

IIT-JEE 2009

CHEMISTRY

SECTION-I

1 Correct Answer: (A)

$$P = K_H \chi_{N_2}$$

$$0.8 \times 5 = 1 \times 10^5 \times \chi_{N_2}$$

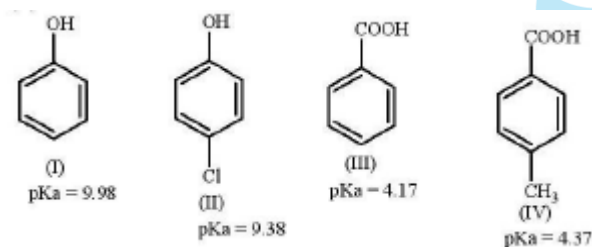
$$\chi_{N_2} = 4 \times 10^{-5} \text{ (in 10 moles of water)}$$

$$\Rightarrow 4 \times 10^{-5} = \frac{n_{N_2}}{n_{N_2} + 10}$$

$$n_{N_2} \times 5 \times 10^{-5} + 4 \times 10^{-4} = n_{N_2}$$

$$\Rightarrow n_{N_2} = 4 \times 10^{-4}$$

2 Correct Answer: (A)



Decreasing order of acidic strength: III > IV > II > I

3 Correct Answer: (B)



(N₂ is used to retard the further oxidation.)

4 Correct Answer: (D)

As chain of natural rubber involves weak van der Waal force of interaction.

5 Correct Answer: (B)

$$\bar{A} = \frac{\sum A_i x_i}{\sum x_i}$$

$$\bar{A} = 54 \times 0.05 + 56 \times 0.90 + 57 \times 0.05 \text{ (where } \bar{A} \text{ is atomic mass of } Fe \text{)}$$

$$\bar{A} = 55.95$$

6 Correct Answer: (B)

Priority of CN is highest.

7 Correct Answer: (C)

As Sb_2S_3 is a negative sol, so, $Al_2(SO_4)_3$ will be the most effective coagulant due to higher charge density on Al^{3+} in accordance with Hardy-Schulze rule

Order of effectiveness of cations: $Al^{3+} > Ca^{++} > Na^{++} > NH_4^+$

8 Correct Answer: (B)

The measure of force of attraction for 'n' moles of real gas $\left(\frac{n^2 a}{V^2}\right)$

$$\left(P + \frac{n^2 a}{V^2}\right)(V - nb) = nRT$$

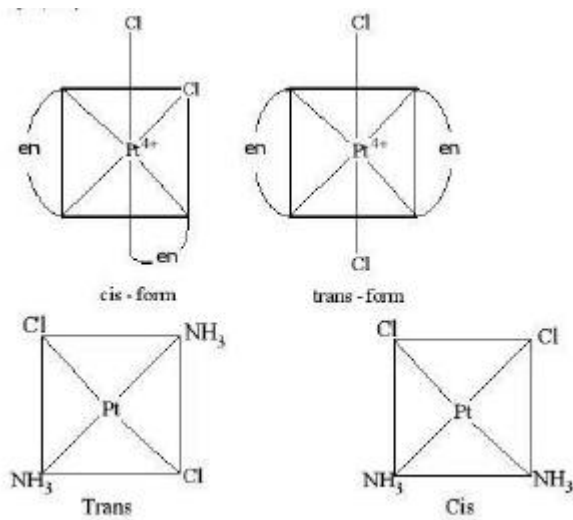
SECTION-II

Multiple Correct Choice Type

9 Correct Answer: (A, B) in dry air

10 Correct Answer: (A,D)

11 Correct Answer: (C,D)



12 Correct Answer: (B,C)

SECTION-III

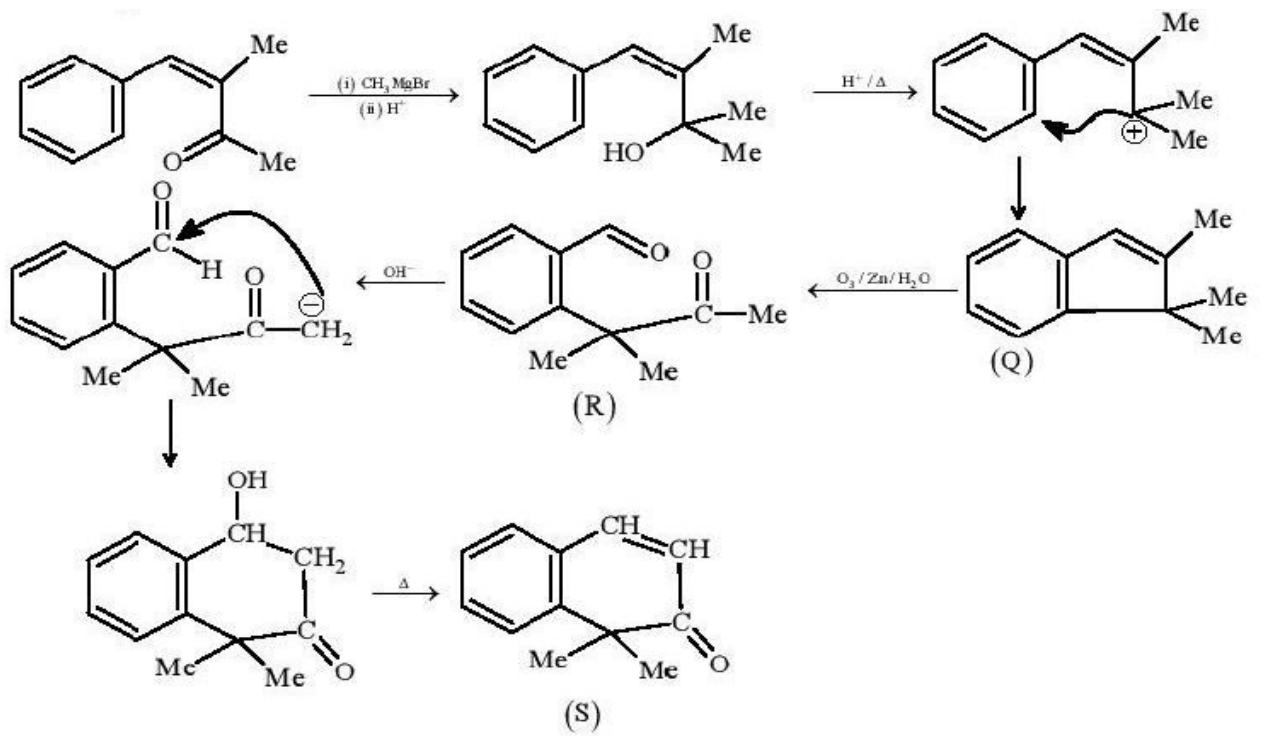
Comprehension Type

13 Correct Answer: (B)

14 Correct Answer: (A)

15 Correct Answer: (B)

Solution for the question nos. 13 to 15



16 Correct Answer: (D)

17 Correct Answer: (C)

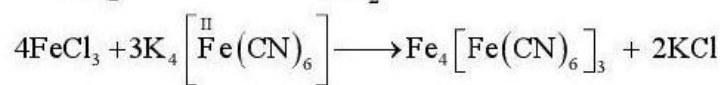
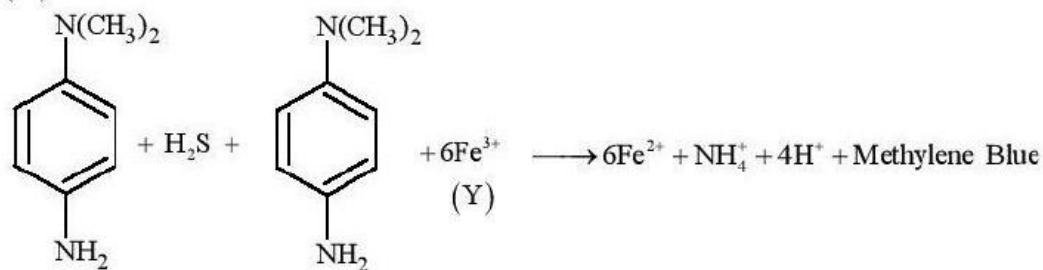
18 Correct Answer: (B)



Solution for the question nos. 16 to 18



(X)



Intense blue



Brown coloration

(X) – Na_2S

(Y) – FeCl_3

(Z) – $\text{Fe}[\text{Fe}(\text{CN})_6]$

