2021

Chemistry

(History of Chemistry)

Paper: 2.5

Full Mark: 60

Time: 3 hours

The figures in the margin indicate full marks for the questions

Answer all the questions

1. Answer the following: 1x5=5

   (a) Who developed the first table of affinities ?

   (b) Who introduced the term "bond" to express the force of attraction between atoms ?

   (c) Who did place the inert gases in the periodic table ?

   (d) Who prepared urea in the laboratory for the first time ?

   (e) Name the first German who was awarded Nobel Prize in chemistry.

2. Answer *any five* of the following: 3x5=15

   (a) What was the mystery to chemists in 18^{th}century ? What was thought to be an occult power in that period ?What was Newton's suggestion regarding the cause of cohesive interaction among particles ?

Contd...

(b) What does affinity table summarizes ?Who published the earliest handbook of qualitative analysis ? Name the most poisonous gas used in the chemical laboratories.

(c) Name the physicist who discovered inert gases. Comment on the atomicity of inert gases. Which inert gas formed a compound for the first time in the laboratory ?

(d) "....chemists must never be satisfied that they know the composition of a substance unless it has been both analysed and synthesized..." – who commented this ?Name the book where this statement was published. How the materials were classified in the beginning of 19^{th}century ?

(e) "The production of all organic substances no longer belongs just to organisms....." Name the scientists who announced this. Which compound have the empirical formula $C_{20}H_{24}N_2O_2$? How many derivatives of uric acid were synthesized by Liebig and Wohler ?

(f) Which aromatic compound is abundantly available from coal gas production ? Name the 18 year old scientist who attempted to transform allyltoluidine into quinine? Name the α, β – unsaturated carboxylic acid that was synthesized by Perkin's condensation.

3. Answer *any ten* questions: 4x10=40

a) Who is considered to be America's most successful organic chemist ?How does biotechnology came into existence ? 1+3=4

b) How did systematic analytical table help the than chemists ? Name the apparatus used for production of Hydrogen Sulfide. Who developed this apparatus ? 2+1+1=4

c) Why are the inert gases and rare earths placed in a separate column of the periodic table ? 2+2=4

d) How did the inert nature of Argon established ? How was the rationale behind the inertness of argon was strengthened ?2+2=4

e) Where did we find the first recorded term *synthesis* ?Who synthesized and analyzed successfully air and water ? In the 19^{th} century which experiment confirmed the existence of isomerism ? How did the fact that the radicals benzoyle and uril provided a common constitutional arrangement ?

f) Who first laid down the vocabulary of reagents and reactions ?Name the chemist who was associated with Germany's chemical and food supply during World war I. What are nucleoside and nucleotides ? Who won Nobel Prize by elucidating the structure of nucleosides and nucleotides?

g) What was the first antibiotic synthesized ? What made the natural world not that much superior ("upside down")? 1+3=4

h) Write a note on how Frankland introduced the concept of valency. 4

i) Describe the incidence leading to the death of G N Lewis. 4

j) Who wrote the classic book The Nature of the Chemical Bond ? Name the scientist who introduced the concept of restricted rotation around C=C. What is the reason behind restricted rotation around C=C ? 1+1+2=4

k) Who is known as the father of Indian Chemistry ? Write a note on the important research works of the chemist. 1+3=4

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