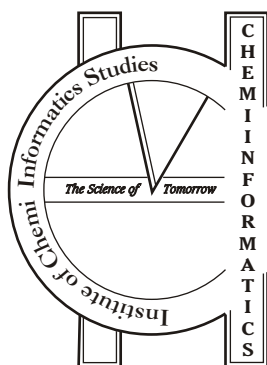


Industry Program in Paint & Coating Technology

Examination Assignment

April 2011



ICIS

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INSTRUCTIONS FOR EXAMINATION ASSIGNMENTS

- Electronic (email, fax) submission of the assignments is not acceptable.
- The assignments have to be submitted by the student on standard A4 size paper in legible hand written, typed or printed format only.
- Do not copy from the answers of other participants. If it is noticed the assignment of such participants will not be accepted.
- The assignment for each paper should be written separately. Do not write the assignment for all the papers in continuity. However, all the assignments are to be submitted together.
- No two or more participants should submit their assignments in one envelope.
- The participants should mention their name and enrollment number on each page of submitted assignment copy.
- The last date of submission of Assignments is 30th April 2011.

The assignments have to be submitted to:

The Program Coordinator

Institute of Cheminformatics Studies

C-56A/28, Sector-62, Noida-201301

U.P. INDIA

- Participants are advised to keep a photocopy of submitted assignments.
- The participants should mention their name and enrollment number at the top of the envelope.
- The participant should also mention **Examination Assignment** at the top of the envelope.

Introduction to Paint Technology

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1. Write a short note on paints and the various components of paint.
2. Explain the following:
 - a) Solution and dispersion viscosity.
 - b) Polymer solution viscosity.
 - c) Rheological structure.
3. Explain various methods and techniques of measurement of paint fluid geometry.
4. Explain the following:
 - a) Manufacture of Synthetic organic and inorganic pigment.
 - b) Pigment condition.
 - c) Paint types and paint performance.
5. Explain the use of combined PVD and HF methods for deposition of metallic and dielectric coatings and give details of coating methods used in industries.
6. What is natural weathering? State the durability testing of natural versus artificial paints.
7.
 - a) Explain any five color pigments.
 - B) What are the different application methods used in paint and coating Industry? Explain any one method.

Chemical Database Design & Their Management

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1. Explain the databases relational model and relational query language.
2. Write a short notes on the following:
 - a) Wildcard characters
 - b) Comparison operators
 - c) Queries-AND/OR criteria
 - d) Queries-Multiple Table
3. What is a HITSET? How can HITSET be modified?
4. Write a short on failed reaction database. Explain its uses DBMS. How are use the failed reactions database in Accord.
5. Write down the SQL statement for the following:
 - a. Count the number of elements in the table name periodic and field EI_name.
 - b. Find the color field of EI_name = lithium in the table name periodic.
 - c. Select rows which are within the range of Neutron field between 25 to 40 in table name is periodic.
 - d. Sort out the table name periodic where crystal column is like 'cubic.
6. Explain the Data Modeling Components in detail?
7. Explain the following:
 - a) Why use DBMS to store Data?
 - b) Database Level
 - c) Database Concept
 - d) How we loose Data
 - e) Key features of Database system

Coating Technology and Equipments

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1. Polymers are important for coating. Justify the statement by explaining their properties.
2. Define inhibitive pigments. Describe coating system design, varieties of factors influencing the choice of material and performance specification of coating.
3. Write short notes on the following:
 - a) Pigments.
 - b) PVC and CPVC
 - c) Additives.
4. Write short notes on the following:
 - a) The chemistry of unsaturated polyester.
 - b) The chemistry of alkyd polyester.
 - c) Properties of alkyd coatings.
5. Write note on the following:
 - a) Novolac resins and other epoxy compounds.
 - b) Classification of epoxy coatings.
 - c) Non - esterified solution coatings.
6. A. What are the uses of chlorinated rubber paints? Give an idea about the primers which are used in chlorinated rubber system.
B. Give an illustrate account on general properties of Two-Pck Epoxy system.
7. Write a short note on the following:
 - a) Value of coating technology to tube and pipe producers.
 - b) Pencil test.
 - c) Cross-hatch tape test

Chemical Information Sources

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1.
 - A. What are basic necessities of chemical safety and toxicology information? Describe.
 - B. Why National Library of Medicine's TOXNET System and the Canadian centre for occupational Health and Safety Database help in Chemical safety.
2. Write a short note on Chemistry on the WWW.
3. Explain Chemical Abstracts in the following headings:
 - a) CA index guide
 - b) CAS Nomenclature
 - c) Alphabetization of Compounds
4. Explain the following:
 - A. Spectral complications
 - B. Biomolecule sequence and structure databases
 - C. Physical property information
 - D. Beilstein and Gmelin
5. Give detail account on the contents of the abstract record.
6. Write note on the following:
 - a) Patent.
 - b) Chemical abstracts in print.
 - c) Molecular formula index.
7. Write notes on "current science on internet". Give a list Chemical application of world wide web.

Formulation Principles & Practice

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1. What is natural asphalt? State its importance. Explain bituminous coating.
2. Write short notes on the following:
 - a) Finishing Coats.
 - b) Machinery and furniture finishes.
 - c) Formulation.
3. Write an essay on Polymer Emulsion.
4. Write note on the following:
 - a) Primer paints and enamel paints.
 - b) Formulations of enamel paints.
 - c) Cross linking resins and pigmentations.
5. 'The use of water as a solvent has always been attractive', give reason for this and explain water borne coatings in detail.
6. Classify the solvent and explain how the solvents are extracted from the coal tar with the help of an example.
7. Write short notes on the following:
 - a) Spar varnish and floor varnish.
 - b) Varnishes for metal and wood primers.
 - c) Aluminum paint varnishes.

Paint Production and Manufacturing Technology

Max. Marks: 100

Attempt any five Questions:

5 × 20 Marks

1. Explain the following
 - a) Adsorption.
 - b) Adsorption isotherm.
 - c) Specific ad
 - d) Sorption.
2. Explain depletion flocculation and stabilization.
3. Explain Micro-pulverizer. Draw a well labeled diagram of Micronizer.
4. Write short notes on:
 - a. Subtractive colour mixing
 - b. Colour-blindness
 - c. Colour matching
 - d. Principles of spectrophotometer.
5. What are the reasons for enormous paint failure and what is the importance of durability test? Explain durability testing methodology, test sample preparation, chemical resistance testing and use of driers.
6. What is fluorescence and phosphorescence? Explain how opacity changes in films?
7. Write short notes on the following:
 - a. Diagglomeration Dispersion Colloid Stabilization.
 - b. Dispersion Stabilization by Charge
 - c. Zeta Point and Dynamics of Interaction