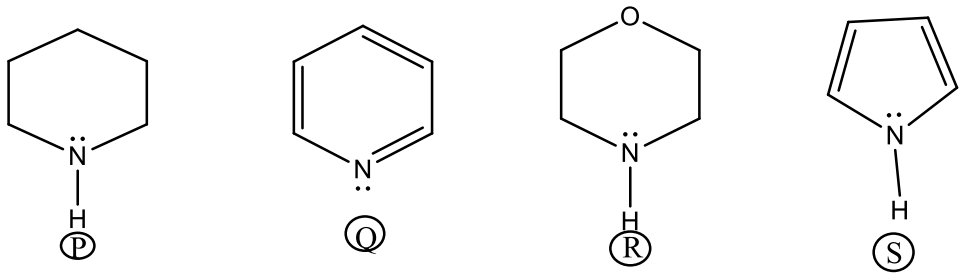
MOCK TEST: CHEMISTRY

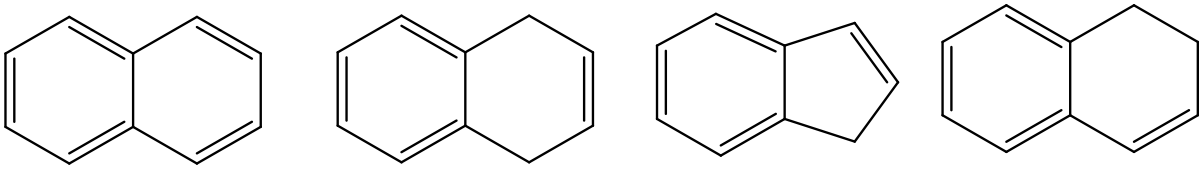
Time: 1hr30min **Full Marks: 20x2=40**

1. Write the order of basic strength:



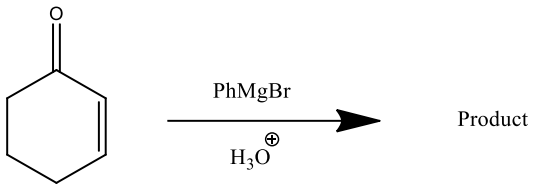
(A) Q>R>S>P (B) P>R>Q>S (C) R>P>S>Q (D) P>Q>R>S

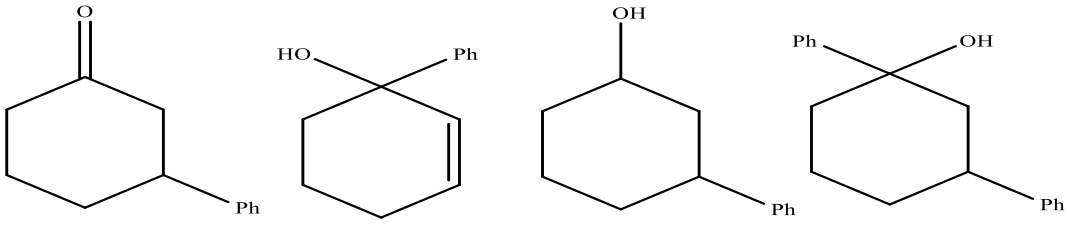
2. Which one of the following is the strongest acid?



(A) (B) (C) (D)

3.





(A) (B) (C) (D)

4. Nitrating agent for aromatic compound may be:

(A) N_2O_5 (B) $C_2H_5NO_2$ (C) $NO_2CF_3SO_3$ (D) All of these

5. Given are Cyclohexanol (I), Acetic acid(II), 2,4,6-trinitrophenol(III) and Phenol(IV). In these the order of decreasing acidic character will be:
(A) II>III>I>IV (B) II>III>IV>I (C) III>IV>II>I (D) III>II>IV>I

6. The unit of rate constant for a first order reaction is:

(A) sec^{-1} (B) $mol.L^{-1}.sec^{-1}$ (C) $L.mol^{-1}.sec^{-1}$ (D) $L^2.mol^{-2}.sec^{-1}$

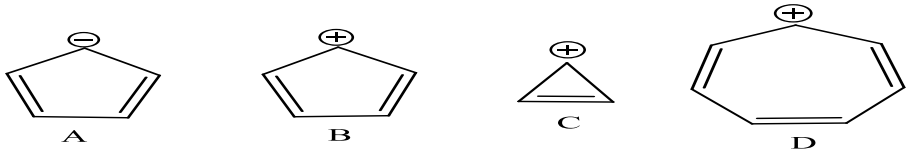
7. A reducing agent is:
(A) Loses electrons and is reduced (B) Gains electrons and is reduced
(C) Loses electrons and is oxidised (D) Gains electrons and is oxidised.

8. Arrange the following in decreasing order of reactivity with HCN.
HCHO (I), CH_3COCH_3 (II), CH_3CHO (III)
(A) I>II>III (B) II>I>III (C) III>II>I (D) I>III>II

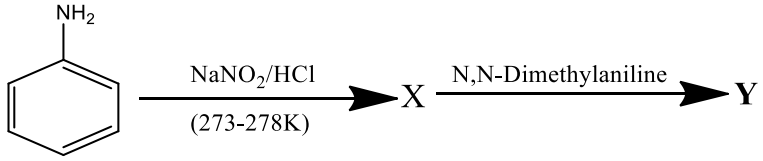
9. The state of hybridisation of the nitrogen atom (N) bonded to hydrogen atom in Hydrazoic acid (N_3H) is:
(A) sp^2 (B) sp^3 (C) sp (D) none of these

10. (S)-(+)-lactic acid and (R)-(-)-lactic acid are nonsuperposable mirror image to each other. They are called as:
(A) Enantiomers (B) Diastereomers (C) Tautomers (D) Structural isomers.

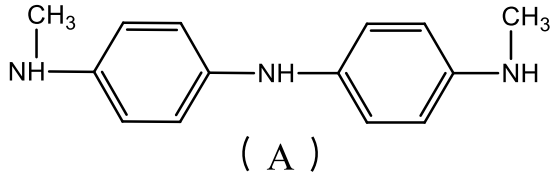
11. Which of the following species is not aromatic:



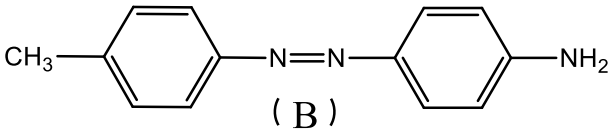
12. Aniline in a set of the following reactions yielded a coloured product "Y"



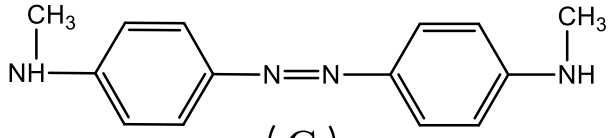
The Structure "Y" would be:



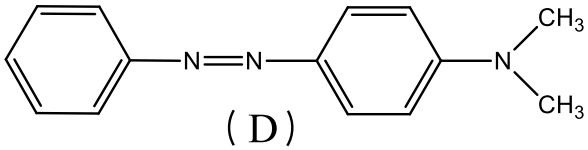
(A)



(B)



(C)



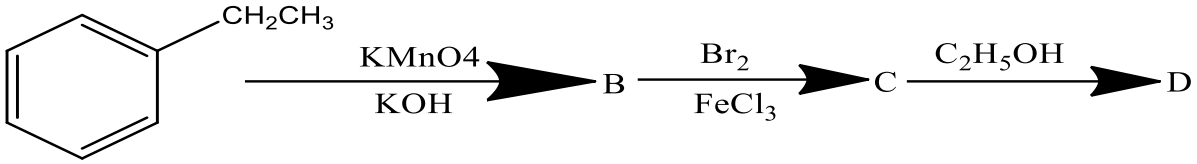
(D)

13. Standard entropies of X_2, Y_2 and XY_3 are 60, 40 and 50 $JK^{-1}mol^{-1}$ respectively. For the reaction $1/2X_2+3/2Y_2=XY_3$, ΔH= -30KJ to be at equilibrium, the temperature should be:
(A) 1000K (B) 1250K (C) 500K (D) 750K

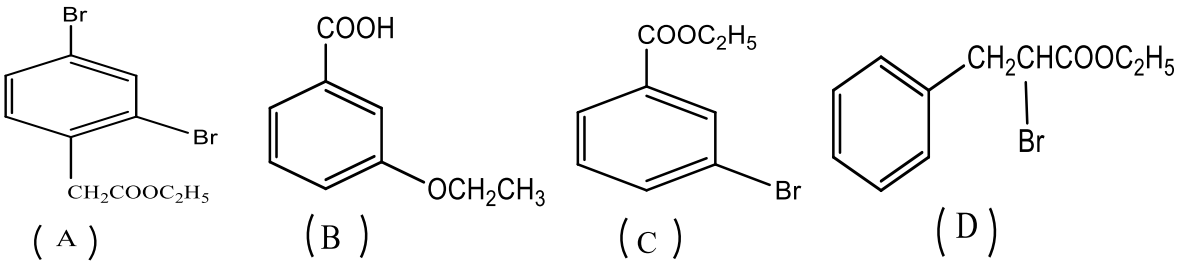
14. AB crystallizes in a body centred cubic lattice with edge length 'a' equal to 387 pm. The distance between two oppositely charged ions in the lattices is :
(A) 250pm (B) 200pm (C) 300pm (D) 335pm

15. For the reduction of silver ions with copper metal the standard cell potential was found to be +0.46V at 25°C. The value of Standard Gibbs energy, $\Delta G°$ will be (F=96500 C mol^{-1}) :
(A) -89.0 kJ (B) -44.5 kJ (C) -98.0 kJ (D) -89.0 kJ

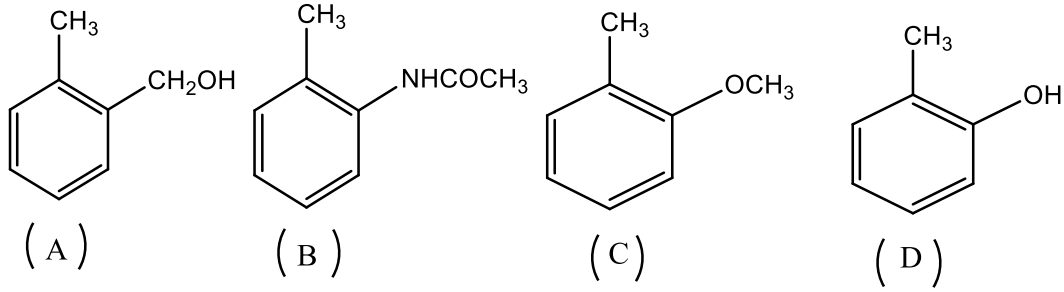
16. In a set of reactions, ethylbenzene yielded a product D.



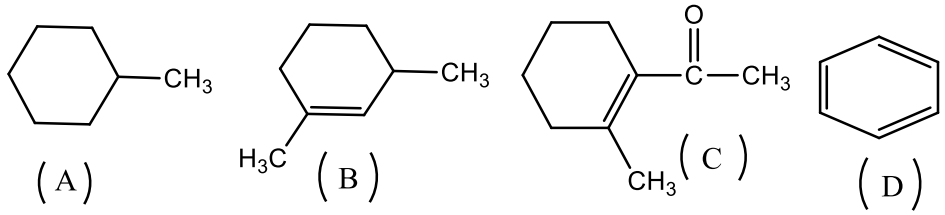
"D" would be:



17. Which one is the most reactive towards electrophilic reagent?



18. In which of the following molecules all the effects of electronic effect namely Inductive, mesomeric and hyperconjugation operate?



19. What is the $[H^+]$ in mol/L of a solution that is 0.20 M in CH_3COONa and 0.10 M in CH_3COOH? K_a for $CH_3COOH=1.8 \times 10^{-5}$.
(A) 1.1×10^{-5} (B) 1.8×10^{-5} (C) 9.0×10^{-6} (D) 3.5×10^{-4} .

20. Which of the following species has the maximum number of unpaired d-electrons:
(A) Zn (B) Fe^{2+} (C) Ni^{2+} (D) Cu^{+}

**********THE END*****ALL THE BEST**********