ORGANIC CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP No. 11

Total Marks : 23

Max. Time : 23 min.

Topic : Acid and Basic Strength

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.6	(3 marks, 3 min.)	[18, 18]
Fill in the Blanks ('–1' negative marking) Q.7	(3 marks, 3 min.)	[3, 3]
True or False (no negative marking) Q.8	(2 marks, 2 min.)	[2, 2]

1. **Decreasing order of their basic strength follows for :**

$C_2H_5NH_2$ (I) $C_6H_5NH_2$ (II) NH_3 (III) $C_6H_5CH_2NH_2$ (IV) $(C_2H_5)_2NH$ (V)

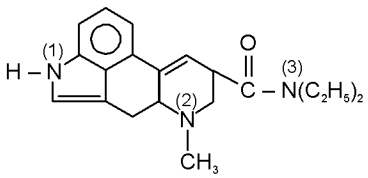
(A) V > I > III > IV > II (B) I > V > III > IV > II (C) I > V > IV > III > II (D) V > I > IV > III > II

2. **Increasing order of their basic strength follows for :**

Aniline (I) p-nitroaniline (II) p-toluidine (III)

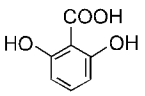
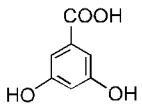
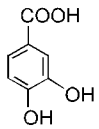
(A) III < I < II (B) III < II < I (C) II < I < III (D) I < III < II

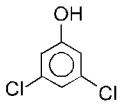
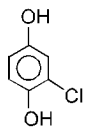
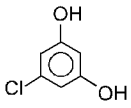
3. Which nitrogen in LSD (Lysergic acid diethylamide) is most basic ?

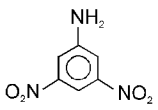
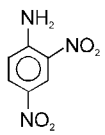
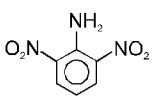


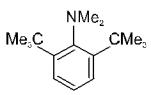
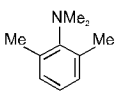
(A) 1 (B) 2 (C) 3 (D) all are equally basic

4. Which of the following is incorrect order for the property mentioned against each groups

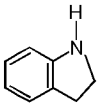
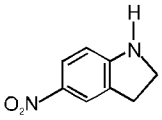
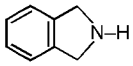
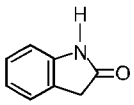
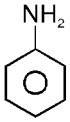
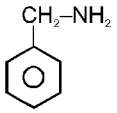
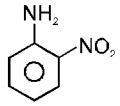
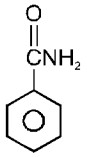
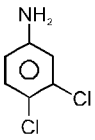
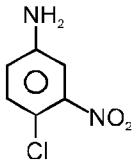
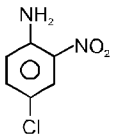
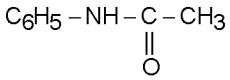
(A)  >  >  [Acidic strength]

(B)  >  >  [Acidic strength]

(C)  >  >  [Basic strength]

(D)  >  >  order of (SIR) steric inhibition of resonance to lonepair of electrons of nitrogen atom

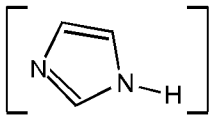
5. Identify strongest & weakest base in each.

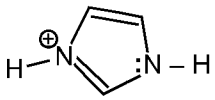
	(a)	(b)	(c)	(d)
(1)				
(2)				
(3)				
(4)	$C_6H_5NH–CH_3$	$C_6H_5NH_2$		

	(1)	(2)	(3)	(4)
(A)	c, d	b, d	a, c	a, c
(C)	c, b	b, d	a, c	b, d

	(1)	(2)	(3)	(4)
(B)	c, d	b, c	a, b	a, c
(D)	a, b	b, c	a, c	b, c

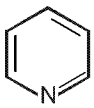
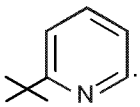
6. Which is incorrect statement

(A) Imidazole  is more basic than pyridine because conjugate acid of imidazole have equal distribution of charge between both nitrogen.

(B)  is stronger acid than H_2O.

(C) A solution of imidozole in water is basic than pure water.

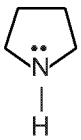
(D) CH_3NH_2 is more basic than imidazole.

7. Explain why  is more basic than  .

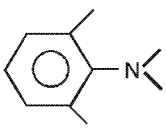
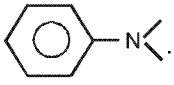
(I) **(II)**

True/False

8. **(a)** Pyrrolidine (II) is more basic than pyrrole (I).

(I) (II)

(b) C–N bond length in  is more than C–N bond length in  .

(c) 2, 4, 6 trinitro N , N -dimemethylaniline is more basic than 2, 4, 6 – trinitroaniline.

Answer Key

DPP No. # 11

1. (A) **2.** (A) **3.** (B) **4.** (B) **5.** (A)

6. (D) **7.** t-Butyl group hinders protonated pyridine for hydration.

8. **(a)** True **(b)** True **(c)** True

Hints & Solutions

DPP No. # 11

7. t-Butyl group hinders protonated pyridine for hydration.

8. **(a)** In (I) lone pair of N is delocalised but not in (II). After protonation of (I) positive charge cannot participate in resonance (follow octet rule)
(b) This is due to steric inhibition of resonance in former which does not appear in the later.
(c) In the former steric inibition or resonance causes the availability of ℓp on N whereas in the later due to H-bonding of NH_2 with NO_2 groups make NH_2 planar with benzene ring , so easy delocalisation of electron pair of N in benzene ring.