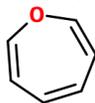


**Multiple Choice Questions:**

1. Which one of the following is a heterocyclic aromatic compound?



(a)



(b)



(c)

**(d)**

2. What do you need to add in order to remove aniline from a solution of aniline hydrochloride in aqueous solution?

(a) Aqueous KBr

**(b) Aqueous NaOH**

(c) Aqueous HCl

(d) Heat

(e) None of the above

3. Which of the following is the strongest base?

**(a) 4-methylaniline**

(b) 4-aminobenzaldehyde

(c) aniline

(d) 4-nitroaniline

(e) Two of the above

4. How many benzylic hydrogens are on the following molecule?

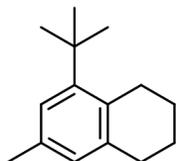
**(a) 7**

(b) 6

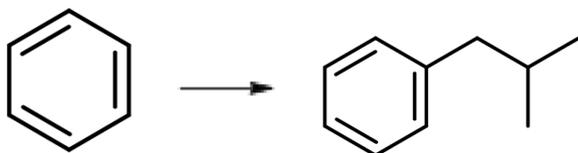
(c) 5

(d) 4

(e) 3



5. What reagent would be most effective in generating the desired product?

(a) Isobutyl chloride and  $\text{AlCl}_3$ (b) Propyl chloride and  $\text{AlCl}_3$ ; NBS, Benzoyl Peroxide; Methoxide in Water**(c) Isobutanoyl chloride and  $\text{AlCl}_3$ ;  $\text{Zn}(\text{Hg})$  and  $\text{HCl}$** 

(d) Two of the above will work

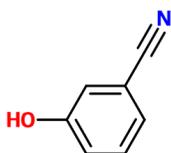
(e) None will work

6. Identify the true statements about the effect that  $-N(CH_3)$  will have on benzene for electrophilic substitution?

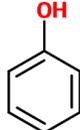
- I. The group will activate the ring
- II. The group will deactivate the ring
- III. Directs to the meta position
- IV. Directs to the ortho or para position

(a) I, IV      (b) I, III      **(c) II, III**      (d) II, IV      (e) Only one is true

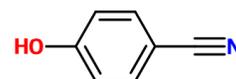
7. Rank the following in acidity? (Most Acidic > Least Acidic)



I



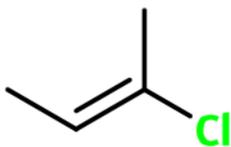
II



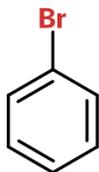
III

(a) I>III>II      (b) II>III>I      **(c) III>I>II**      (d) II>I>III      (e) I=III>II

8. Which of the following molecules would be the most stable after a carbon-halogen heterolytic bond cleavage?



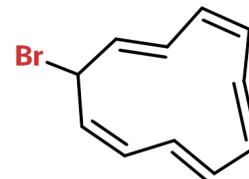
(a)



(b)



(c)

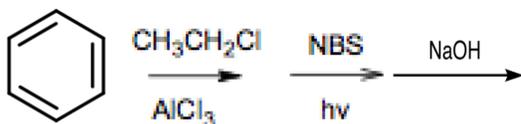


**(d)**

9. Which of the following would undergo the fastest acylation with propanoyl chloride and aluminum chloride

- (a) Phenol**
- (b) Benzene
- (c) bromobenzene
- (d) Nitrobenzene
- (e) All will have the same rate

10. What is the product after the following reactions?



- (a) Anisole
- (b) Xylene
- (c) Phenol
- (d) Styrene**
- (e) None of the above