



ICIS

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PG Program in Paint & Coating Technology

Examination Assignments

November 2012

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 November, 2012**.

The assignments have to be submitted to:
The Program Coordinator

ICIS

C-56A/28, 1st Floor, 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

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. Explain pigments.
2. Explain polymers or resin film formers.
3. Explain surface coating and paint.
4. Explain azoic dyes.
5. Give note on corrosion.
6. Explain paint additives.
7. What do you understand by thickeners in paints. Explain with examples.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain defoamers in paints.
2. Describe factors Influencing colours of paints.
3. Explain flash point of solvent mixture.
4. Why do paints fail? Explain.
5. What is natural weathering. Explain.
6. Explain solvent effects on viscosity.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2×20=40 Marks

1. Explain the required qualities of pigments.
2. Explain particulate nature of pigments and the dispersion process.
3. Explain corrosion inhibiting pigments.
4. Explain "Hansen Solubility Parameter System".

Chemical Database Design & Their Management

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. Explain key features of database system.
2. What is database concept. Explain
3. Give overview of MOS Database.
4. List the issues arising from file based systems.
5. Give an overview of the relational model.
6. How to remove duplicate rows of SQL Data.
7. Explain failed reactions chemical database.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain chemical databases in terms of biocatalysis.
2. Explain chemical databases in terms of Metabolism.
3. Explain CODD's Rules.
4. Explain Data Modeling Components.
5. Write down the steps for creating tables using table wizard after database creation.
6. Explain antibody catalysis and cross linking.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2 × 20 = 40 Marks

1. What is DBMS. Explain the uses and the components of Database Management System.
2. Explain HITSET? How can HITSET be modified.
3. Explain protecting groups database.
4. Explain solid phase synthesis database with its database content and the selection criteria of reactions for inclusion in the database.

Coating Technology and Equipments

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. Explain polymers.
2. Explain pigment volume concentration and CPVL.
3. Explain barrier Protection.
4. Differentiate between decoloration and Brown spot.
5. Define corrosion and boottoppings.
6. Explain airless coating.
7. Define cleanliness and brittleness.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain briefly CPVC along with different angles of deflected light?
2. Explain various coating components with composition.
3. Explain the precision of plastic finishing?
4. Explain anti fouling coating?
5. Explain chlorinated rubber and epoxies.
6. Explain:
 - i. Polyvinyl alcohols and acetates
 - ii. Polyvinyl chlorides and fluorides.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2×20=40 Marks

1. Explain polyurethanes and its classification along with properties.
2. Explain coating. How a coating works? What are applications and purpose of coating?
3. Briefly explain powder coating, its stages and process development.
4. Explain coating system design. What are desired properties of coating system? Explain the factors influencing the choice of materials in a coating system.

Chemical Information Sources

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. Give overview of chemical literature with its main types.
2. Write about primary literature the major forms of primary scientific publication.
3. Explain spectral complications.
4. Explain biomolecule sequence and structure databases.
5. Define and give overview of Beilstein and Gmelin.
6. Explain patents.
7. What is Molecular formula index.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. What do you mean by CAS. Explain the basic rules of CAS Nomenclature.
2. Write a short note on chemistry on www.
3. Differentiate between basic search skills and electronic search skills.
4. Describe the procedure of structure searching by using scifinder scholar.
5. Write short note on chemical connectivity and structure searches (2-D).
6. Write short note on chemical structure, property and shape based searches (3-D).

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2 × 20 = 40 Marks

1. Explain structure searching and its uses.
2. Explain chemical safety and toxicology information.
3. (A) What are basic necessities of chemical safety and toxicology information? Describe.
(B) Why National library of medicines TOXNET system and the canadian centre for occupational health and safety database help in chemical safety.
4. Write down notes on "current science on internet". Give list of chemical applications of World Wide Web.

Formulation Principles & Practice

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. List out the types of paints with examples.
2. Explain benzol with its applications.
3. What are the applications and characteristics of xycol.
4. Explain primer paints.
5. Explain cross linking resins & pigmentations.
6. Explain water borne coatings.
7. What are paint removers? Explain with examples.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain water paints.
2. What are terpene solvents, also explain the composition and properties.
3. Short note on finishing coats.
4. Explain spar varnish and floor varnish.
5. Explain how solvents are extracted from coaltar with the help of an example.
6. Explain mechanism of electro deposition.
7. Explain EPC (Electro Powder Coating).

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2×20=40 Marks

1. Explain solvents. How solvents are classified?
2. Explain bituminous paints / coating.
3. Explain:
 - (A) Bacteriostatic Paints
 - (B) Tungistatic Paints
 - (C) Fungistatic Paints
 - (D) Fungicidal wash
4. What do you understand by additives. Explain main additives used for paint formulation.

Paint Production and Manufacturing Technology

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. Explain adsorption.
2. Explain De agglomeration of powder form pigment.
3. Explain viscosity.
4. What are zeta potentials.
5. Explain micronizer.
6. What do you understand by drying time of paints.
7. Explain can - corrosion inhibitors.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain how colours are measured in terms of paints.
2. Explain scattering in paint particles by white pigments.
3. Differentiate between fluorescence and phosphorescence.
4. Explain the dynamics of interaction between particles.
5. What do you understand by chemical resistance testing.
6. Explain sedimentation and flocculation.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2 × 20 = 40 Marks

1. Explain binders and solvents with their respective types.
2. Explain the process of estimation of free energy and energy isotherms.
3. How pigments used in paints are classified. Explain physical properties of various colors.
4. Mention the properties of steel. State the criteria used for classification of steel. Explain the different types of steel along with properties.

Emulsion and Paint Additives

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. What do you mean by organic pigments.
2. Define oxidizing inhibitors and non-oxidizing inhibitors?
3. Define physical drying system and chemical drying system.
4. What do you understand by light stabilizers.
5. Define paint stainers.
6. Define and explain varnish removers.
7. Define and explain water borne paints.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Differentiate between natural waxes and synthetic waxes.
2. Explain organic corrosion Inhibitors.
3. What do you understand by initiators? Explain the types of photo initiators.
4. Define foam control additives and explain its composition.
5. Explain the method of preparing paints composition.
6. Give overview of Bio-diesel with the help of any one product.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2 × 20 = 40 Marks

1. Briefly describe emulsion and emulsion paints? Give some view on anionic bitumen emulsion.
2. Briefly describe additives for powder coating along with curing agent and catalysts.
3. Explain paints, paint bases, spray paint and paint mixing.
4. Briefly explain solvents, its purpose, components departure of solvent along with the types of solvents.

Painting of Aircraft and Ships

Max. Marks: 100

SECTION A

Very Short Answer Type Questions (30-40 Words)

Attempt any four Questions :

4 × 5 = 20 Marks

1. What is tie coat / sealer coat. Explain its objectives.
2. Write short note on surface preparation in internal and external painting of aircrafts.
3. List out main structures of the ship.
4. Define synthetic coatings in aircrafts.
5. Write short note on eco friendly solvents.
6. Explain two main defects of paint application in case of aircrafts.
7. Define and explain the condition of blushing in aircraft painting.

SECTION B

Short Answer Type Questions (150-200 words)

Attempt any four Questions:

4 × 10 = 40 Marks

1. Explain selection of underwater coating system and its types.
2. Explain boottoppings.
3. What are the requirements of aircraft coatings.
4. Find out the main differences between nitro-cellulose coatings and acrylic coatings. Which one better for aircraft coating purposes?
5. Write short note on polyurethane coatings.
6. Discuss the necessity of painting in ships.

SECTION C

Long Answer Type Questions (800-1000 words)

Attempt any two Questions:

2 × 20 = 40 Marks

1. Explain various types of aircraft coatings.
2. Explain preparation of aluminium and its alloy surfaces and steel and magnesium alloys.
3. Explain soluble and in-soluble matrix types with specific formulations. Also explain the difference between these two types.
4. Explain how painting of ships differ from painting of aircrafts.