TDC Even Semester Exam., 2019

CHEMISTRY

(Honours)

(4th Semester)

Course No. : CHMH–402

(Organic Chemistry)

Full Marks : 35
Pass Marks : 12

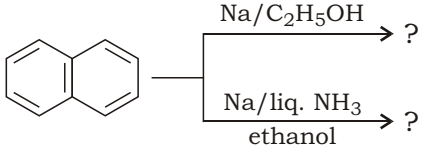
Time : 2 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, selecting **one** from each Unit

UNIT—I

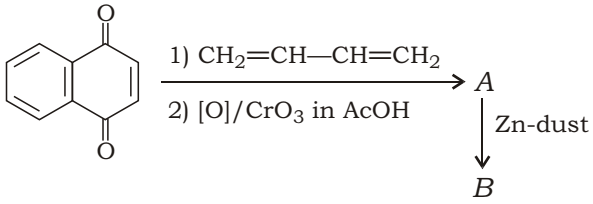
1. *(a)* *(i)* Write the product of the following reactions : 1×2=2

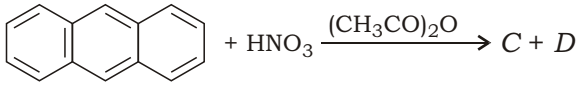


(ii) How will you show that naphthalene contains two *ortho*-fused benzene rings? 2

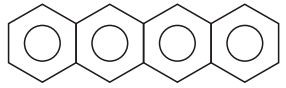
(b) With the help of the concept of resonance, show that electrophilic substitution at -position of naphthalene is more favourable than -position. 3

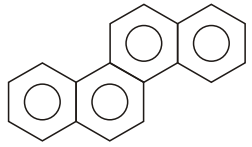
2. *(a)* Identify *A*, *B*, *C* and *D* from the following reactions : (1×2)+(1×2)=4

(i) 

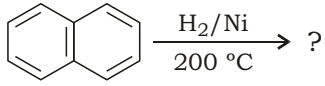
(ii) 

(b) What is the total number of -electrons in each of the following polynuclear hydrocarbons? 1×2=2

(i) 

(ii) 

(c) Complete the following reaction : 1



UNIT—II

3. *(a)* Provide mechanism of synthesis of glycine by Gabriel phthalimide method. 3

(b) What is isoelectric point? 1

(c) An amino acid migrates towards cathode in acidic solution while the same amino acid migrates towards anode in alkaline medium during electrolysis. Give reasons. What is the name of this phenomenon? 2+1=3

4. *(a)* Explain, why basic solution of amino acid is necessary to protect acid group by Merrifield polymer. 2

(b) Discuss how Edman's degradation method is helpful to find out the *N*-terminal amino acid residue in polypeptide and protein. 3

(c) Discuss the importance of peptides and proteins in biological system of human. 2

UNIT—III

5. *(a)* What are vitamins? Give one example of each of fat-soluble and water-soluble vitamins. 1+½+½=2

(b) What do you understand by the term 'vitamin B complex'? 2

(c) How can vitamin C be synthesized from glucose? Write the reaction sequence only. 3

6. *(a)* What are food preservatives? How are they classified? 1+2=3

(b) Provide two examples of each of the following : ½×4=2

(i) Emulsifier

(ii) Sweetener

(c) What are antioxidants? Give examples. 2

UNIT—IV

7. *(a)* What are flue gases? How does coal carbonization differ from coal gasification? 1+2=3

(b) Name two aromatic compounds which can be derived from coal tar. ½×2=1

(c) What is flash point of a fuel? 1

(d) Write brief notes on knocking and anti-knocking compounds. 2

8. *(a)* What are dyes? How are they classified? 1+2=3

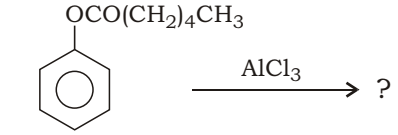
(b) How would you synthesize phenolphthalein and methyl orange? Give reaction sequence only. 2+2=4

UNIT—V

9. *(a)* In context of green chemistry, explain the concept of atom economy. 1

(b) What are green solvents? Give two examples. 1+(½×2)=2

(c) Write the product of the following reaction : 1



3-hydroxyphenyl hexanoate

(d) Provide green synthesis of ibuprofen. 3

10. *(a)* State the necessary and sufficient conditions for a compound to show enantiomerism. 2

(b) What is specific rotation? If the specific rotation of one enantiomer of 2-butanol is +13·5°, then what is the specific rotation of the other enantiomer? 1+1=2

(c) Explain asymmetric synthesis with a suitable example. 2

(d) What is optical purity? 1

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