



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY
Question Paper

B.Sc. Honours Examinations 2022

(Under CBCS Pattern)

Semester - VI

Subject: CHEMISTRY

Paper : DSE 3-T

Full Marks : 40

Time : 2 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)

Group - A

Answer any **four** questions from the following :

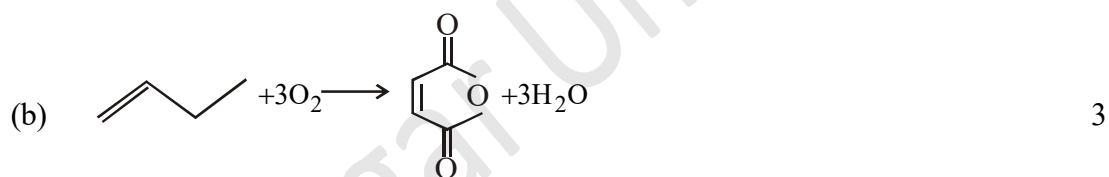
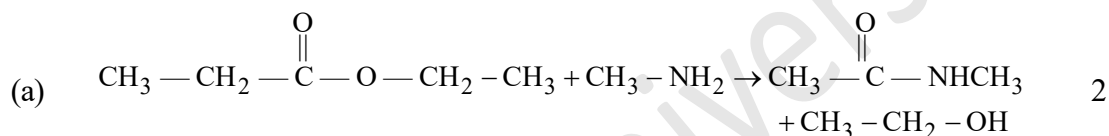
1. (a) “Green Chemistry is sustainable chemistry” — Explain the statement. 2
- (b) List any four limitations / obstacles in the pursuit of green chemistry. 2
- (c) Give an example of solvent free reaction. 1
2. (a) What is sonication ? Which effect is responsible for supplying energy in sonication? 1+2
- (b) Discuss two advantages of microwave assisted organic synthesis. 2
3. (a) What is super critical CO₂ ? What are its advantages over conventional organic solvent ? 2+2

- (b) Give an example of Ionic liquid. 1
4. Carry out the following conversions considering the greener route.
- (i) Glucose → Adipic acid
- (ii) Corn → Poly lactic acid 2½ + 2½

5. Write short notes on the following :

- (a) Photo catalysis
- (b) Atom economy 2½ + 2½

6. Calculate the atom economy of the following reaction :



Group - B

Answer any *two* questions from the following : 10×2=20

7. (a) What are Rightfit pigments ? List the toxicological problems associated with the conventional colourants. 2+2
- (b) What do you mean by combinatorial green chemistry ? Give example. 2
- (c) Discuss the principle of inherent safer design (ISD). How does it work for designing the green processes in Industry ? 2+2
8. (a) Explain the working mechanism of Carbondioxide surfactant in garment industry. 2
- (b) What are antifoulants ? What were the adverse effects of the conventional antifoulant? 2+2
- (c) Catalytic reagents are superior to stoichiometric reagents. Explain. 2
- (d) Outline the green synthesis of Disodium iminodiacetate. 2

9. (a) What is biocatalyst ? Differentiate Homogenous and Heterogenous Catalysis. 2+3
- (b) Write a short note on production of healthier fats and oils. 3
- (c) What type of reaction vessels are used in microwave reactions ? 2
10. (a) Write twelve principles of green chemistry. Briefly explain any two with suitable example. 4+4
- (b) What do you mean by asymmetric catalysis ? 2
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Vidyasagar University

Or,

(Inorganic Materials of Industrial Importance)

Group - A

Answer any *four* from the following questions :

5 × 4 = 20

1. (a) What is vitrification of glass ?
(b) How lead acid batteries are charged ? What happens when charging is done at higher voltage ? 2+(2+1)
2. (a) What is phase transfer catalysis ? Give an example.
(b) Hydrogenation of ethene into ethane falls under which type of catalysis — explain. (2+1)+2
3. (a) What do you mean by “Fillers”? Give example.
(b) Give the composition of triple super phosphate. (2+1)+2
4. (a) What are propellants ? How they can be classified ?
(b) What is “Anodising process”? (2+1)+2
5. (a) What do you mean by blasting agent ? What is the difference between explosive and blasting agent ?
(b) Differentiate between ferrous and non-ferrous alloys. (1+2)+2
6. (a) What is decarburization reaction ?
(b) How the surface area of electrode plays a pivotal role in fuel cell ?
(c) What is armoured glass ? 2+2+1

Group - B

Answer any *two* from the following questions :

10 × 2 = 20

7. (a) What is catalyst poison ? Cite one example.
(b) Describe the steps involved in the manufacture of glass.
(c) Write the requisities of a good paint.
(d) Differentiate between primary and secondary batteries. (2+1)+3+2+2

8. (a) Synthesize PETN from formaldehyde
- (b) What are fertilizers ? How they can be classified on the basis of their application?
- (c) Write a short note on quick setting Cement.
- (d) "A high detonation pressure is necessary when blasting hard, dense rock" — Explain. 2+(1+2)+3+2
9. (a) How fibre glass is different from safety glass ?
- (b) Write a note on paint formulation.
- (c) What are the advantages of Li-ion batteries ?
- (d) Differentiate between different types of steel. 2+3+2+3
10. (a) Describe the applications of Zeolites as catalysts.
- (b) What are the defects that occur during heat treatment of steel ?
- (c) Write short note on metal spraying.
- (d) What is the effect of adding Ba to glass ? 3+2+3+2
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