S.NO: 42 98 Reg. No.

BATCH: 2018

END OF SEMESTER EXAMINATIONS, SEPTEMBER - 2020
INORGANIC CHEMISTRY - IV
SUBJECT CODE: 17P3CH12

MAJOR : M.SC. (CHEMISTRY) SEMESTER : IV
TIME : 3 HOURS MAX. MARKS : 70

SECTION – A (10 x 1 = 10)

Answer ALL Questions:

1. Distinguish between isopolyacids and heteropolyacids.
2. Draw the structure of pentaborane (9).
3. Why is NMR spectra used to study the fluxional behavior of molecules?
4. What is the function of copper(II) chloride in Wacker process?
5. Give an example for bent ferrocene.
6. Write an example for selectivity in Wilkinson's catalyst.
7. List the advantages of homogeneous catalyst.
8. What is de-insertion reaction?
9. Why chelates are used in detoxification of metals?
10. Mention one biological role of zinc.

SECTION – B (5 X 4 = 20)

Answer ALL Questions:

11. a) With neat sketch discuss the structure of 12-heteropolyacids.

(OR)

b) Write two chemical reactions of borazine which are different from benzene?

12. a) Give two organometallic catalyst used in hydroformylation reaction. Which one is best and why?

(OR)

b) Illustrate the π -bonding ability of dinitrogen with suitable example.

13. a) Give any three electrophilic substitution reactions of ferrocene which establish its aromatic character?

(OR)

b) Draw the structure of the expected product (2+2)

$$NiCl_2 + 2CH_2 = CH - CH_2MgBr \quad ------\rightarrow$$

$$FeCl_2 + 2C_5H_6 + 2(C_2H_5)2NH \quad ------\rightarrow$$

14. a) What are the conditions to be satisfied by a metal to involve in oxidative addition reactions.

(OR)

b) Discuss the insertion of following molecule with suitable example
i) CO and (ii) $CH_2 = CH_2$

15. a) Name the diseases caused excess of copper and cadmium.

(OR)

b) Describe two examples for chelate therapy.

SECTION – C (5 X 8 = 40)

Answer ALL Questions:

16. a) Discuss the structure and bonding features of $Re_2Cl_8^{2-}$.

(OR)

b) Give an account of the hydrides of boron with special reference to diborane.

...2..,

17. a) What is Monsanto acetic acid reaction? Explain the mechanism of this reaction using Rhodium catalyst.

(OR)

b)

i. What is fluxional behavior of molecule? (2)

ii. How will you find it with the help of NMR? (6)

18. a)

i. Give a method to synthesize $Cr\left(\eta^6 - C_6H_6\right)_2$. (2)

ii. Explain bonding feature in $Cr\left(\eta^6 - C_6H_6\right)_2$. (6)

(OR)

b) Write note on

i. Half sandwich complex . (4)

ii. Multidecker complex . (4)

19. a)

i. Illustrate the Green-Davies-Mingos rules for the reactivity of polyenes towards nucleophilic attack. (6)

ii. Polyenes is very less reactive towards nucleophilic attack while coordinated with metal is more reactive. Why? (2)

(OR)

b) Discuss the applications of Suzuki cross coupling reactions.

20. a) With detail scheme explain the anticancer activity of cis-platin.

(OR)

b) Comment on the importance of the following compounds. (Each 2 marks)

i) Ferrous fumarate ii) Sodium arsenate iii) Aromatic arsenicatls .

iv) Grew copper .

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S.No. 21 BATCH: 2018

END OF SEMESTER EXAMINATIONS, SEPTEMBER - 2020
ORGANIC CHEMISTRY - IV
SUBJECT CODE: 17P3CH13

MAJOR : M. Sc.,(Chemistry)
TIME : 3 HOURS

SEMESTER : IV
MAX.MARKS : 70

SECTION – A (10 x 1 = 10)

Answer ALL the Questions:

1. How do you determine the presence of methoxyl groups in alkaloids?
2. Define alkaloids.
3. What is the importance of hydrogen bond in protein?
4. Define Enzymes.
5. What are the products obtained when uric acid is oxidised with nitric acid?
6. Write down the bromination reaction of thiazole.
7. Define green chemistry.
8. Give an example of PTC.
9. Define Green synthesis.
10. What is polymer supported catalyst?

SECTION – B (5 x 4 = 20)

Answer ALL the Questions:

11. a) Give any one synthesis of Codeine.

(OR)

b) Give any one synthesis of Brucine.

12. a) Describe solid phase peptide synthesis.

(OR)

b) Give the synthesis of oxytocin.

13. a) Discuss any two synthesis and properties of uracil.

(OR)

b) Give an account on pyrimidine.

14. a) Explain – recycling of waste.

(OR)

b) Illustrate the microwave assisted reactions in water.

15. a) Explain the greener synthesis of adipic acid and paracetamol.

(OR)

b) Explain the role of polymer supported catalysts in green synthesis.

SECTION – C (5 x 8 = 40)

Answer ALL the Questions:

16. a) Elucidate the structure of quinine.

(OR)

b) Describe the general methods of determining the structure of alkaloids.

17. a) Discuss the classification of proteins.

(OR)

b) Illustrate the structure and biological importance of RNA.

18. a) Give an account on chemistry of uric acid.

(OR)

b) Explain any two synthesis and properties of oxazole and thiazole.

19. a) Explain twelve basic principles of green chemistry.

(OR)

b) Describe the mechanism, benefits and limitations of microwave assisted synthesis.

20. a) Give an account on ultrasound assisted reactions.

(OR)

b) How do you design a green synthesis?

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S.NO: 55 BATCH: 2018

END OF SEMESTER EXAMINATIONS, SEPTEMBER - 2020
ELECTIVE – III : ANALYTICAL CHEMISTRY
SUBJECT CODE: 16P3CH14

MAJOR : M.SC. (CHEMISTRY) **SEMESTER : IV**
TIME : 3 HOURS **MAX. MARKS : 70**

SECTION – A (10 X 1 = 10)

Answer ALL the Questions:

1. Identify the significant figures for the following numbers: a) 6.023×10^{23} b) 200.03
2. Define the terms precision and accuracy.
3. Specify any two non destructive techniques of chemical analysis.
4. Write the equation used to calculate pH in potentiometric titration when calomel electrode is used as reference electrode and quinhydrone electrode as working electrode.
5. What is meant by template synthesis?
6. Mention the characterization techniques used in crystal growth.
7. When will you use abbreviations in thesis writing?
8. Name any three computer aids used in literature survey.
9. How will you use foot notes in thesis writing?
10. Give a style followed in thesis writing.

SECTION – B (5 X 4 = 20)

Answer ALL the Questions:

11. a) What are the different statistical methods used to express the results? Mention any two experiments where they are used.

(OR)

b) Give an account on reporting of analytical data.

12. a) Write the principle and theory behind energy dispersive X-ray.

(OR)

b) Explain the principle and working of AAS.

13. a) Give a detailed account on sol-gel method.

(OR)

b) Explain self propagating high temperature synthesis.

...2.,

14. a) Write note on the types of abstract and survey of abstract indexes.

(OR)

b)How will you summarize the already published work? Explain.

15. a) Discuss the method of literature review in thesis writing.

(OR)

b) Explain the importance of tables and figures in thesis writing.

SECTION – C (5 X 8 = 40)

Answer ALL the Questions:

16. a) What are errors? What are the different methods of expressing errors? With a suitable example explain the classification errors.

(OR)

b) (i) Write a note on confidence limits.

(ii) What are the errors you have experienced in gravimetric analysis? How they can be eliminated?

17. a) Explain the principle, theory and functioning of fluorescence spectroscopy. Mention any one of its application.

(OR)

b) Write in detail about the principle and types of conductometric titration.

18. a) Give an account on (i) ion exchange reactions (ii) intercalation reactions.

(OR)

b) Describe any two methods of crystal growth.

19. a) Discuss the primary and secondary sources employed in research work.

(OR)

b) Write short notes on: (i) Citation index (ii) Catergorization of topics and their importance in research.

20. a) Describe the general format in thesis writing.

(OR)

b) Explain the drafting of thesis in detail.

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