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3 Hours / 100 Marks

Seat No.

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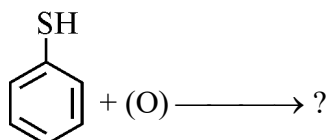
- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

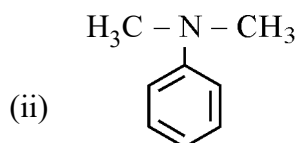
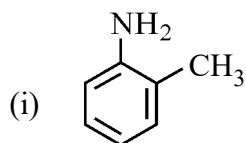
1. Answer any TEN :

10 × 2 = 20

- List the products obtained in coaltar distillation and draw their structures.
- State four physical properties of benzene.
- Complete following reaction and write name of reactant, reagent and product :



- State uses of benzene Sulphonic acid.
- Write the names of following aromatic compounds :



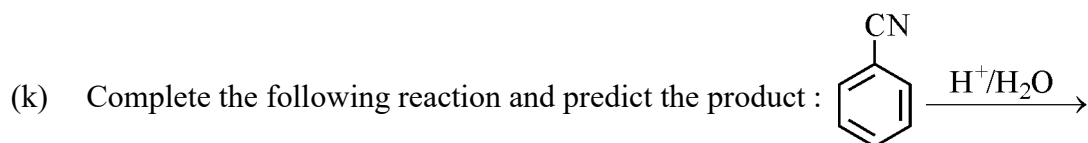
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- (f) State two uses of Aniline.
- (g) How will you prepare benzene diazonium chloride in laboratory ? Write the chemical reactions.
- (h) State physical properties of benzene diazonium chloride.
- (i) Draw the structure of :
- (i) quinol
- (ii) resorcinol
- (j) How will you prepare benzoic acid from toluene ?



- (l) Draw resonating structures of anthracene.
- (m) State uses of phenol.
- (n) Explain physical properties of naphthalene.

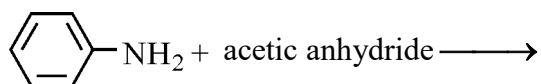
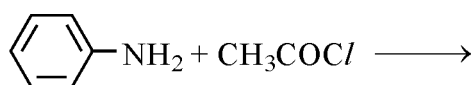
2. Answer any FOUR :

4 × 4 = 16

- (a) Distinguish between aliphatic and aromatic compounds.
- (b) How will you prepare chlorobenzene using
- (i) Phenol, and
- (ii) Cuprous chloride ?

Explain with chemical reactions.

- (c) Explain following chemical properties of benzene sulphonic acid :
- (i) Reaction with NaOH
  - (ii) Reaction with  $PCl_5$
- (d) Name all nitro derivatives which are formed during nitration of benzene. Draw their structures.
- (e) Predict the products of following reactions :



- (f) How will you prepare naphthalene and anthracene ? Explain with chemical equations.

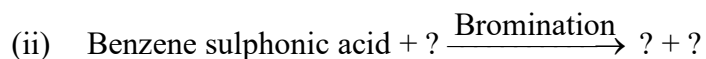
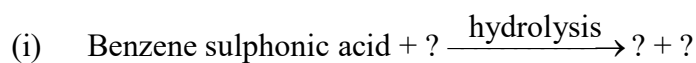
**3. Answer any FOUR :**

**4 × 4 = 16**

- (a) Explain Friedal Craft's reaction considering toluene as reacting substance.
- (b) What will happen if chlorobenzene reacts with :
- (i)  $NH_3$
  - (ii) Mg metal
  - (iii) KOH
  - (iv)  $HNO_3$

**P.T.O.**

(c) Complete following reactions. Draw chemical structures and name reactant, reagent and products :



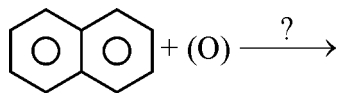
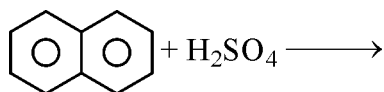
(d) Explain following chemical properties of nitrobenzene :

(i) Reduction in acidic medium and neutral medium

(ii) Sulphonation

(e) State and explain physical properties of aniline.

(f) Predict the products of following chemical reactions and complete it :



4. Answer any FOUR :

4 × 4 = 16

(a) What is coaltar ? How will you get benzene toluene and xylene from coaltar ?

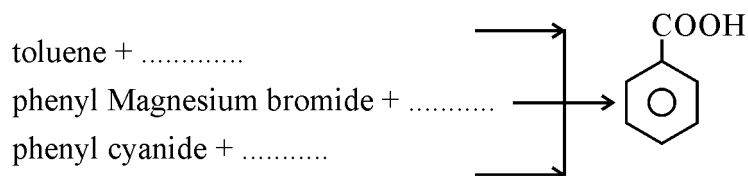
(b) How will you prepare (any two) :

(i) Phenol

(ii) Chlorobenzene

(iii) Thiophene from benzene diazonium chloride ?

- (c) Explain following chemical reactions of aniline :
- Oxidation
  - halogenation
- (d) Why is phenol acidic in nature ? Explain with chemical reactions.
- (e) Complete following chemical reactions and draw the structure where required :



- (f) Explain following chemical reactions :
- Preparation of  $\beta$  naphthol
  - oxidation of anthracene

**5. Answer any FOUR :**

**4 × 4 = 16**

- (a) How will you obtain (any two) :
- nitrobenzene
  - benzene sulphonic acid
  - toluene
  - acetophenone from benzene ?
- (b) Explain following chemical properties (any two) of benzene diazonium chloride :
- Reduction in presence of  $\text{H}_3\text{PO}_2 + \text{H}_2\text{O}$
  - Reaction with KI
  - Reaction with  $\text{HBF}_4$

**P.T.O.**

- (c) (i) Write common name and chemical structure of hydroxy benzene.  
(ii) It discolours in air.  
Explain why.
- (d) How will you obtain (i) ethyl benzoate and (ii) benzoyl chloride from benzoic acid ?
- (e) (i) Write two physical properties of anthracene.  
(ii) State its applications.
- (f) Naphthalene is used for preparation of dye intermediate. Explain giving suitable chemical reaction.

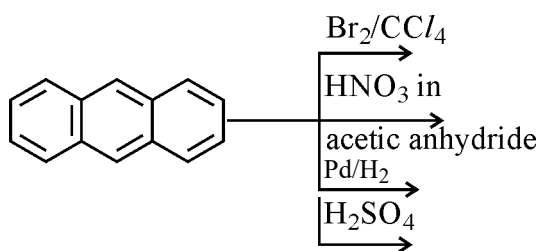
**6. Answer any FOUR :****4 × 4 = 16**

- (a) Predict the products giving suitable chemical reaction when toluene is treated with :
- (i)  $\text{HNO}_3$ , in presence of  $\text{H}_2\text{SO}_4$  at  $160^\circ\text{C}$   
(ii)  $\text{CH}_3\text{Cl}$   
(iii)  $\text{H}_2\text{SO}_4$
- (b) How will you prepare (any two) :
- (i) anisole  
(ii) phenyl hydrazine  
(iii) p-hydroxy azo benzene  
from benzene diazonium chloride ?
- (c) Explain any two chemical properties of phenol :
- (i) Reaction with  $\text{HNO}_3$   
(ii) Reaction with  $\text{NaOH}$  followed by  $\text{CHCl}_3$   
(iii) Kolbe reaction

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- (d) Explain acidic nature of benzoic acid giving chemical reactions.
- (e) Complete following chemical reactions :



Write the name of products.

- (f) Anthracene is used for preparation of dye. Explain giving suitable chemical equation.

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