[Total No. of CO's - 05] Seat No: [Total No. of Pages: 02]

G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution affiliated to Savitribai Phule, Pune University)
F.Y Year B. Tech (Mechanical, Civil & E&TC) (Term-II)
ESE SUMMER 2021
Environmental Chemistry (UBSL 102)

**[Time: -- 2Hours]** **[Max. Marks – 50]**

*COURSE OUTCOME:*

1. *Explain various methods of water treatment for domestic and industrial use*
2. *Differentiate various categories of waste and its disposal techniques*
3. *Identify various batteries and recognize its commercial applications*
4. *Classify the different types of Energy and its future scope*
5. *Apply the knowledge of environmental pollution and degradation to solve related problems*

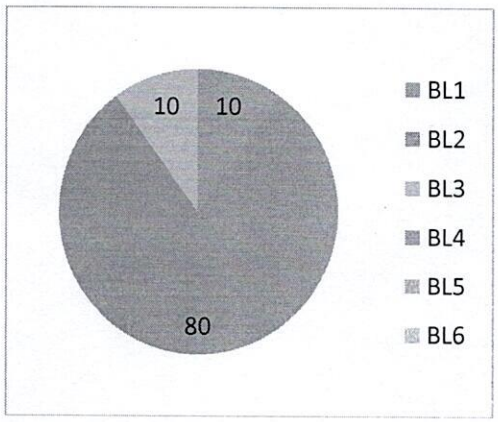
*Instructions to the candidates:*

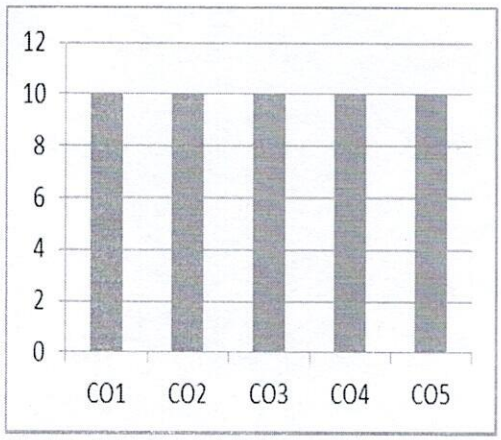
1) *(CO1/CO2/CO….)at the beginning of question/sub question indicates the course outcome related to the question.*
2) *All questions are compulsory.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right indicate full marks.*
5) *Assume suitable data, if necessary.*
6) *Other Instructions, if any.*

| *CO* | *Sub Question* | | *Marks* | *BL* |
|---|---|---|---|---|
| CO1 | *a)* | **Explain boiler corrosion, state its causes and preventative measures.** | [5] | L2 |
| | *b)* | **On the basis of your understanding, explain the Zeolite process with a suitable diagram for water softening and give its advantages and disadvantages.** | [5 ] | L2 |
| | | **OR** | | |
| | *c)* | **Applying your knowledge to explain hardness of water, also explain it with chemical reaction of soap in soft water as well as in hard water.** | [ 5] | L3 |
| CO2 | *a)* | **What is E-waste? Explain collection, segregation, transportation and its disposal.** | [5 ] | L2 |
| | *b)* | **Applying your knowledge to explain solid waste management with suitable technique.** | [5] | L3 |

**P.T.O.**

| | | | | |
|---|---|---|---|---|
| CO3 | *a)* | **Explain Lithium –Ion battery with suitable diagram and chemical reaction, also state any two advantages of it.** | **[5 ]** | **L2** |
| | *b)* | **Explain Fuel Cell with suitable diagram. Explain its advantages and disadvantages.** | **[5]** | **L2** |
| CO4 | *a)* | **Remember and write any six characteristics of good fuel.** | **[5 ]** | **L1** |
| | *b)* | **As per your understanding explain the working mechanism of Solar Cooker with diagram.** | **[5 ]** | **L2** |
| | | **OR** | | |
| | *c)* | **A Chemist was burnt 0.75 g of coal completely in a Bomb Calorimeter; he observed the increase in the temperature of 2600 g of water was 1.75$^0$C. If the water equivalent of the calorimeter is 165 g, calculate the gross calorific value in KJ/Kg. Specific heat of water = 4.187 KJ/ kg$^0$C** | **[5]** | **L3** |
| CO5 | *a)* | **What are the sources of air pollution in your area and explain its controlling methods?** | **[5 ]** | **L2** |
| | *b)* | **Explain water quality index as per WHO. Explain various sources of water pollution.** | **[5]** | **L2** |




- **BL – Bloom's Taxonomy Levels (1- Remembering, 2- Understanding, 3 – Applying, 4 – Analysing, 5 –Evaluating, 6 - Creating).**