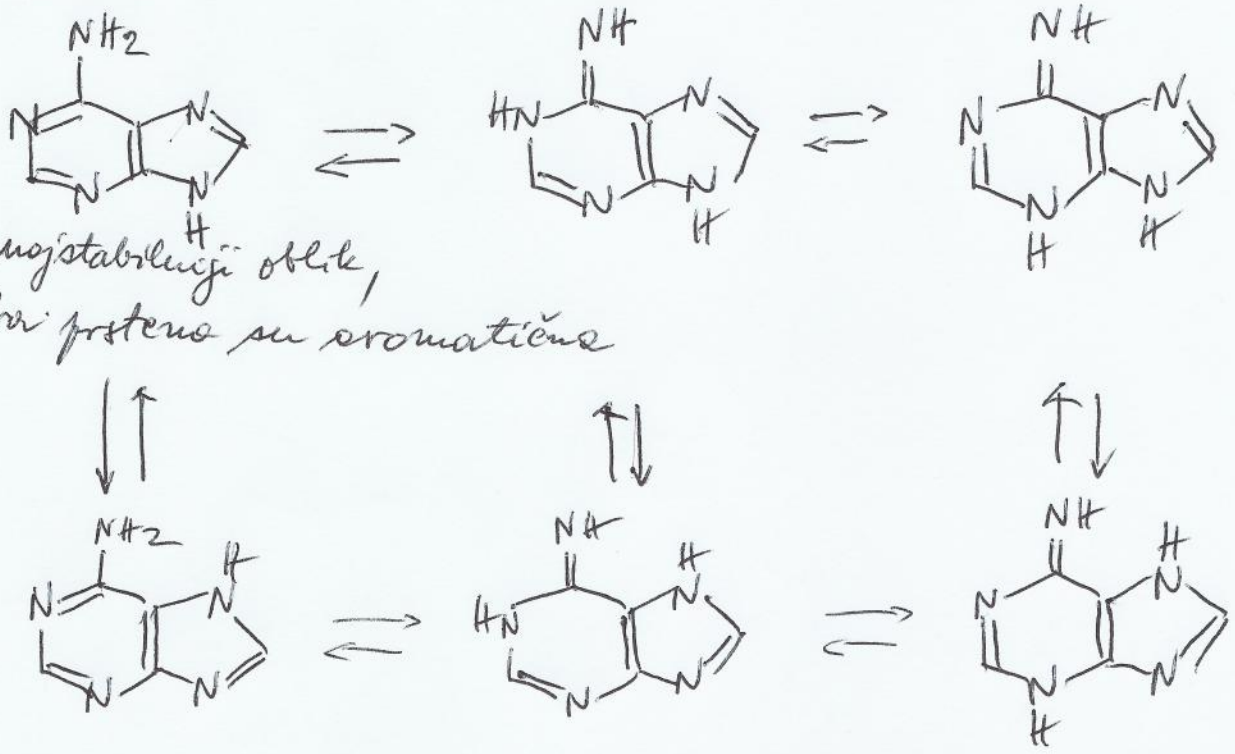
konstanta disocijacije drugog protona, dakle imamo vrste H_2A^- i HA^{2-}, odnosno:



Kod nukleotida nemamo pK_3 jer je umjesto tekog H vezan nukleozid

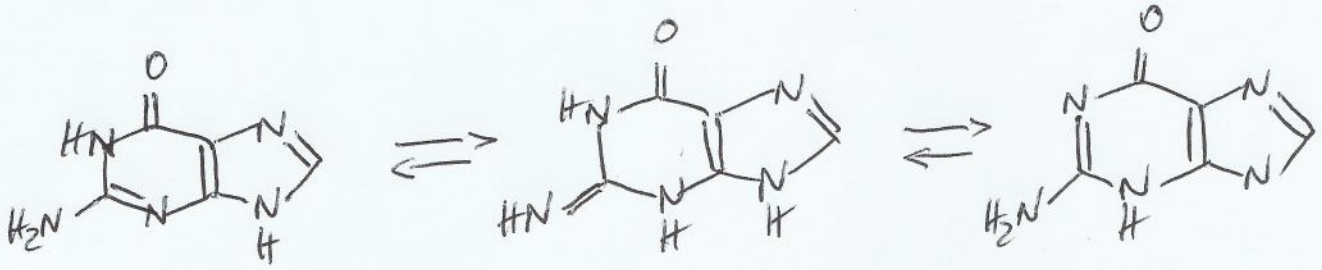
Tautomeri purinskih baza (1. dio, 15. slajd)

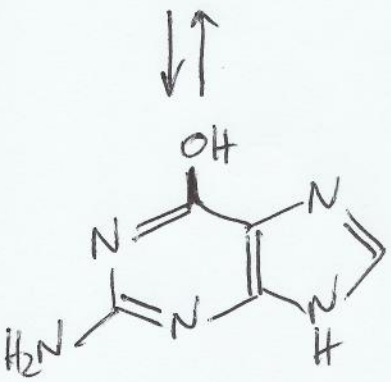
ADENIN



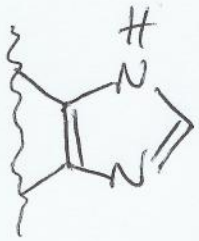
najstabilniji oblik, oba prstena su aromatična

GVANIN



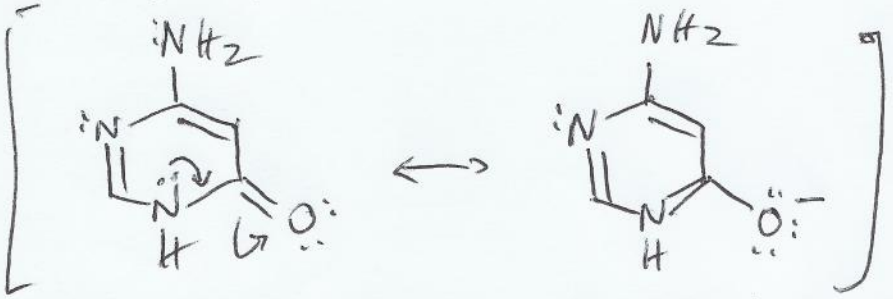


+ strukture u kojima imamo drugi tautomer imidazolskog prstena:



Aromatični karakter nukleobaza

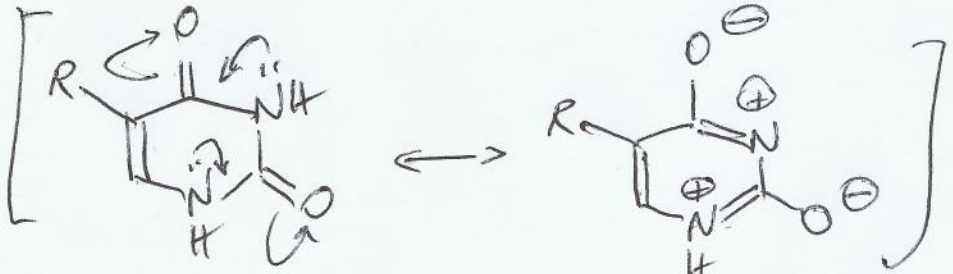
CITOZIN



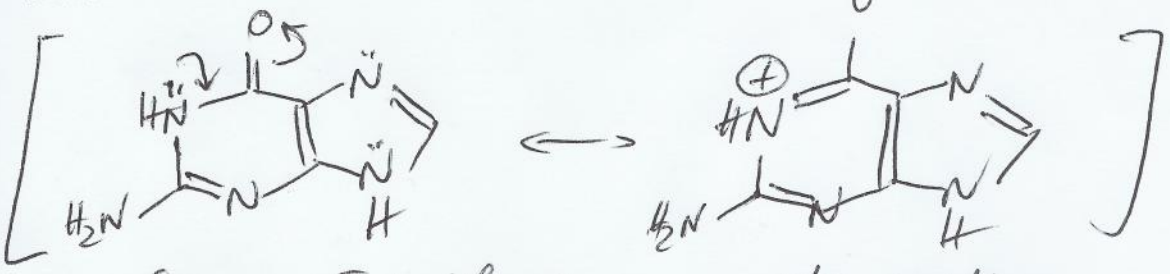
AROMATI:
1. PRSTEN
2. NEPREKINUTI NIZ DVOSTRUKIH VEZA
3. 4N+2 π e$^-$

u ovoj rezonancijskoj strukturi prsten je aromatičan → ima značajan doprinos rezonancijskom hibridu → odražava se na reaktivnost

TIMIN (R=CH_3), URACIL (R=H)



aromatičan prsten



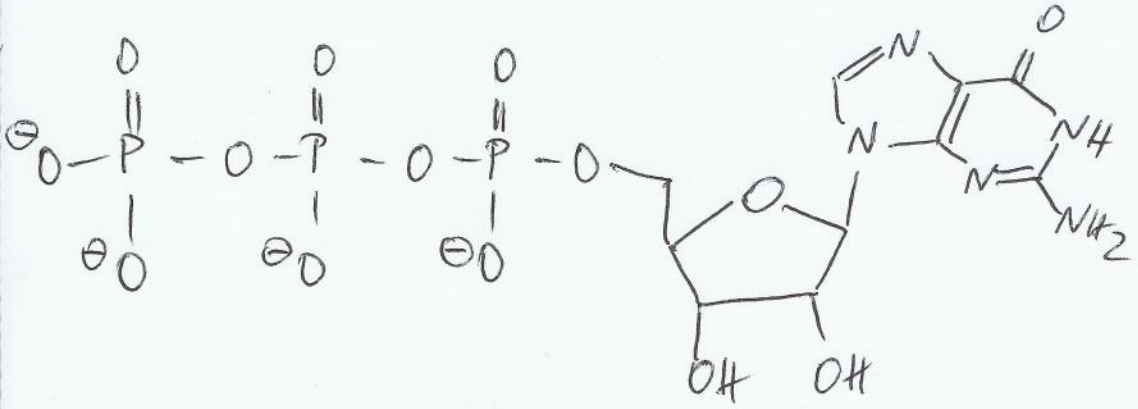
Samo 5-očlani prsten je aromatičan

oba prstena su aromatična

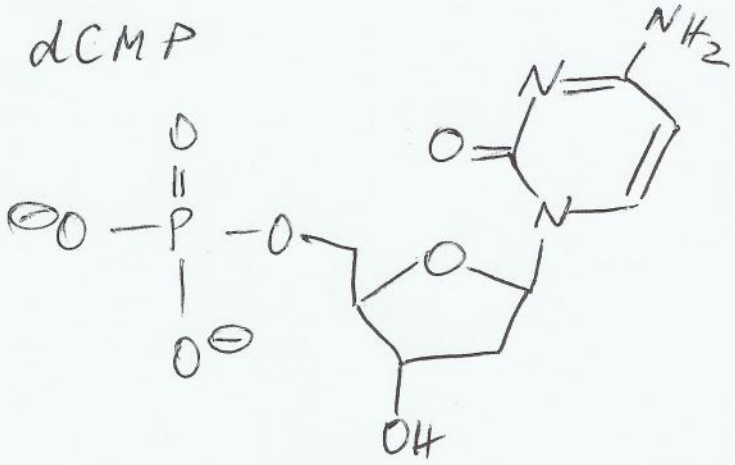
2. NUKLEOZIDI, NUKLEOTIDI I NUKLEINSKE KISELINE

ZADATAK – 2. dio, 25. slajd

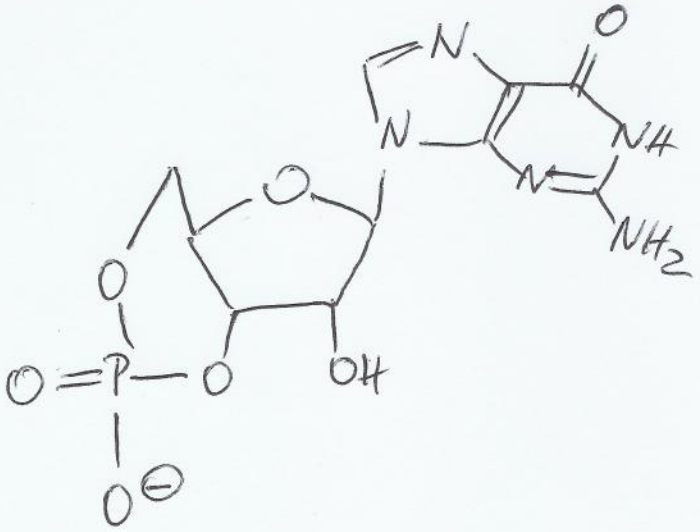
a) GTP



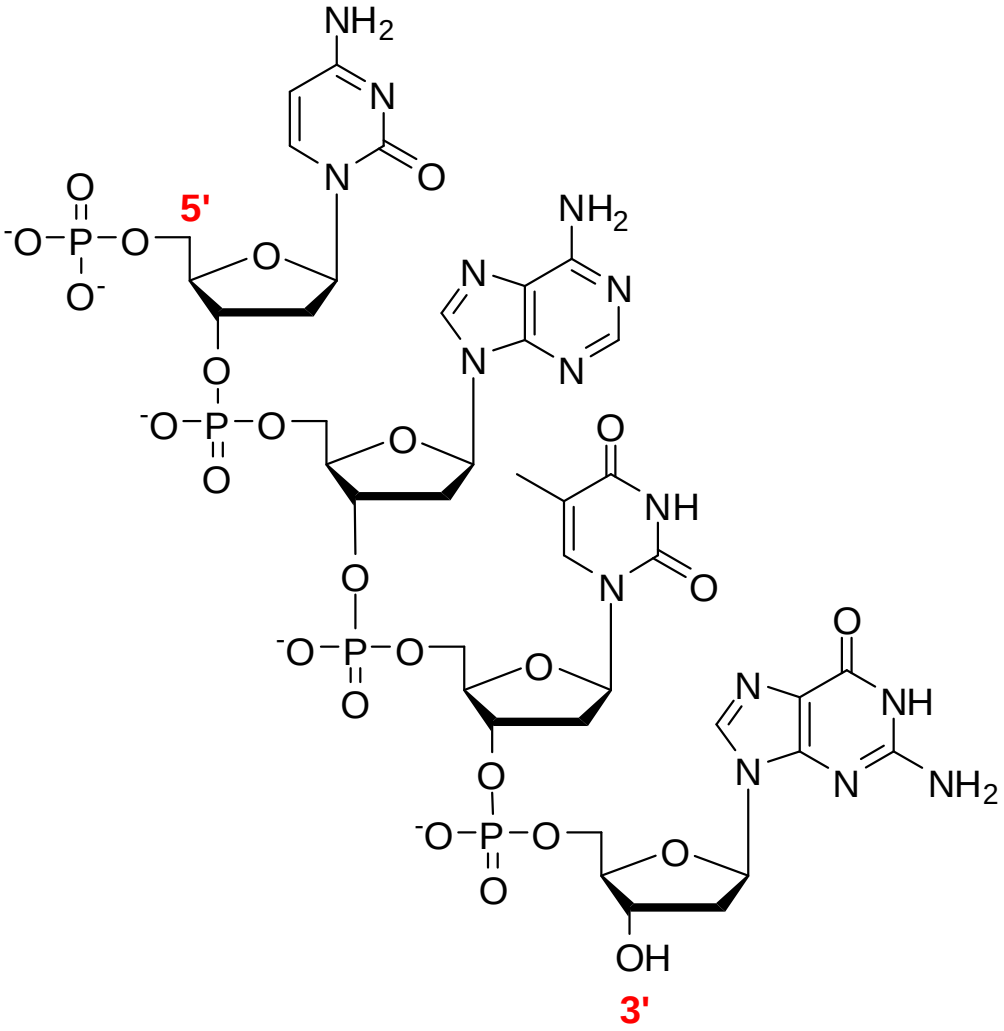
b) dCMP



c) cGMP



1.


NH2
N
N
O
O
-O
P
O
O-
5'
O
O
NH2
N
N
N
N
O
-O
P
O
O
O
O
NH
N
O
O
-O
P
O
O
O
O
N
NH
N
N
NH2
O
-O
P
O
O
O
OH
3'

DZ

(2.) a) Ne vrijedi $G=A$ i ne možemo ništa reći o njihovom međusobnom odnosu.

b) $A + G = C + T$

vrijedi, jer je $A=T$ pa i zbroj ove 2
$G=C$
jednadžbe mora biti jednak

c) Chargaffovo pravilo odnosi se samo na DNA u obliku dvostruke zavojnice. Ne vrijedi za molekule koje se sebe.