

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Chemistry Degree Examination, November 2017

CHE5B06 – Inorganic Chemistry III

(2015 Admission onwards)

Max. Time: 3 hours

Max. Marks: 80

Section A (One word)Answer *all* questions. *Each question carries 1 mark*

1. Zirconyl nitrate is used in the elimination of ----- ion.
2. Boric acid on heating gives -----.
3. An alkali metal that can combine directly with nitrogen is -----.
4. The shape of ClF_3 molecule is -----.
5. Which metal is used in photocopying?
6. An example of aprotic solvent is -----.
7. Disulphur dinitride (S_2N_2) has a ----- structure.
8. The disease caused by Cd poisoning is -----.
9. Name the alternative refrigerant developed in India.
10. Name any *two* non-biodegradable solid wastes.

(10 x 1 = 10 Marks)

Section B (Short answer)Answer *any ten* questions. *Each question carries 2 marks*

11. What is co-precipitation? How can it be minimised?
12. Give any two advantages of micro scale experiments in qualitative analysis.
13. Why borazine is called inorganic benzene?
14. What is inert pair effect?
15. What are fullerenes? Give an example.
16. Which is more acidic, HCl or HClO? Why?
17. Among F and Cl, which has higher electron affinity? Why?
18. Discuss briefly pseudohalogens. Give any two examples.
19. What are silicones? Give any two applications.
20. Describe any *two* reactions taking place in liquid SO_2 .
21. Suggest any *two* methods to control air pollution.
22. How do CFCs cause ozone layer depletion?

(10 x 2 = 20 Marks)

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Section C (Paragraph)

Answer *any five* questions. *Each question carries 6 marks*

23. Discuss briefly the different methods adopted for the minimisation of method errors.
24. What is diagonal relationship? Briefly discuss the diagonal relationship between Li and Mg.
25. How is Diborane obtained? Explain its properties and structure.
26. Explain the charcoal adsorption method for the separation of noble gases.
27. How is IF_5 obtained? What is its hybridisation and structure?
28. Write notes on the electropositive character of iodine.
29. Discuss the synthesis and applications of phosphazenes.
30. What is photochemical smog? How does it differ from London smog?

(5 x 6 = 30 Marks)

Section D (Essay)

Answer *any two* questions. *Each question carries 10 marks*

31. a) Discuss the application of solubility product and common ion effect in the precipitation of cations from solution. (8)
- b) Distinguish between ortho and para hydrogen. (2)
32. Discuss the hybridization and structure of XeF_2 , XeF_4 and XeF_6 . Briefly explain their reaction with water.
33. a) Write notes on the various water quality parameters: DO, BOD and COD (6)
- b) Write notes on *Minamata* disaster. (4)
34. Discuss the various types of solid wastes and their management.

(2 x 10 = 20 Marks)

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE
Fifth Semester B.Sc Chemistry Degree Examination, November 2017
CHE5B07 – Organic Chemistry II
 (2015 Admission onwards)

Max. Time: 3 hours

Max. Marks: 80

Section A (one Word)

Answer all the questions each question carries 1 Mark

1. What product is formed when furan reacts with n-butyl lithium in ether?
2. m-dinitrobenzene when reduced with sodium sulphide.....is formed.
3. Aniline when heating under pressure with an alcohol in presence of HCl gas gives.....
4. Phenyl nitrile on hydrolysis yield.....
5. Pyridine when reacts with peracetic acid.....is formed.
6. Benzene sulphonyl chloride when reduced with sodium sulphite.....is formed
7. Benzaldehyde condenses with acetaldehyde in presence of dilute acid.....is formed.
8. The narcotic action of alcoholswith chain branching.
9. The structure of fluorescein is
10. Bezophenone when oxidized with NaOClis obtained.

(10 x 1 = 10 Marks)

Section B

Answer any 10 questions each carries 2 Marks

11. What is the action of thionyl chloride on alcohol?
12. How eosin is prepared from phenol?
13. Give two applications of crown ethers in organic synthesis.
14. What is Wolf Kishner reduction?
15. How benzene is prepared from benzene sulphonic acid?
16. What is carbylamine reaction?
17. How aromatic amines can be prepared from aromatic acids.
18. What is Etard's reaction?
19. What is the action of hydrazine on urea?
20. Account the basicity of guanidine.
21. What is the action of chlorine on acetophenone?
22. How succinic acid is prepared from acetoacetic ester?

(10 x 2 = 20 Marks)

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Section C (Paragraph)

Answer any five questions. Each question carries 6 marks.

23. Write notes on molecular orbital picture of furan and pyridine.
24. Discuss the comparison of acidity of alcohols and phenols.
25. What are the reduction products of nitrobenzene in various media?
26. Write down the properties of benzene sulphonic acid.
27. Write notes on explosives.
28. Explain Victor Meyers test.
29. Write down the preparation and properties of citric acid.
30. How diethyl zinc is prepared? What are its important synthetic applications?


(5 x 6 = 30 Marks)

Section D (Essay)

Answer any two questions each question carries 10 marks

31. Explain the reactions of esters and amides.
32. Write down the important synthetic applications of benzenediazonium chloride.
33. Write notes on Nucleophilic aromatic substitution with mechanism.
34. a) Discuss the chemistry of methanol poisoning (3 Marks)
b) Explain the energy profile diagram of S_N^1 and S_N^2 reaction (3 Marks)
c) Write down the mechanism of Reimer Tiemann reaction and Beckmann rearrangement (4Marks)

(2 x 10 = 20 Marks)



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Reg. No:.....

Name:

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Chemistry Degree Examination, November 2017

CHE5B08 – Physical Chemistry II

(2015 Admission onwards)

Max. Time: 3 hours

Max. Marks: 80

Section A (One word)

Answer all questions. Each question carries 1 mark

1. The unit of zero order rate constant, K is
2. Number of molecules reacting per quantum of radiation absorbed is called
3. The enthalpy change for adsorption is
4. Tyndall effect is an.....property of sols.
5. At triple point of water, the number of phases in equilibrium is
6. A system consisting of one phase only is said to be a system.
7. Basic principle of chromatography is
8. The order of the C_{2h} point group is
9. The spin quantum number of proton is
10. The vibrational spectra of molecules are obtained in the.....region.

(1x10 = 10 Marks)

Section B (Short answer)

Answer any ten questions. Each question carries 2 marks

11. How many lines does the ESR spectrum of methyl radical contain?
12. How many mirror planes does a water molecule have?
13. What is the identity operator?
14. What is the mobile phase in GLC?
15. Explain Gel-permeation chromatography.
16. Explain the term 'degrees of freedom' with regard to phase rule.
17. What is meant by a cooling curve?
18. State distribution law.
19. What is zeta potential?
20. What are macromolecular colloids?
21. State Grotthuss-Draper law.
22. What is 'meant by 'catalytic poison'?

(2 x 10 = 20 Marks)

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Section C (Paragraph)

Answer any five questions. Each question carries 6 marks

23. Differentiate order and molecularity of a reaction.
24. Explain the important steps of a chain reaction.
25. Draw the Jablonski diagram and explain various types of transitions.
26. Briefly discuss electrophoresis and electroosmosis.
27. Briefly explain Pattinson's process of desilverization of lead.
28. Explain the merits and limitations of GLC.
29. Derive an expression for the rotational energy of a diatomic rigid rotor.
30. Give the group multiplication table for the C_{2v} point group.

(5 x 6 = 30 Marks)

Section D (Essay)

Answer any two questions. Each question carries 10 marks

31. (a). Explain the influence of temperature on reaction rate.
(b). First order reaction is 25% complete in 20 minutes at 40°C and in 3 minutes at 50°C . Calculate the energy of activation.
32. (a). Explain the Donnan membrane equilibrium.
(b). How is the Langmuir adsorption equation is useful in the determination of the surface area of an adsorbent.
33. (a). Draw the phase diagram of the water system and explain. (b). Discuss the merits and limitations of HPLC.
34. (a). Discuss the complementary character of IR and Raman spectroscopies.
(b). Given that the fundamental vibrational frequency for HI is 2484.5 cm^{-1} . Calculate the force constant of the H-I bond. ($H=1.008$; $I=126.9$)

(2 x 10 = 20 Marks)

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fifth Semester B.Sc Chemistry (Open Course) Degree Examination, November 2017

CHE5D02 – Chemistry in Daily Life

(2015 Admission onwards)

Max. Time: 2 hours

Max. Marks: 40

Section A (One Word)*Answer all questions. Each question carries 1 mark*

1. is an example of Vat dye.
2. is an example of antipyretic.
3. is a common adulterant in vegetable oils.
4. is a polymer used for making contact lenses.
5. LPG contains mainly.....
6. is an example of non-degradable pesticide.
7. The chemical name of the main ingredient used in hair dye is.....
8. is an example of conducting polymer.
9. The chemical compound used for the artificial ripening of fruits is
10. is an example of thermosetting plastic.

(10 x 1 = 10 Marks)**Section B (Short answer)***Answer any five questions Each question carries 2 marks*

11. What is meant by mordant dye?
12. Differentiate between antiseptics and disinfectants with examples.
13. Explain bio-degradable polymers with examples.
14. Vulcanised rubber is more superior to non-vulcanised rubber. Explain the statement.
15. Differentiate cold creams and vanishing creams.
16. Give the advantages of artificial sweeteners with example.
17. What is meant by the Calorific value of fuels?

(5 x 2 = 10 Marks)