

Reg. No.:



Name:

University of Kerala

W7123

Third Semester FYUGP Degree Examination, November 2025

Discipline Specific Elective

CHEMISTRY

UK3DSECHE201 - CHEMISTRY FOR RENEWABLE & CLEAN ENERGY - I

Academic Level: 200-299

2024 Admission

Time: 2 Hours(120 Mins)

Max. Marks: 56

**Part A.6 Marks:Time 5 Minutes.(Cognitive Level :Remember(RE)/Understand(UN)) Objective Type.1 mark each,
Answer all questions**

Qn No.	Question	CL	CO
1	Which nuclear accident occurred in Japan in 2011?	RE	2
2	Name the different types of energy audits.	RE	4
3	What are the primary renewable energy sources assessed in energy audits?	UN	4
4	Name two major global energy challenges.	UN	2
5	What is the main component of natural gas	UN	1
6	Discuss the term zero energy concept.	UN	3

Part B.10 Marks.Time:20 Minutes (Cognitive Level:Understand(UN)/Apply(AP))Two-three sentences.2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Define green house effect.	UN	2
8	Explain what is meant by hydrogen economy?	UN	3
9	A country wants to achieve carbon neutrality. Suggest practical steps it could take in energy production and consumption.	AP	2
10	State the importance of energy policy for industries.	AP	4

Qn No.	Question	CL	CO
11	Apply your knowledge of coal to describe its role in energy production.	AP	1

Part C.16 Marks:35 Minutes.(Cognitive Level :Apply(AP)/Analyse(AN))Short Answer.4 marks each, Answer all 4 questions,choosing among options * within each question

Qn No.	Question	CL	CO
12	A) Apply nuclear waste management to prevent hazards. OR B) A city relies heavily on coal-fired power plants and faces rising pollution levels. Suggest sustainable energy solutions and explain their benefits.	AP	1, 2
13	A) Suggest and explain two practical methods to reduce the environmental impact of fossil fuel use. OR B) If your country is planning a new nuclear plant, what waste management strategies should be included in its design?	AP	1, 2
14	A) Compare the economic benefits and environmental benefits of zero-energy buildings. OR B) During a Walk-through-Audit of a college campus, several old fluorescent lights and inefficient air conditioners were identified. Analyze how these findings can help in reducing overall consumption and costs.	AN	3, 4
15	A) Analyze how combining an industrial energy assessment with a detailed energy audit can lead to optimized energy use in a chemical plant. OR B) Explain the role of training and awareness in energy management programmes.	AN	4, 4

Qn No.	Question	CL	CO

Part D.24 Marks.Time: 60 Minutes.(Cognitive Level :Analyse(AN)/Evaluate(EV)/Create(CR)) Long Answer 6 Marks each.Answer all 4 questions choosing among options * within each question

Qn No.	Question	CL	CO
16	A) Analyze major steps in achieving carbon neutrality and why it is important? OR B) Analyze the environmental, economic, and social challenges posed by non-sustainable energy systems and suggest strategies to address these challenges	AN	2, 1
17	A) Explain the significance of knowing the energy costs. OR B) Evaluate hydrogen as a renewable energy source with reference to the concept of the hydrogen economy. Discuss its advantages, limitations, and future prospects.	EV	4, 3
18	A) Evaluate the role of the executive summary, flow charts and tables in influencing management decisions in an energy audit report. OR B) Evaluate the importance of policy regulation in energy sustainability.	EV	4, 3
19	A) Propose a creative roadmap for 2030 where your college becomes fully energy sustainable. OR B) Design a Sankey diagram to display energy flow based on your home's daily energy input, usage by different appliances (like lighting, refrigeration etc) and energy losses and suggest any two practical measures to improve household energy efficiency.	CR	4, 4