



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2021

(Under CBCS Pattern)

Semester - VI

Subject: CHEMISTRY

Paper: DSE 3-T & P

Full Marks : 60

Time : 3 Hours

Candidates are required to give their answer in their own words as far as practicable.

The figures in the margin indicate full marks.

Green Chemistry

THEORY (Marks : 40)

Group A

Answer any *two* questions :

15 × 2

- (a) What do you mean by Green Chemistry and describe the necessity of such chemistry?
(b) Write the twelve principles of Green Chemistry with explanations. [5+10]
- (a) Define Atom Economy.
(b) What is the atom economy of producing carbon dioxide by burning propane? [5+10]

3. Write short notes on the following :

(a) Renewable energy

(b) Ionic liquids [7.5+7.5]

4. (a) How water can act as better solvent than common organic solvents for a simple Diels-Alder reaction? Illustrate with suitable examples.

(b) Synthesize glucose to adipic acid through green route.

(c) Give the principle of inherent safer design (ISD)? How does it work for designing the greener processes in industries? [5+5+5]

Group - B

Answer any *one* question : 10 × 1

5. What are antifoulants. Why the marine antifoulant tributyl tin oxide (TBTO) was replaced by Sea Nine 211 ?

6. What is biocatalysis? Give two relevant advantages and limitations of biocatalysis used in the chemical reactions.

PRACTICAL (Marks : 20)

Paper : DSE 3P

Answer any *one* question : 20 × 1

1. Write down the principles of the synthesis of gold nanoparticles using tea leaves extract.

2. How atom economy of a reaction can be calculated? Explain with a model reaction.

3. Write down the principle of photoreduction of benzophenone to benzopinacol in the presence of sunlight.

Inorganic Materials of Industrial Importance

THEORY (Marks : 40)

Part A

1. Answer any **one** question : 1×10=10
- (a) (i) What is portland cement ? What are the raw materials required for the manufacturing of Portland cement ? (2+3)
- (ii) Why glass articles are annealed ? (2+)
- (iii) What is meant by complete fertiliser ? (3+)
- (b) (i) What are the essential ingredients of paints ? (6+)
- (ii) What are the differences between paints and varnish ? (4+)
2. Answer any **two** questions : 2×15=30
- (a) (i) Discuss the principles, properties and industrial applications of catalysts. (6+)
- (ii) Write a short note on Ammonium Sulphate. (5+)
- (iii) Describe the process required for the manufacturing of Urea with flow diagram. (4+)
- (b) (i) What is plaster of paris ? (2+)
- (ii) Why gypsum is added during the manufacture of portland cement ? (3+)
- (iii) Discuss the chemical and physical changes that occur during setting of cement. (6+)
- (iv) What is Soundness of cement ? (4+)
- (c) (i) Write down the advantages and disadvantages of ceramic products. (4+)
- (ii) What is clay ? Write the use of clay. (2+2)
- (iii) Write short note on raw materials in Glass making. (5+)
- (iv) Name two commonly used pigments. (2+)
- (d) (i) Write a short note on RDX. (3+)
- (ii) What is enamel ? (2+)
- (iii) Write down the properties of waxes. (5+)
- (iv) What are the differences between Mortars and Concrete ? (5+)

PRACTICAL (Marks : 20)

Paper : DSE 3-P

Answer any *one* question :

1 × 20=20

1. Describe the procedure for estimation of Iron (Fe_2O_3) in cement.
2. Write down the procedure for the preparation of Zinc oxide pigment.
3. Describe the methods of electroless metallic coatings on ceramic materials.

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Vidyasagar University